

Institute For Enterprise Excellence



Bringing Purpose To Life

Practical Wisdom for Addressing Problems

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Executive Summary:

Our first White Paper “Foundations For Transformation: Linking Purpose, People and Process”¹ described the common patterns that we have observed as executives and managers have attempted to create a culture of continuous improvement in their organization. Many executives and managers find themselves trapped in a cycle of “program of the month” approaches that never produce the sustained transformation of management that is necessary. You may be familiar with the “parade” of promising improvement approaches (e.g. TQM, CQI, 6-Sigma, Lean, Lean-Sigma, and now HRO – “High Reliability Organizations.”) We call this phase the “comfort of the comfort zone.” There are multiple causes for this common experience, as well as many reasons why many executives and managers never progress past this phase. One primary cause is described in this paper – an inadequate understanding of the theory of knowledge, in particular not appreciating the practical benefits that this knowledge could provide to managers in business, healthcare, education and government.

Our second White Paper “Evolving World View: Implications for All Industries, Including Healthcare”² described the sources of knowledge that will be needed in order to manage effectively in the twenty-first century. This body of knowledge is perhaps best described by Dr. W. Edwards Deming as the “System of Profound Knowledge” represented by four interdependent components of: appreciation for a system, psychology, understanding variation and theory of knowledge.³

This paper explores the common element from our previous two papers - understanding the theory of knowledge, and the consequences of not understanding. While a study of the theory of knowledge may seem abstract and “too theoretical” for many executives and managers, we will attempt to relate this to the practical benefits for executives and managers in business, healthcare, government and education including the consequences of fear, frustration and alienation as well as waste and financial costs.

Common Approaches to Solving Problems

We begin some examples of problems that you may have encountered in the business world, and some common solutions.

Improving Productivity

If you want to have a productive organization, how would you go about achieving that goal? Here’s a common approach:

1. Measure the productivity (hours worked per unit of service) by department for every department in the organization.
2. Compare each department’s productivity results to the productivity of similar departments that are available in a national, comparative database.
3. Assign each department manager a target to hit (get to a better level of productivity compared to the benchmark number).
4. Measure each manager’s productivity against their goal. Reward those who achieve or exceed their productivity targets. Punish (or fire) those who do not achieve their goals.

Assumption: The productivity of the entire organization is the sum of the departmental productivities.

Maintaining a Healthy Financial Bottom Line

1. Create a budget for the company on an annual basis that indicates the allocated costs for each department by month, as well as expected revenue (for departments that generate revenue).
2. Provide monthly reports that show each manager how they are doing relative to their allocated targets.
3. On a monthly basis, require every manager to explain variances from the budget for any results that are more than 10% away from the budget (to the negative).
4. Require each manager to create an action plan for their variances to explain how they will get back to their budgeted targets.

¹ <http://bit.ly/IEXFoundations4>

² <http://bit.ly/IEXEvolvingWorldview2>

³ *The New Economics*, W. Edwards Deming, 1993.

Assumptions: Managers should be able to explain any variances from budget that are beyond 10%. The financial health of the entire organization is the sum of the financial health of each of the departments.

Improvement and Accountability

Every organization has goals and result targets it is trying to achieve. How do you accomplish this? Here's a common approach:

1. The company's goals are parceled out to the various departments and divisions.
2. Make a balanced scorecard to show how each of the departments is doing on quality, safety, cost, productivity, delivery, employee engagement, customer satisfaction related to the organization's goals. Color code the results: red = off target (bad), yellow = getting off target (could become bad), and green = on target or exceeding target (good).
3. Make the achievement of these goals a key feature of the annual performance evaluation system. Reward and promote the top ten percent of the organization, punish or fire the bottom ten percent. Create an "up or out" culture.

Assumptions: Management by Objective (MBO) will lead to organization-wide improvement. Evaluating the performance of individual managers will lead to improved performance and accountability. People will be motivated to improve, either for financial incentives or bonuses or through peer pressure from being "in the red."

Implementing a Lean Program

You've heard about the advantages of a lean improvement systems (through books, conferences, or the internet). You would like to see the benefits of a lean approach. You want better quality for your customers, but you are particularly intrigued by the promise of lower costs. Here's a common approach:

1. Visit other organizations that are "doing lean." Copy the tools and methods that you see them practicing.
2. Appoint a Director of Lean and train facilitators to teach others in the use of tools and methods.
3. Target specific departments and areas to achieve targeted improvements through improvement methods including rapid improvement events and kaizen improvements. Assign personnel from the lean department to track and get the desired results. Require 30, 60 and 90-day report-outs on results.
4. Implement huddles and install white boards throughout the organization. Require every department to have "true north" measures that are tied to the organization's goals. Have administration visit these departments on a scheduled basis to hold managers accountable for hitting their results. Score each department's white boards according to a standard.

