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Transforming Higher Education: Responding to the Coronavirus and Other Looming Crises

Michael F. Mascolo¹

Abstract. Higher education is being deeply challenged by the coronavirus. The immediate threats of the coronavirus come at the heels of an existing panoply of problems that already threaten higher education as we know it. These include, of course, the looming enrollment crisis, the high cost of higher education, intractable student debt, the corporatization of education, limited learning on campus, and a general loss of faith in higher education among many sectors of the nation. How are colleges and universities to respond to these challenges? This paper calls upon colleges and universities to consider the need for structural transformation in order to adapt to the multiple crises facing higher education. Toward this end, using the coronavirus crisis as a point of entry, I propose a model of *transformative problem-solving* to support the *dynamic adaptation* of higher education. The model calls for deep reflexivity about basic assumptions, goals, values and practices that structure teaching and learning in the academy, and proposes ways to evaluate and transform complex and entrenched institutional systems in a time of extended crisis. I illustrate the approach with a description of how a single college program is preparing for structural changes brought forth by the coronavirus. Turning attention to the broader crises facing the academy, I call for a need to reflect upon, rethink and consider the fate of goals, values and practices have been long been considered sacred in higher education.

The Coronavirus has forced higher education to move to online teaching and learning – at least temporarily. In so doing, it has sent college administrations, faculty and students scrambling for ways to adapt traditional face-to-face teaching to an online format. Happily, video-conferencing technologies have recently evolved to levels that can support the production of group meetings with large numbers of participants. While it is likely that most colleges will meet the most basic criterion of completing instruction in some form until the end of the academic year, a series of questions remain open. In the context of the transition, to what extent are students engaged in meaningful learning. How well does online learning serve the needs of students?

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More important questions loom on the not-so-distant horizon. What will the near-term and long term bring? It is possible the world will bring the coronavirus under control: the infection curves will flatten and extinguish so that college life will return to normal. If this is so, then all colleges will need to do is to put sufficient plans into place to weather the current storm. It is also possible, however, that the crisis will last longer, that the coronavirus will prove to be seasonal, or that new such viruses will arise on the horizon. Under such circumstances, there may be a need to prepare for a new normal.

Prior to the onset of COVID-19, higher education was already facing serious structural problems (Altbach, Berdahl, & Gumpert, 2011; Blumenstyk, 2014; Bok, 2007, 2013; Hacker & Dreifus, 2011; Hersh & Merrow, 2005; Lucas, 1996; Mascolo & Castillo, 2015; Mettler, 2014; Taylor, 2010). As is well known, costs have been increasing at many times the cost of inflation (Morris, 2017). Student debt has reached levels that are beyond the capacity of many students to remit (Goodnight, Hingstman & Green, 2015; Perna, Kvaal & Ruiz, 2017). College administrations are burgeoning while tenure-track faculty positions have become the minority. Traditional pillars of the liberal arts curriculum – the Humanities – have given way to market values (Crage & Fairchild 2007; George, 2007; Potts, 2005). Many students who attend college are unprepared for college level work (Jackson & Kurlaender, 2014; Harvey, Slate, Moore, Barnes, & Martinez-Garcia, C. (2013). A sizable minority ore more lack fundamental skills in reading, writing, mathematics, organization and motivation (McCormick, 2011; Nonis & Hudson, 2010; Tierney & Sablan, J2014). College teachers have experimented with a variety of pedagogical models to support student learning, including active learning (Lee & Jabot, 2011), flipped classrooms, problem-based learning (Savery, 2006), various forms of collaborative learning, experiential learning, and the use of various technologies. Despite these experiments, the quality of student learning continues to be in question (Arum & Roksa, 2011; Arum, Roksa & Cho, 2011). The traditional liberal arts curriculum is increasingly giving way to *consumerism* and *vocationalism* (Delucchi & Korgen, 2002; Potts, 2005). Even here, however, employers complain that students are ill prepared to make meaningful contributions to the workplace (Calonge & Shah, 2016; Jaschik, 2015).

If there is a new normal – and it is as yet unclear whether there is – how will colleges respond? If there is a need to move the brick-and-mortar residence to increasingly online formats, how will colleges survive? As more families are losing their livelihoods, how will students afford the high price of higher education? If students do physically attend colleges, how will colleges raise enough money to compete with already established online institutions? How will brick-and-mortar institutions survive in a post-COVID world? Should they survive?

There has long been a debate about the relationship between the values that guide individual action and the social, material and economic conditions of the time (Haslanger, 2018; Rekret, 2018; Sarki et al., 2019). Which comes first? Do our values determine how we arrange our worlds and our lives? Or are our lives conditioned by social, material and economic forces that are beyond our immediate control? The coronavirus is a reminder that, despite our capacities for symbolism, technology and sophistication, humans are biological animals subject to shifting biological and material conditions. If there is a new normal, institutions will either have to adapt or become extinguished. As the material and

social conditions change, colleges and universities may find that they are unable to outpace the latest emergency; they may need to reinvent their goals, values and practices to adapt to a new normal.

Dynamic Adaptation

In higher education, as in other pursuits, adapting to a crisis occurs at many levels and timeframes. In any given crisis, some adaptations will be more urgent than others. Short-term triage, maintenance and survival will take precedence. Once the short-term exigencies have been addressed, it becomes necessary to address more important long-term considerations. There is often the risk, however, that short-term precedents and procedures will eclipse longer-term considerations (Keeling, Underhile & Wall, 2007). In the context of higher education, for example, even successful responses to short-term threats – for example, moving instruction online – may obscure the need for reflection on more systematic threats – the extent to which online teaching is able to replace face-to-face teaching either in the present or the future.

In the immediate aftermath of the COVID crisis, climate, colleges and universities address the urgent need to move instruction online. With little time, colleges were forced to upgrade their technological resources (if needed) and administer a shift to online learning. While many faculty have long been accustomed to online learning, others found themselves needing to only learn new technologies in a short span of time, but also to adapt their ongoing coursework to the new format. This process, which might be called *linear re-packaging*, is indicated in Figure 1. Without the time to rethink the relationship between traditional instruction and the online format, instructors had to find some way to repackage their ongoing procedures to the online format. For many, this likely involved simply moving lectures online. Some faculty continued to employ a synchronous approach to teaching; others experimented with asynchronous teaching and other forms of instruction.