Assumption: Lean is basically a set of tools that can be learned and used by anyone to achieve better results, especially financial results.

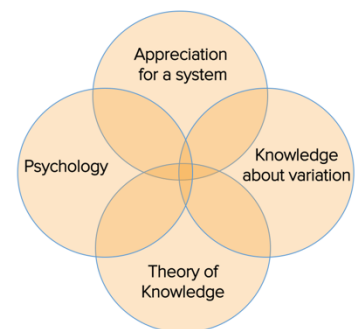
What could possibly go wrong with these approaches? What could be some unintended consequences?

A System of Profound Knowledge

In our second White Paper "Evolving World View: Implications for All Industries, Including Healthcare"² we described the sources of knowledge that will be needed in order to manage effectively in the twenty-first century. This body of knowledge is perhaps best described by Dr. W. Edwards Deming as the "System of Profound Knowledge" represented by four interdependent components of: appreciation for a system, psychology, understanding variation and theory of knowledge.⁴ Figure 1 represents these 4 interdependent components.

Anyone who has devoted some time to the study to these bodies of knowledge (and the principles that are derived from them) could readily identify some of the consequences of following the approaches in the four problems described above. For instance, an understanding of appreciation for a system would likely cause an executive to think twice about dividing the

Figure 1 - A System of Profound Knowledge



⁴ *The New Economics*, W. Edwards Deming, 1993.

organization into parts and managing the parts separately. The effect of this approach leads to competition, not collaboration, between departments in an organization. An executive or manager who understood some of the basics of psychology (of individuals, and of groups) would understand the negative consequences associated with reliance on extrinsic motivation with individuals. They would also understand the consequences of fear in the workplace, and the causes of fear, including the interaction between psychology and understanding variation. For instance, a manager who understood the difference between common causes of variation (random) and special causes would recognize the wasteful approach of asking people to explain random variances from budget, or in doing the same with measures of productivity, quality, delivery, or any measure). The prevailing style of management (tampering with random variation) makes matters worse at least 80% of the time.

In a similar manner, a better understanding of how the theory of knowledge might inform the executive or manager about what they can reasonably expect from themselves and each other when tackling these kinds of problems. The study of the theory of knowledge (a branch of philosophy) however can seem quite abstract. The practical benefits of learning about the theory of knowledge can be elusive. We'll attempt to introduce the theory of knowledge, and the practical benefits in the remainder of this paper.

Problems, Knowledge and Prediction

In this next section we'll describe four problems: A, B, C, and D to explain some of the important ways that an understanding of a theory of knowledge can be of practical value to executives and managers.⁵

Problem A: Construct a square whose area is double of a given square.

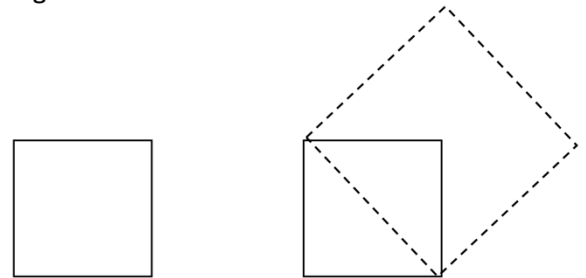
Here's the solution. Use the diagonal of the original square as the side of the new square as in Figure 2. Never mind why it works. Just do it. For it will work, and it will work every time.

Here is the first point to note about this problem. The solution can be passed on to anyone, and applied by anyone, and they do not need to make the intellectual effort demanded of the person who originally found the solution. The solution is accessible to anyone who can carry out the technique. This, as we shall see, cannot be said of every kind of problem.

To create some vocabulary about the different kinds of problems, we'll borrow from the British economist E.F. Schumacher⁶, and distinguish between convergent and divergent problems. We'll characterize the difference between these kinds of problems in this way: convergent problems are problems whose solution can be reduced to a rule, or a recipe. These are problems that are permitting of a solution that can be written down and passed on to others who can apply the solution without having to apply the intellectual effort by which the solution was initially devised.