Figure 1. Linear Repackaging

Such adaptations are likely to be sufficient to maintain equilibrium in the short-term. If there is a new normal, it is less likely that linear re-packaging will support meaningful teaching and learning. There are many reasons why this is the case. One reason is that the online format is simply not the same as the face-to-face format. Most instructors who have adapted to this transition are likely to experience the profound differences. Depending upon the form it takes, some aspects of online teaching may be superior to the face-to-face version; others are markedly inferior. It would be a mistake to assume that a simple transfer of learning from one format to the other – or a hybrid – will be necessarily smooth or effective (Kirkwood, 2009).

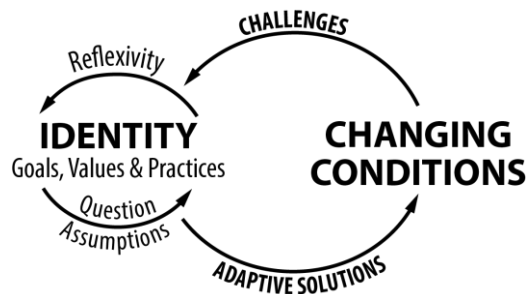


Figure 2: Dynamic Adaptation

Under a new normal, in place of short-term linear repackaging, long-term planning will most likely require *dynamic adaptation* at the levels of the college, the classroom and the individual teacher and learner. This approach is depicted in Figure 2. In a crisis, the dynamic adaptation is predicated on an awareness of a fundamental need to *transform* ongoing goals, values and practices of any given institution in light of changing environmental circumstances. It differs from linear repackaging in its awareness that it may not be possible to make linear or quantitative shifts from an existing to a new way of functioning. There may be a need to rethink first principles, sacred values and core practices in order to adapt to novel circumstances.

Adaptive Transformation in a Time of Crisis

Adapting to existential crises often requires re-inventing and reconstructing fundamental ways of relating to the world. Figure 3 outlines a holistic model of adaptive problem-solving during times of crisis. The model is organized around three key principles. First, (adaptive problem solving is a (a) *continuous process* rather than a singular event (Fogel, 1993). As process, transformative problem-solving occurs over time and continuously adjusts to shifting circumstances (Carmeli, Sheaffer, Binyamin, Reiter, & Shimoni, 2014; Eriksen, 2008; Lin, Zhao, Ismail & Carley, 2006; Kegan & Lahey, 2016). It is sensitive to the need for continuous monitoring of shifting social conditions. It is sensitive to the ways in which any attempt to resolve a problem often exposes unseen needs and creates novel and unanticipated problems of its own. Continuous monitoring of feedback to novel interventions is central to the process of adaptive problem-solving.

Second, holistic problem-solving is found upon (b) *deep reflexivity* (Carmeli, Sheaffer, Binyamin, Reiter, & Shimoni, 2014; Eriksen, 2008). *Reflexivity* refers to the process of reflecting upon the assumptions, beliefs and values that structure what we do. The practice of reflexivity functions to orient people toward fundamental, tacit and often unquestioned beliefs that structure the functioning of an organization. This requires exposing and questioning time-honored assumptions, values and practices that may be experienced as sacrosanct. The more foundational such beliefs, the more implicit and unarticulated they may be. It is precisely the failure of assumptive frameworks to accommodate to novel circumstances that brings them into awareness.

Third, holistic problem-solving focuses on (c) the *holistic coordination of multiple needs* through the systemic transformation of existing systems and resources (Kegan & Lahey, 2016). Crises do not simply create local problems; they pose threats to the systemic

integrity of any given organization. Adaptation requires a capacity not only to represent multiple problems simultaneously, but also an understanding of how emergent problems *affect each other* within the context of the larger system. Systemic problems require the flexible coordination of multiple constituencies and stakeholders in order to produce systematic solutions. Thus, it follows that the important moments in the process of adaptive transformation are not necessarily the invention of novel solutions to particular problems, but instead the process of continuously and reflexively monitoring feedback from solutions and their relevance to the organization's adaptive system of assumptions, goals, values and practices.

The Holistic Process of Transformative Problem-Solving

The process of holistic problem-solving involves a series of iterative and overlapping steps that evolve continuously over time. These steps are illustrated through an analysis of the need for higher education to respond to the crisis created by COVID-19.

Encountering the Threat

The process begins with the registration of some systematic *threat*, such as the COVID-19 virus. In the context of a credible threat, there is a first need to assess the full range of *changing conditions* and the nature of the ongoing *threat*. The process begins with an immediate, holistic, systematic and ongoing analysis of the nature of *changing conditions*. Because existing conditions are subject to linear and nonlinear change, the process must be ongoing and flexible. Because existing conditions are systemic in nature, the process must take into consideration diverse processes organized at multiple levels both inside and outside of institution. For example, with the context of the COVID crisis, issues involve but are not limited to questions related to the *virus* itself (How does the virus operate? Who does it infect? How long will the crisis last? Will it be seasonal? Will there be recurrent iterations?), matters related to *safety* (how to keep people safe during teaching and learning), *social infrastructure* (Can people travel safely; Are essential supplies available?), *economic loss* (How are family incomes being affected? Will government programs compensate for the loss?); available *technological* resources (What forms of education do current technologies support?), shifting *social need* (e.g., What new forms of social need are emerging? What forms of education are needed?), *mental and spiritual health* (e.g., How are people responding psychologically, socially and spiritually to the crisis? What forms of social and cultural life make life meaningful under novel social conditions?), and many others.

As it becomes clear that the situation is indeed a crisis, it becomes necessary to create a shared sense of *urgency* among the community (Kotter, 2008). This includes not only establishing the credibility of the crisis, but also fostering communal understanding of the *severity* of the crisis and thus of the need to for *collective* action. Communication with the community should be *compassionate, informative, authentic, authoritative, and inviting* (Carmeli, Sheaffer, Binyamin, Reiter, & Shimoni, 2014; McNaughtan, DePue, McNaughtan, 2019; Perlmutter, 2018). *Compassionate* communication is founded on a deep appreciation of the needs, fears and difficulties of the affected community, and of the need to foster hope, solidarity and confidence among the community. *Informative*

communication is necessary to ensure that the community has a basic understanding of the best technical knowledge available about the crisis. Such knowledge is necessary to foster solidarity, trust and an ethos of shared problem-solving. *Authentic* communication is honest, transparent and non-defensive in nature. Honesty and transparency is essential in order to foster trust, confidence in leaders and in whatever process is created. Non-defensive and authentic communication extend to issues that generate conflict and diversity of opinion. One might argue that the more a community understands about the nature, source and reasons for conflicting beliefs and interpretations, they better they are able to understand the issues involved, and thus participate in collective action.

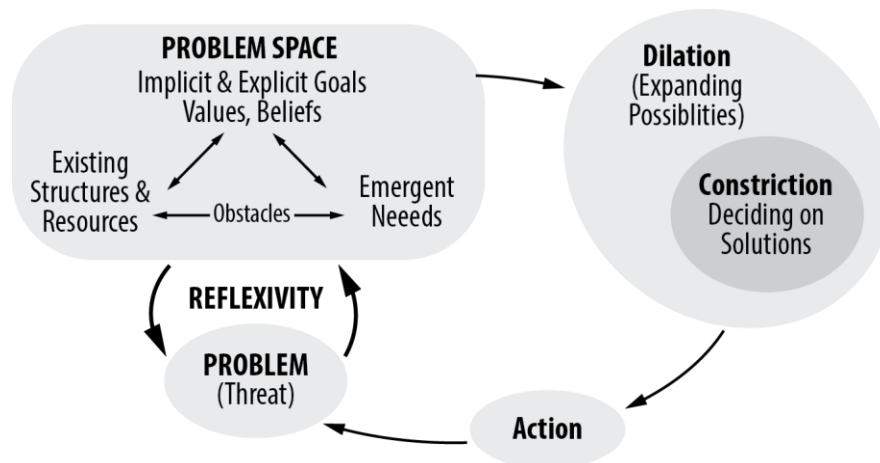


Figure 3: Reflexivity and Complex Coordination in Adaptive Problem-Solving

It is also important for communication by campus leaders to be *authoritative* (but not *authoritarian*). Authoritative communication communicates a clear sense of collective direction for further action. Authoritative communication is neither authoritarian, coercive nor autocratic. Unlike authoritarian leadership, authoritative leadership must always be both *justified* and *justifiable* (see Radzik, 2000). An authoritative communication is one that is grounded in shared knowledge, informed by recognized expertise, established on the basis of some degree of consensus, grounded in shared beliefs about the legitimacy of the role of the leader in question, and accountable to those to whom the communication is directed (see Baldassarri & Grossman, 2011). Authoritative leadership is thus inherently *inviting*. It creates an open space for constituencies to give voice to problems, concerns and possible solutions. It does not simply create such a space, it actively *solicits* open discourse in an authentic attempt to address the needs of all constituencies, and to build upon collective knowledge and expertise of the community.

Representing the Full Range of Complex Problems

As indicated in Figure 3, all problem-solving necessarily operates within some sort of *problem space* (Clariana, Engelmann & Yu, 2013; Helie, 2013). A problem space consists of one's *representation of the problem*. It consists of one's understanding of the nature and source of the threat; the goals to be achieved; the obstacles to the goal; the resources available to address the problem. One's representation of the problem frames one's

approach to resolving the problem. An impoverished representation of the problem decreases the likelihood that it will be solved to anyone's satisfaction. Any systemic threat raises a suite of interrelated problems – not just one. A problem is always a *relational* phenomenon. It always contains at least two elements that are in some state of *conflict*: an *initial state* and a *desired state*; an *event* and a *thwarted goal*; an *unmet need* and a desire to *meet the need*. In a problem, the task is to remove the conflict, distance or gap between the initial and desired state. While it may seem that identifying a problem is a relatively straightforward task, it is not necessarily so. A problem depends significantly on what one takes to be the nature of the threat; of the conditions that are threatened; and the goals, values and needs that define the desired state.

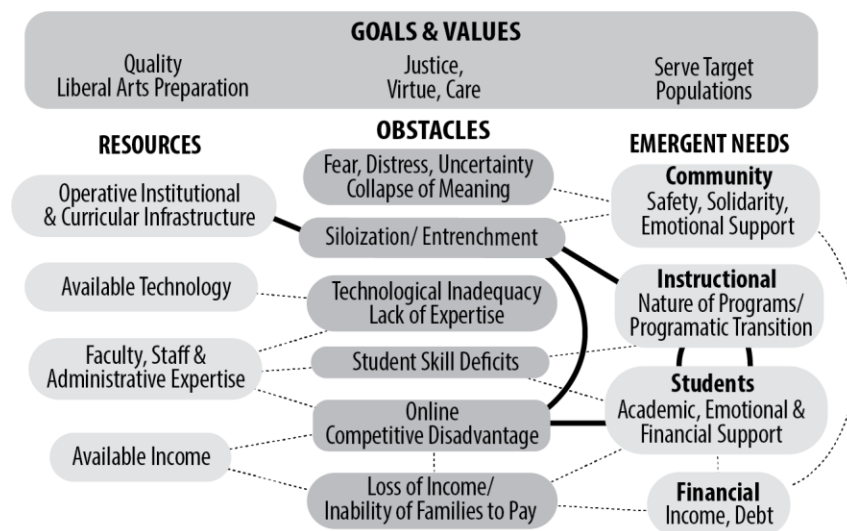


Figure 4: A Sample Problem Space

It is here that developing a clear and comprehensive representation of the problem becomes essential. Figure 4 shows a sample problem space for an imaginary small liberal arts college. The problem space provides a representation of the structure of the concerns that an institution must coordinate during a time of crisis. Even a simple problem space like that depicted in Figure 4 illustrates the complexity of the systemic concerns confronting any given institution. The problem space is divided into four categories: (a) *core goals and values*, (b) *existing structures and resources*; (c) *emergent needs* that arise as a result of the crisis, and (d) *obstacles* to meeting those needs. The task of the institution is to adapt *existing structures* in order to meet *emerging needs* within the context of *core goals and values*.

The problem space sketched in Figure 4 is hypothetical, but is likely to be representative of many small colleges facing a potentially existential crisis such as the coronavirus threat. Each element in the problem space is necessarily simplified. We begin with the assumption that the college in question is committed to the *goal* of preparing students with a quality *liberal arts education*, defined by shared and contested notions of quality. We assume that the college seeks to serve a particular target population, and seeks to do so with a commitment to some set of shared *values*, such as *justice, virtue* and *care*.