Divergent problems, on the other hand, will permit of no such rote solution. This is because the solution to such divergent problems will always take the form of the artful (as opposed to the rote or unthinking) balancing of opposites. Some examples of such balancing might be: freedom-obedience, discipline-spontaneity, or order-creativity. But before pursuing these contrasts, let's notice a second point about Problem A.

Figure 2 – Problem A



⁵ We are indebted to Dr. John T. Edelman, Professor of Philosophy, Nazareth College in Rochester, NY, who provided many of these key points in a presentation at the Ohio Quality and Productivity Forum, 1995 "Knowledge, Problems and Prediction: An Introduction to the Theory of Knowledge." Please reference him as the source when sharing this with others.

⁶ Schumacher borrows the distinction from mathematics and more precisely from G.N.M. Tyrell. His use of the distinction appears in "The Greatest Resource – Education," *Small is Beautiful*, 1973, p. 102.

Problem A is an abstract problem. It is a problem in geometry, so it is a problem belonging to the realm of what a philosopher might call *a priori* knowledge. This requires some understanding of the difference between *a priori* knowledge and “empirical” knowledge before we proceed with “Problem B.”

Empirical Knowledge and *a priori* Knowledge

Dr. Deming frequently remarked that the theory of knowledge teaches that “management in any form is prediction.”⁷ For instance, we plan and we act on the basis of what we think we know, because a claim to know something at this present moment involves an element of prediction as to what will happen in the future. Deming’s point on this matter derives, in part, from the work of C.I. Lewis in the book *Mind and the World Order*⁸ where Lewis argues that all empirical knowledge is predictive.

Dr. Edelman explains it this way: “Even the claim that ‘my watch is on the table’ is predictive. It involves a claim that what is on the table is a certain sort of thing and not another sort of thing. If I should turn away for a moment and turn back and find that there’s a rabbit on the table, then I’d better retract my statement. To say it is a watch is to say something about how it will behave in the future, and if it doesn’t behave in that way, then this will show that my original statement is mistaken. Essentially Lewis was saying ‘description is prediction.’ To describe what you perceive is to predict what you will perceive in ten minutes, a half hour or two days.”⁹

Dr. Deming also said empirical knowledge is only probable. What does this mean? There are three key points:

- 1) Empirical knowledge is predictive.
- 2) Empirical knowledge is probable only. These two points, in turn, suggest a third point:
- 3) The predictive element in my empirical knowledge will be probable only.

Many people may have noticed either point 1 or 2, but probably not the consequence – point 3.

Dr. Edelman explains it this way: “Is there some knowledge that is not probable? A philosopher such as C.I. Lewis would say that there is knowledge that is not probable, and he would call that knowledge *a priori* knowledge. This is a sort of knowledge of ‘necessary truths’, i.e. truths that cannot become false. If nowhere in our experience these truths can become false, whence did we derive them? If your experience can’t show that these truths are at any time mistaken, did you actually learn these truths from experience? No, it can’t be that way. *A priori* means ‘from before’ your experience, not necessarily in time. There are certain truths that you don’t derive from your experience because you couldn’t falsify them in your experience. They must have some other source.

“Here’s an example: A triangle is a three-sided figure. Your experience will not lead to falsification of that statement. Here’s another example: Every event has a cause. We have to consider two things: 1) what would it be like if you gave that up? Maybe every event doesn’t have a cause. The problem with that is, how would you determine that any event did have a cause? It looks as though anything could happen with no cause. On the other hand, 2) you didn’t learn that every event has a cause, since you don’t have experience of every event. So, how did you get to that universal statement? In a certain sense, you can’t give that up. Your world falls apart. Yet the world couldn’t have taught you that every event has a cause.”⁹

Contrast it with this example: Planets move in elliptical orbits. That’s empirical knowledge. It’s conceivable that it could be otherwise. This is not a necessary truth. We learn it through experience and observation. New observations could render it obsolete, or cause it to be updated or adjusted. Empirical knowledge concerns “contingent reality” – objects and states of affairs that happen to be as they are but could be different. If an empirical statement is true, it just happens to be true. Empirical knowledge is knowledge of contingent matters. *A priori* knowledge is in some sense, eternally true. Our level of certainty is different for the two types of knowledge.