Emergent Needs. Emergent needs refer to the needs of stakeholders that arise as a result of the coronavirus threat. These needs may be short- or long-term, depending upon the long-term impact of the virus. *Communal* needs include keeping the community physically *safe*, fostering *solidarity* for collective action, and providing *emotional support* to the community at large. Instructional needs include finding ways to foster learning outside of the context of face-to-face interaction. This requires identifying the *types* of programs (e.g., classes, support systems) that can be adapted to such contexts, the *medium* for delivering instruction (e.g., different types of online classes), and providing faculty and other professionals with the support needed to *transition* to novel forms of educating.

Student needs will differ from faculty needs. As discussed above, the transition from face-to-face to online teaching is unlikely to operate by merely substituting an online platform for face-to-face instruction. Traditional classroom education operates as a kind of cultural milieu. Students and instructors act within the context of shared expectations about what is required in the process of teaching and learning. In face-to-face context, students will have developed a series of learning and study strategies that they anticipate will maximize their performance on tests and examinations. The transition to online teaching disrupts the culture of explicit and implicit expectations in both obvious and nonobvious ways. Online formats may disrupt the normative sense of community that exists in face-to-face courses; it will make it more difficult for the teacher to monitor and support student engagement. Students may find it more difficult to maintain attention and extract meaning in a lecture format; they may fail to compensate for such difficulties by implementing changes in their reading and notetaking. As a result, students may find themselves disengaged both intellectually and emotionally from virtual courses. Students may also find themselves requiring unanticipated levels of both academic and emotional support. Across all socio-economic lines, students may find themselves with less than adequate computer technology, internet connections and access to online services. Some students will find it difficult to carve out a physical space that is relatively free from distractions and interruptions.

Most institutions will face deep *financial* needs caused by the immediate and long term ramifications of the virus. Families will suffer financial hardship from an inability to work, from layoffs, from the decline of the broader economy. Parents will demand repayment for unused dormitories and food plans. Institutions will face a deep need to supplement lost income that results from these and other conditions, thus impacting the institution's attempts to support transitional instruction, support students with financial hardship, pay ongoing debt, and otherwise survive in the marketplace.

Resources and Obstacles. Most colleges and universities can rely upon a series of existing strengths that are well adapted to face-to-face instruction. They typically are organized around a more-or-less stable *administrative and curricular infrastructure*, physical and virtual *technologies* that support the delivery of a liberal arts curriculum; a wealth of administrative, faculty and staff *expertise*; and the availability of *funds* to support these ongoing operations. Successful crisis management builds upon institutions' capacities to adapt existing structures and resources to novel contingencies and emergent needs. The problem is, of course, that structures and resources that have been adapted

to one set of conditions may not be directly applicable to novel social conditions – and especially to long term changes that cannot be clearly anticipated at the time of an incipient crisis.

Figure 4 identifies a series of *obstacles* that arise as colleges adjust to the short-term and long-term effects of the coronavirus. The first obstacle is perhaps the most dominant obstacle but also the one that most easily overlooked – the individual and collective *emotional* states of the community. In the case of the coronavirus, this includes feelings of fear, distress, anxiety and deep uncertainty about the future. Many experience a personal fear of disease and death. Members of the community will require time and support to care for people who are sick, and to mourn those who will die from the illness. As the crisis moves on – and particularly as persons are isolated from others and unable to experience the capacity to affect their worlds – these feelings may also include a collapse of meaning, a sense of purposelessness, and experiences of depression. Such feelings may serve as obstacles to fostering the level of solidarity needed for collective action.

Colleges and universities face a suite of obstacles that threaten the short- and long-term delivery of quality educational experiences. While many institutions in the United States already have sophisticated forms of electronic *technology*, it has been necessary to upgrade the quality of technology to meet the demands of online learning. While faculty have expertise in traditional teaching, many do not have *expertise* in online teaching. Still further, the transition to online learning not only taxes the expertise of instructors, as discussed above, it exposes a suite of *skill deficits* in students. Some students may find the online format to be more congenial to their learning needs than the traditional face-to-face classes. However, for other students, academic, motivational and socio-emotional difficulties that may have been hidden in more traditional formats can become exposed during online learning. For example, students who rely upon face-to-face interaction to compensate for difficulties in self-regulation may find that such strategies fail when they are required to organize their learning strategies in the context of online and blended instruction (Rasheed, Kamsin & Abdullah, 2020). Such skill deficits make it difficult for many students to adapt to online format.

The most daunting obstacles to successful adaptation consist of long-term challenges. Prior to the coronavirus, scholars had already identified a suite of difficulties facing traditional higher education. To the extent that the current crisis will produce longer term social and economic changes, the coronavirus not only exposes these challenges, but adds significantly to them. The forces are highly systemic. (The mutual influence of these processes is indicated by the bold lines connecting target elements in Figure 4.) If there is a need to rely increasingly on online learning, stakeholders will find themselves alternating between self-isolation, restricted engagement, and full social engagement in the community. At the very least, such an arrangement will require the elaboration of pedagogically sound (Kirkwood & Price, 2013) and *flexible* hybrid models of learning that can seamlessly switch from face-to-face to online modes (García-Peñalvo, Fidalgo-Blanco & Sein-Echaluce, 2018; Chingos, Griffiths, Mulhern & Spies, 2017; Jefferies & Hyde, 2010). As this occurs, it will become difficult to justify the high costs of tuition that support traditional learning. In the context of online learning, students may seek out

already established and less expensive online colleges and universities. Traditional colleges will thus find themselves at a *competitive disadvantage*. Such circumstances would call for major transformations in the way we think about and structure of higher education.

Under such circumstances, the survival of higher education will depend upon the extent to which they can adapt to meet the novel needs of students and their families. There are significant obstacles to ushering in such changes. Change in traditional colleges and universities tends to be slow. Higher education tends to be both *silozed* (Thorpe & Goldstein, 2010) and organized around *entrenched structures* (Hansmann, 2012). Faculty and departments work in relative isolation from each other, and faculty and administration are often in conflict; academic tenure – essential for academic freedom -- makes it difficult to mobilize change during times of crisis.

Transformational Problem Solving

Systemic problems call for systemic solutions. Transformational problem-solving is systemic in the sense that it seeks identify multiple interrelated problems and invent solutions that reconcile the conflict demands of multiple problems simultaneously. The goal is the transformation of a system that is less adaptable to one that is more adaptable to short- and long-term changes.