⁷ *The New Economics*, W. E. Deming, 1993

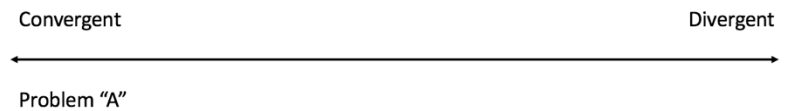
⁸ *Mind and the World Order: Outline of a Theory of Knowledge*, C.I. Lewis, 1991.

⁹ John T. Edelman, OQPF Presentation, 1995.

Dr. Edelman states it this way: “We cannot have about empirical matters, the same sort of certainty about *a priori* matters. This is what is meant by ‘empirical knowledge is probable only.’ At the practical level, what this means is that, in the world of concrete particulars, there can be no unqualified expectations about the future. Our descriptions of the observable world warrant only expectations qualified by our awareness of the probable nature of our empirical knowledge. Do we recognize the probable character of the predictive element in our empirical knowledge when we hold individuals responsible for various tasks assigned to them? Especially when those tasks are dependent upon not only available empirical knowledge, but the extrapolations of that empirical knowledge, so ‘probable’ knowledge such as economic forecasts. On the other hand, if we don’t see our empirical knowledge as probable, then to what extent do we hold individuals responsible for predicting and controlling the future in ways they could not possibly do? That, it seems, to be a recipe for fear, frustration, anxiety and alienation. The knowledge to be used in arriving at a solution to the problem is not empirical, not probable, but *a priori* knowledge.”⁹

Let’s return to Problem A and understand a third characteristic of this kind of problem. You can predict with certainty that if you follow the technique you will correctly solve the problem every time. For this reason, we are going to set “Problem A” at the extreme left of what will become for us a continuum of problems (see Figure 3).

Figure 3 – A Continuum of Problems



Problem B: Let’s consider another problem, and the kinds of knowledge that might help us to find its solution: Determine the speed on impact of a body falling to the earth from a position of rest at a height of forty feet.

Here’s the solution: measure the time of the fall and multiply it by thirty-two feet, per second, per second.

Under controlled circumstances (i.e. no wind) you can apply this solution without reproducing the intellectual effort that Galileo had to expend in order to find this formula or rule. In this respect, this problem is similar to Problem A, which is why we will call it convergent. Yet, unlike Problem A, this problem and its solution do not allow you the same sort of confidence in predicting that you will get the correct result. And this is connected with the second point regarding Problem A, which was an abstract problem. Problem B, while still to some extent is convergent, it is less abstract. It is a problem in the contingent, material world. And insofar as it is a problem in the contingent, material world, knowledge of an abstract formula will not be enough. You will need to know something of the scope of the formula or law, that is, you will need to know something of the conditions that qualify your application of the formula, and whether those conditions pertain at this moment, i.e. in this particular case. It may be possible to create a set of instructions or a kind of check list, but that list would never be complete because knowledge of the empirical world is probable only.

Dr. Edelman explains one of the limits of empirical knowledge: “It is not possible for us to anticipate all of the contingencies of the world. That is part of what we mean calling them ‘contingencies.’ And yet, if we cannot anticipate all of the contingencies of the world, this means that we cannot anticipate all the contingencies that might bear on the application of the rule, law, recipe or technique. And here we begin to recognize the ‘limit of technique,’ the limit of any law or rule or problem-solving procedure. The limit of rules or techniques is set by the fact that the world in which we live is a contingent world. Or, to put it differently, the limit of technique is set by the fact of novelty in human life. Unless we imagine our world to be entirely predictable – and if you do, then you are imagining an abstraction, or not our world at all – then we must accept that there will always be room for novelty, which because it derives from the play of chance in the world, cannot be foreseen and so cannot be anticipated by the rule, the recipe, the law, or the directions for the application of the technique. Our knowledge of the empirical world is probable only. Thus, the predictive element in our empirical knowledge is probable only.”⁹

We will place Problem B somewhat to the right of Problem A on our continuum of problems (Figure 4). It is still convergent in the sense that I can give you the rule, and you can apply it.

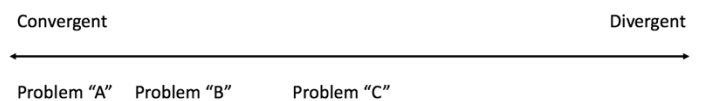
Problem C: Bake two loaves of bread.

Here's the solution: follow the recipe in the Betty Crocker Cookbook.¹⁰

Again, we have a convergent problem (you have a recipe), but our knowledge of how to make bread is empirical knowledge, not *a priori* knowledge. So expectations as to outcomes must be considered. If you use the recipe in the dead of winter in northern Minnesota, you can't expect to get quite the same loaf as when you make it in hot and humid Atlanta in July. And even if you consistently make it in northern Minnesota, one tablespoon of yeast may be different from another. This convergent problem, then, is not an abstract problem as our problem in geometry was. But neither is it quite the same in kind as our problem in applied physics (Problem B). It is different from our problem in physics because it is not merely a problem of knowing but a problem of making. It is a problem of production. We are not concerned only to know what has happened or will happen. We want to make something happen. So we will need the recipe, similar to our problem in geometry. And we will need to recognize those contingencies that might affect the product we get when we follow the recipe. This is much akin to our problem in applied physics (Problem B), but now we shall also have to control those contingencies. If we cannot control the temperature of the water, then we cannot follow the recipe.

This leads to another important aspect of Problem C. In order to get the product that we desire, there will have to be a producer. Moreover, the producer will be a major variable in the process, which brings an element of the divergent into our problem. As soon as we introduce a human agent, we find ourselves in the world of divergent problems. This we can make clear if we look at yet another problem (Problem D, below) – one that is itself predominantly divergent in nature. Meanwhile, let us locate Problem C still further to the right of our continuum of problems (Figure 5), for with Problem C we have a mix of convergent and divergent elements.

Figure 5 – Problem C, Problem of Production



Note that Problem C has many similarities to the four kinds of problems we described at the beginning of this paper: improving productivity, maintaining a healthy financial bottom line, improvement and accountability, and implementing a lean program. These approaches resemble recipes or prescriptive check-lists, yet making things happens through human agents introduces a divergent element that we will illustrate with Problem D.

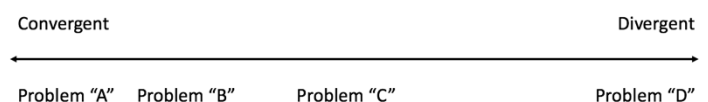
Problem D: Educate a young man at the beginning of the twenty-first century to be an informed, critical thinker.

Here's the solution: Send him to school. Or perhaps, to the right school. And which is the right school? The school with the right curriculum. Or perhaps with the right curriculum and the right teachers. But who are the right teachers? Dr. Edelman offers these thoughts: "The right teachers are the teachers who, possessing a mastery and love of their subjects, can, without discouraging the child's natural capacity, yet channel – or constrain – that capacity for learning within the discipline of a precise vocabulary and rigorous standards of thought."⁹

As a solution, all of this is very different from our approaches to Problem A or B. We are clearly no longer in the world of convergent problems, past Problem C to the world of divergent problem (Figure 6). What are the primary differences?

Dr. Edelman identified some key differences: "First, the closest we can get to a formula or rule or recipe here is something along the lines of: cultivate discipline and encourage independence. But unless you've given some thought to education and the nature of intellectual excellence, that formula will mean little or

Figure 6 – Problem D, Problem of Education



¹⁰ Betty Crocker Cookbook: 1500 Recipes for the Way You Cook Today, 2011

nothing to you. In other words, this is not a case where you can apply the ‘solution’ without having reproduced at least some of the intellectual and moral effort required to find that solution in the first place. On the contrary, unless you have made that effort, you will not understand the ‘solution.’ Indeed, unless you have given considerable thought to this problem, how can you even see the problem for what it is, that is, see the true nature of the problem. How could you correctly describe the problem? This is a point of paramount importance. Apart from ideas about education – which ideas are available only to those who have tried to think about education – one cannot see the ‘problem’ for what it is.

“Suppose that you grasp the formula, such that it is. Still, its application will be anything but rote. Indeed, to the extent that you can try in any sort of rote or unthinking way to ‘cultivate discipline and encourage independence’ you will most certainly fail to cultivate discipline and encourage independence. So, there are several differences between this divergent problem and the convergent problems we have considered.”⁹

It is not possible to carry out the “solution” to this problem without reproducing the intellectual effort that went into discovering it in the first place. Unless you reproduce the intellectual effort, you will not even understand the meaning of the “formula” expressing the “solution.” You will not be able to adequately describe the problem. We might realize that pursuit of a rote application of the “solution” will not amount to a solution. It is this point that goes a long way to explain Dr. Deming’s familiar remark, “There is no substitute for knowledge.”¹¹