To illustrate the process, instead of focusing on institutional change, let us examine a more manageable problem of adapting a particular program from the traditional face-to-face format to an online model – one capable of moving from face-to-face to online formats as needed. The program in question is intensive year-long academic immersion program for underprepared college students (Compass, Merrimack College). This program serves approximately 80 undergraduate students with various combinations of academic, motivational, and socio-emotional deficits. Students are admitted to the college on the precondition that they participate in the year-long program. The goal of the program is academic self-cultivation – to raise skills to levels that will support meaningful learning throughout college and life. The program provides an integrated milieu of support. It provides small cohort classes; academic coaching; guided instruction in reading, writing, notetaking, and the growth-through-perseverance mindset – all organized around *guided mastery* model of learning. The program provides a high-demand and high-support milieu (Larkin & Richardson, 2013) and is based upon fostering student engagement through the cultivation of the teacher-student relationship.

The problems for sustaining such a program throughout a crisis – especially one that threatens the capacity of limited staff to engage students in individualized and small group learning – are readily apparent. Figure 5 provides a problem space for representing the resources, needs and obstacles that emerged during the crisis period. Existing structures and resources are well-adapted to the face-to-face format: A community milieu; physical space ecologically designed to enable faculty, staff and students to work together in a single setting; faculty, staff and academic counselors trained to work with the target population; the routine use of technology as appropriate for instruction and so forth. The primary learning experience is a year-long Critical Inquiry Seminar – an

intensive course in which students meet every day with their instructors. Students meet as a group twice weekly, and then in groups of 15-20 for 2-3 lab sessions per week. Laboratory sessions function as workshops and provide an opportunity for 1-1 and small group interaction among faculty and students. In laboratories, faculty and staff support skill development as students work on reading, writing and related assignments.

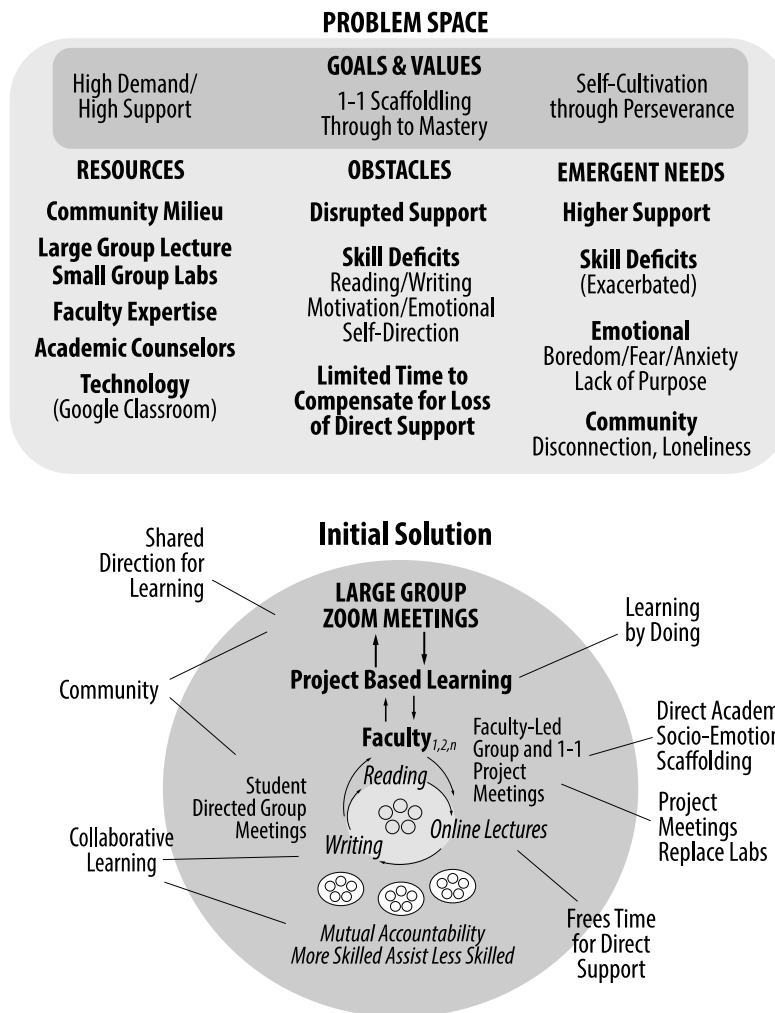


Figure 5. From Problem-Space to Systemic Solutions

The coronavirus crisis prompted a shift from face-to-face to online learning. A series of emergent needs became apparent during the transitional period. Student skill deficits became exacerbated as they sought to adapt to the novel format. Students had difficulty attending in lectures and workshops. Lacking socio-emotional skills that support out-of-class reading, writing and studying, students not only struggled to keep up with their work, but also experienced difficulty sustaining a sense of communal and individual motivation. Although they were provided with ample assignments, many reported feelings of boredom, loneliness, anxiety and depression. Many experienced personal difficulties as family members became sick or were laid off from work.

The instructors addressed these problems by (a) creating a focus on the importance of creating a sense of community among students in the program during zoom-based classes; (b) engaging in discussions about the need to adapt to the online teaching by seeking to find a sense of personal meaning and purpose in the course; (c) reducing the number of assignments that students would be expected to complete; (d) focusing in greater depth on a smaller set of integrative and central topics; (e) providing 1-1 support for students who were especially challenged by the transition to online learning; (f) contacting students who fell behind to help them to create strategies to complete their work in an appropriate time period. The vast majority of the students were able to complete their assignments successfully. Many students reported that while it was difficult for them manage their motivation and to organize their time and energy efficiently, the instructor's efforts to engage students personally mattered in their capacity to complete the assigned learning tasks. Both instructors viewed themselves as seeking to find ways to "get through" the remainder of the semester while simultaneously preserving an acceptable degree of meaningful learning.

The problem to be solved is one of transforming existing structures and resources in order to meet emergent needs: what types of novel structural systems can meet the multiple needs represented in the problem space within the context of ongoing goals and values? Toward this end, it is not sufficient to address each need in isolation; the various needs, values and structural resources must be considered as they relate to each other as a complex and dynamically changing system. To create novel ways to meet the shifting needs, a brainstorming phase occurred organized around the principle of *dilation* – extending and widening the range of possible ways that can address emergent needs given available resources. After multiple iterations in the construction of alternative ways to meet individual and collective needs, the process of *constriction* began in an attempt to identify a single initial solution to the problem of transition. This solution was created by culling from the multiple possible solutions proposed at the dilation stage, seeking to reconcile their contradictions, and coordinating them into a single integrated initial proposal.

The final transformative proposal is identified in the bottom panel of Figure 5. The structure of the proposed solution is depicted in the inner circle; the outer circle identifies how each element of the proposed solution addresses different longstanding and emergent needs. The primary task was one of finding ways to provide students with sufficient degree 1-1 and small group support needed to foster engagement and skill development while also providing students with emotional support, a sense of community, broad group instruction – all within the limited time available over the course of any given week. A course organized around on-line lectures and labs would provide insufficient time and ability to support individual student needs; a course organized around 1-1 online support would fail to provide sufficient instructional support to any single student.

The proposed solution – as yet untested – was to organize the class around two large group meetings per week ("lectures"). Large group meetings will be devoted to skill instruction. Laboratory classes will be abandoned. In their place, students will work in

small groups of five students, carefully selected by instructors to include various levels of skill. This will allow more skilled students to assist less skilled students over time. Students will jointly perform a semester-long project, organized in phases, that integrate instruction in reading, writing and course content. Out of class, students will perform projects at assigned times, updating their work on google classroom after each session. Once per week, each group will spend 1-2 hours in faculty-guided small-group instruction on their particular projects. Students will be provided with continuous feedback about their projects (Hattie & Timperley, 2007), and will revise their work continuously over the course of the project. At the end of the semester, students will be graded on the development of their skills as related to their individual contributions to the final collective version of the project. The capacity to revise and to be graded on ones' best work provides a way to use assessment in the service of constructive learning (Demotakis, Mitchell & Mauer, 2017; Hatzipanagos, S., & Rochon, 2011).

Dynamic Implementation and Monitoring

At this writing, it is unclear whether this structure will be successful – or even if it will be revised before the coming academic year. The point, however, is not to suggest any particular way to structure any particular course. The needs of a given program or course will vary depending on the individuals involved. Instead, it is to illustrate the process – implicit in any successful attempt to transform an existing program – of producing systemic transformational change in a program or course of studies during times of ongoing or immanent threat.

This is why perhaps the most important point in the problem-solving process is not the formulation of any single transformative solution to any given problem, but instead the ongoing process of monitoring the results of implementing a solution against the core goals that define a problem. During a time of crisis, it is often necessary to test procedures as they are being implement, and consider ways to modify them during the process of their execution. In so doing, however, it is necessary to consider the ways in which a single modification of any particular elemental process in a system will affect other elements of that system.

The process of adaptive transformation occurs against the backdrop of deep uncertainty. It is often the case that solutions that one believes are almost certain to work will contain hidden flaws that require immediate attention. Because all adaptation requires adjusting already existing structures and resources to novel exigencies, it is often difficult to identify alternative solutions to a problem under conditions of failure. While it is possible that some problems are unsolvable, it is more likely that what makes a problem appear to be unsolvable is one's current representation of the problem. Adaptation may require structural changes that are difficult to identify because they are difficult to acknowledge. They may be implicit, unconscious or even unspeakable. This raises the importance of *deep reflexivity* in the process crisis management.

The Need for Deep Reflexivity in Crisis Management

In our everyday lives, we typically engage in our daily routines without any need to reflect upon why we do what do. As a result, we not always aware of the assumptions, values and beliefs that structure our everyday actions. Things change in a crisis. A crisis is *threat* – a challenge to the integrity of the self, whether that self is the institution at large, the practices of the classroom, the teacher, or the student. When things go wrong, our habitual ways of being in the world become threatened. In the throes of a crisis, in seeking to resolve our most urgent challenges, we dedicate our attention *outward* – toward the world. However, as we begin to resolve the most immediate challenges, it becomes important to redirect our attention *reflexively* back onto the self. If a crisis is a time of threat, what assumptions, values, beliefs and practices are being threatened? To what extent can we retain our core assumptions, beliefs and practices? To what extent will be called upon to change them?

Reflexivity refers to the process of reflecting upon the assumptions, beliefs and values that structure what we do (Carmeli, Sheaffer, Binyamin, Reiter, & Shimoni, 2014; Eriksen, 2008). The practice of reflexivity functions to orient people to first principles and basic beliefs. It is a desirable practice in any organization. In practice, however, reflexivity confronts a difficult problem: to the extent that our everyday assumptions, values and beliefs are *tacit* or *implicit*, how are we to gain access to them in order to reflect upon them? Perhaps paradoxically, the emotions that arise during a time of crisis can help to identify the assumptions, beliefs, values and practices that are under threat. Emotions are functional – they alert us to changes in events that have significance to our ongoing well-being.

Emotions are felt experiences that arise in the context of a change in one's relation to the world (Frijda, 1986). In a crisis, we are often reminded of the need to keep emotions in check -- not to let strong feeling get in the way of sound judgment. While it is important for leaders to act with calmness, clarity and confidence, it would be a mistake to think of emotions simply as processes that cloud judgment. On the contrary, emotions are essential to all human judgment (Freeman, 2000). They arise in situations involving novelty. In such contexts, they *organize* our conscious awareness by *alerting us* to circumstances that require our attention (Lewis, 1996). When adapting to a crisis, negative and uncomfortable emotions inform us about how our everyday anticipations of the world have gone wrong. They alert us to the ways in which our current world contrasts with our basic assumptions, beliefs, values and ways of being in the world.

In this way, emotions become an important means for fostering reflexivity. They help bring implicit ways of thinking into awareness so that we can reflect upon them, articulate them, and evaluate their continued validity in the context of a changing world. Table 1 provides a series of examples of how monitoring individual and collective emotional reactions can foster reflexive awareness about core, implicit and taken-for-granted assumptions that may require rethinking in the time of a crisis. While emotional sources of reflexivity are salient during a time of crisis, they are by no means the only sources of insight into implicit beliefs and assumptions. Another source is engagement with diverse

Table 1
Exposing Basic Assumptions through Emotional Reflexivity

	Content	Emergent Questions & Insights
Surprise	Speed with which virus has forced changes	Insights. Our income is deeply tied to the ability of families to pay. Loss of face-to-face contact makes teaching and learning more difficult. I am learning to separate what is essential and what is not essential in educating students. Questions. Are we equipped for a crisis? Are we flexible enough to make quick changes? What have we done or not done that made us vulnerable to these changing conditions?
Fear	Physical safety; loss of income; survival of the institution	Insights. The simply closeness of everyday college life puts us at risk; It is not guaranteed that our institution will survive. Questions. What is essential to our survival? What is essential to the learning process? What is not essential? What do students need under these changing conditions? What can be left behind? What must change to accommodate those needs?
Sadness/ Depression	Loss of established routines, connection, community, of purpose and meaning	Insights. I never know how important merely being physically close to each other is for well-being; my work is more important to my identity than I thought; I need more support. Questions. What has given meaning to my/our lives? How can I/we make life meaningful? What should be our purpose?
Frustration/ Anger	Anger over uncontrollable events; Difficulty in changing; Poor leadership in self or other	Insights. We are easily at the mercy of uncontrollable events; It is difficult to learn new skills quickly; Some students do not have adequate internet access at home; online teaching makes it more difficult to engage students. Questions. What is it about online teaching that makes it difficult for students to engage? What makes it easier to engage? What does this tell us about what teachers and students need to engage in effective teaching and learning?
Empathy/ Compassion	Care and compassion for the distress of others.	Insights. Staff and students are experiencing family and economic stress; Some students are losing family members; people differ in how well they are adapting to the change; many students are afraid for their and their family's future. Questions. What can we do to promote the physical, mental and spiritual health of our community? How can we support the community in ways to move us through this crisis? How important is social support for the ongoing well-being of our institution?
Admiration (Jealous/ Envy)	Good strategies modeled by others	Insights. Institution X was able to put supports in place quickly and smoothly; was able to restructure teaching and curriculum; was able to instruct staff effectively, etc. Questions. How can we do what they are doing? Why aren't we doing what they are doing?
Guilt/ Shame	Sense of not being able to live up to standards of effectiveness	Insights. I would feel ashamed if the public thought that we were in financial difficulty; we made poor decisions in areas x, y and z. Questions. Are we doing enough to help our community? What does it say about us if we can't survive?

and different others. When we encounter a person, group or institution that differs substantially from our own, we typically become aware of how the other is different from us. However, if we are open, by comparing ourselves different Others, we can become aware of our own basic assumptions, beliefs and values. Exposing those beliefs and values necessary to engage in the reflexive self-examination.

The Future of Higher Education

What can the coronavirus crisis teach us about higher education? Even prior to the coronavirus threat, higher education has been experiencing a slow burning crisis. Costs have risen many times faster than inflation. For many students, debt has risen to crippling levels. As the structure of higher education has become increasingly corporatized, its core mission – to prepare individuals to lead *good lives* – has become increasingly compromised. Beyond this, of course, is a looming crisis: as a result of declining birthrates, a “college enrollment crash” is emerging, and is expected to peak in 2026. At least twenty small and mid-sized colleges have gone out of business since 2016 (Jenkins, 2019). While colleges may wish to ensure their survival by increasing enrollments, in the coming years, there will simply be an insufficient number of students to enroll. Thus, the status quo in higher education is already unsustainable. The coronavirus raises the stakes – and alerts of us an immediate need for adaptation.

The need for adaptation calls for transformational problem-solving and deep reflexivity. Against the backdrop of the need for transformation, reflexivity is needed to identify what is most important for the future of any given institution. If higher education is to survive in any form that comports with its traditional mission – the cultivation of knowledge for the good of humanity (Mascolo, 2018; Nussbaum, 2010) – it will need to develop novel ways of doing so. This will require the seemingly antagonistic tasks of reflecting on the core *goals and values* that colleges wish to continue to cultivate while simultaneously rethinking assumptions related to cherished practices. Although each particular institution is different, these may include a suite of difficult structural changes.

Clarifying Mission and Values. An existential threat to an institution calls immediate attention to what can be done to avoid extinction. To the extent that academic institutions will experience serious financial challenges, there will be a need to procure funds to support their missions. In such a context, it would be easy to privilege economic exigency over the mission and values of the institution. While many institutions continue to remain loyal to their liberal arts missions, in practice, commitment to the humanistic values of higher education has eroded (Nussbaum, 2010). Courses, majors and programs that do not “earn their keep” by recruiting students in a tuition-driven school have been slated for removal (Jenkins, 2019). In their place, courses and programs become selected in terms of their market value. When the noble mission of the academy becomes subordinate to market forces, even if colleges and universities survive, they will do so in name only. Instead of relinquishing the academic values to the market, there is a need to reflect upon and reaffirm the core values of higher education and seek ways to reconcile those values with the task of ensuring economic stability (Haberberger, 2018).

Reaffirming the Primacy of Academic Self-Cultivation. In recent decade, students have approached higher education not so much with an intention to invest themselves in deep academic life, but instead with a desire to participate in what might be called “the college experience” – social life, Greek life, extracurricular activities and other non-academic pursuits. Instruction during the time of the coronavirus has shown – not without difficulty or pain – that students can, if necessary, do without the many extra-curricular amenities that colleges have developed to attract students to their campuses. This is not to say that non-curricular activities are not important to the development of students as emerging adults; they are vitally important. Instead, the issue is one of reflecting upon the proper relationship between academic and extracurricular activities in higher education. Instead of thinking of academics and extracurricular activities as separate and independent realms, it might be better to imagine ways in which extracurricular life is subordinate to and informed by the academic mission of higher education. This involves reflecting upon and reaffirming the primacy of academics in the organization of college life (Haberberger, 2018; Johansson & Felten, 2014; Nussbaum, 1997).

Flexible, Hybrid Models of Engaged Teaching and Learning. The coronavirus crisis points to the need to develop pedagogical flexibility. At the very least, academic institutions may find it useful to develop hybrid structures of teaching and learning that integrate online with face-to-face components, or that allow flexible movement between the two. The analysis of programmatic transformation discussed in this paper provides but one example of how this can be done.

Integrated Wrap-Around Support for Students. Changing models of teaching and learning will necessarily have both strengths and weakness. Different formats will be more congenial to some courses and students, but not to others. Novel forms of teaching and learning will bring forth novel challenges. Some of these have been discussed above. In such contexts, it becomes necessary to find ways to meet emerging student needs. There is a need to identify the full range of student needs and to provide innovative ways to support students in both online and face-to-face modes (Ari, Fisher-Ari, Killack & Angel, 2017; Williamson, Goosen & Gonzalez Jr., 2014). Such measures are important for maintaining effective mission-driven earning, but also to ensure that traditional academic institutions are able to compete with already established online colleges and universities. Without the capacity to offer services that extend beyond those of existing online schools, traditional academic institutions will be unable to attract a sufficient number of students to support their ongoing mission and programs.

Restructuring and Intelligent Downsizing. Perhaps the most important transformation might appear to be the most threatening. As the pool of students seeking a college education decreases, colleges may seek to enhance their offerings in order to attract students in a competitive market. The addition of novel programs and amenities may attract students under normal conditions, but additional amenities would require costs that may not be supported by available income (Reynolds, 2007). It may be necessary to reduce the size and complexity of institutions of higher learning in order to accommodate to a decreasing enrollment pool (Xiaodan, 2017). There is a need for innovative forms of transformative problem-solving to develop institutional structures

that are responsive to market conditions but nonetheless organized around core values and needs (Eriksen, 2008; Lin, Zhao, Ismail & Carley, 2006).

Desiloization, Interdisciplinarity and Systematic Restructuring. Entrenched academic and administrative structures provide obvious impediments to any attempt to downsize or restructure academic life. Colleges have experienced increasingly burgeoning administrations organized around increasingly specialized functions. Faculties are organized around increasingly specialized disciplinary structures that tend to compete for both resources and students. While academic tenure serves to protect freedom and innovation of the professoriate, it also tends to create power struggles between the self-directing prerogatives of faculty and the need for flexible adaptation to novel social conditions. In so doing, it creates conditions that limit the capacity of institutions to adapt to novel social conditions. If colleges and universities are to be more sensitive to novel social and market conditions, there will be a need to reflect on novel ways to re-organize faculty and administrative life. Promising alternatives to the fragmented structure of the contemporary academy include efforts toward interdisciplinarity (Goedereis, & MacCartney, 2019), the coordination rather than siloization academic disciplines (Trust, Carpenter, & Krutka 2017; Thorp & Goldstein, 2010), the formation of collaborative rather than antagonistic structures of governance and accountability (Kegan & Lahey, 2016; Mazey & Balazs, 2015), and the fostering of generalist in addition to specialized forms of disciplinary activity. Such structures would allow for more flexible construction of novel programs and procedures to accommodate novel conditions.

Reaffirming and Reinventing Academic Freedom. Academic freedom provides the bedrock of academic innovation. To ensure the authentic pursuit of knowledge, faculty teaching and scholarship must be independent of external sources of influence and authority. The traditional mode of ensuring academic freedom is academic tenure. With the increasing corporatization of higher education, the number of faculty who hold tenured or tenure-track positions has diminished markedly. They are replaced with term faculty and adjunct professors, who lack job security and a suite of other social and economic benefits. Within the academy, however, term and adjunct faculty are employed at the will of the college or university. Such conditions create power hierarchies that threaten the primary academic mission of higher education. At the same time, because it is organized around self-accountability within shared governance, faculty powers afforded by academic tenure sometimes make adaptive action at the level of the institution difficult (Kezar, 2018). The future of higher education as an *academic* endeavor will depend upon finding ways to ensure and enforce tenure and academic freedom within the changing structure of the academic life (Herbers, 2014; Mazey & Balazs, 2015; Ross, 2015).

Focusing on Outcomes not just Opportunities. Students are matriculating at levels that are higher than at any point in human history. However, while access to a college education is high, not all students are able to profit from higher education. Some argue that higher education has overextended its mission and is now admitting students who are not prepared for college-level work (Samuelson, 2012). Others note that colleges are increasingly taking over the role of high schools as social and economic vehicles to

prepare people for the workforce (Farrington, 2014). Still others have noted the failure of higher education to meet the needs of poor and minority students who, while attending college at unprecedented levels, disproportionately fail to complete a college education (Green & Wright, 2017; Jackson & Kurlaender, 2014). In shifting socio-economic conditions, there is a need for colleges and universities to reflect upon ways not only to provide opportunities for the full range of students it may serve, but also to monitor academic outcomes with the intention of building programs that demonstrate genuine learning and development among the student bodies they serve (Kuh et al., 2015).

New Economic Models. As colleges become increasingly financially challenged, they will require new ways to raise revenue and manage scarce funds. Beyond cost cutting and the consolidation of existing resources, multiple solutions are possible. These include but are not limited to increasing reliance on public funding, philanthropy, public and private grants, and emerging partnerships with business and industry (Hansmann, 2012). Each of these solutions presents formidable challenges. The search for public funding would occur against the backdrop not only of national and international economic strain, but also political divisiveness about the value of higher education and the role of government funding of such endeavors (Cubberley, 2015; Fillion, 2016; Pope, 2011). Funds available from philanthropists and granting agencies are limited, and often come with provisions that limit how funding can be spent. Of these, perhaps the most promising but dangerous source of novel funding is partnerships between colleges and businesses. To the extent that one of the functions of higher education is to prepare students for employment, employers have a deep stake in supporting higher education. However, the interests of businesses do not always extend to the traditional humanistic mission of colleges and universities. There is thus a deep risk that partnerships with businesses can lead to even higher levels of vocationalism, credentialism and fragmentation in higher education. It is possible to coordinate vocational preparation with liberal arts values (Vanzant, 2019). However, without deep attention to ways of preserving the humanistic core of the academy, such partnerships run the risk of destroying rather than enhancing higher education.

Cultivating Wisdom in a Technical World

Crises are times of involuntary transformation. They require that we adapt to changing and uncertain conditions that are beyond our control. Changing material and social conditions call upon us to reinvent who we are and how we relate to each other. In this regard, it would be easy to think of adaptation mainly in technical terms: what technologies and technical adjustments can we make in order to maintain the integrity of higher education? Such a mindset, however, may actually hasten the demise of higher education as we know it. We live in a time of unprecedented technological sophistication. One might argue, however, technological advances have surpassed our collective capacity for wisdom in knowing how, why and when to use those technologies. As shifting social conditions spawn new ideas, it will be important for us to reflect upon the values that define what it is that we want to create in the reconstruction of the academy.

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