We need to understand the differences between art and a technique. Dr. Edelman offers these ideas: “We will define an art in this way: An art is a habit – an acquired ability – of making or producing that is based on science or knowledge. Everything in that definition makes a difference. So an art belongs to a human being. To master an art is an ability to produce something. But equally important: it is an ability based on knowledge. That I manage to grow vegetables does not guarantee that I possess the art of agriculture. For the vegetables may be as much a result of luck, as of anything else. And all that I did in growing them may have been at the direction of someone else, in which case I will lack the knowledge that must be the basis of any artful growing of vegetables. For the artful growing of vegetables consists in the production of vegetables through the knowledgeable manipulation of soil, water and plants. The product will be a work of art to the extent that I produce through the knowledge that I possess – I know not only what to do but also why this or that is what should be done. Science, again, is knowledge of causes – an understanding of ‘the reason why.’ In this case, and understanding of why more water or less water is needed, or why more sun or less sun is needed.

“Now let us contrast art and technique. A technique is simply a practical element or skill belonging to an art. To speak of ‘mere technique,’ then, will be to speak of a practice or skill divorced from the knowledge that could correctly guide or direct a skill. With this distinction in mind, we can now say why mere technique will be powerless in the face of novelty. Novelty cannot be eliminated from human life. But only knowledge can transform mere technique into art, and only art – skill informed by knowledge – can hope to deal with the novelty that is an inevitable part of life as we know it. Technique is powerless in the face of novelty. Thus, there is no substitute for knowledge.”⁹

Here are some differences between this divergent problem and any convergent problem. Suppose that you do reproduce the required thought and do comprehend the “solution” (if talk of a solution seems to make sense any longer.) There is still the aspect of our ability to predict. You will not be able to predict with certainty whether you will, in applying the “solution”, get the correct result, namely, an informed, critical thinker. This is similar to the Problem B (the falling body), and Problem C (predicting the kind of bread we will get), and in some sense similar to the four problems we described at the beginning of this paper (improving productivity, maintaining a healthy financial bottom line, improvement and accountability, and implementing a lean program). But there is an important difference.

The difficulties of Problem D are not merely based on the fact that we have moved from the abstract to the concrete. It is true that you will need to know this particular student before correctly applying the formula, as you will need to know, say, particular atmospheric conditions before applying Galileo’s law concerning freely falling bodies. But new

¹¹ A common remark at every Deming 4-Day Seminar
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complications enter simply because the student you are dealing with is a human being and not an inert object, nor even merely some animate object. The student is a human being, with a free will.

The problem of education, like most of the important problems of management (like our 4 problems presented at the onset of this paper) is a problem of wanting to make something happen with or through the work of a free human being. For example, we want to ensure that a free human being produces a given product, whether it is bread, improved productivity, better financial results, achieving company goals, or implementing a lean program. We want to ensure that a free human being masters a certain academic subject and so becomes an education human being. But to compel a human being is to take away that human being's freedom. At the least, it is to restrict that freedom, to try to limit it. Our action will in some sense run counter to the nature of that human being. Indeed, we will find ourselves treating that human being as though he or she were not quite a human being. Now it seems likely enough that to treat something as though it were something it is not, will lead to trouble. What we have to notice is that, on the other hand, not to compel this worker or this student is to risk failure. No one becomes educated by simply thinking or doing as he pleases. And no product comes off an assembly line because workers simply do as they like. So how are we to address these problems? There is a risk of failure whether we try to compel or refrain from compelling.

In this dilemma there are opposites to be balanced: freedom and obedience; discipline and spontaneity. This is the distinctive nature of a divergent problem. Any problem requiring the cooperative efforts of human beings – which means, in effect, virtually any problem of production or management – will be a divergent problem. Let's think more about the problem of education. What is "the problem of education"? Is it not the problem expressed in this "solution" to the problem offered by seventeenth century English philosopher John Locke:

"To avoid the danger that is on either hand is the great art; and he that has found a way how to keep up a child's spirit, easy, active and free; and yet, at the same time, to restrain him from many things he has a mind to, and to draw him to things that are uneasy to him; he, I say, that knows how to reconcile these seeming contradictions, has, in my opinion, got the true secret of education."¹²

While that's a description of the solution, it's also a description of the problem. If you haven't given a certain kind of thought to education, to what knowledge is, to what understanding is, then you will probably not recognize the problem or the solution, because in a certain sense they are one and the same. Locke's remarks illustrate the correct identification of a divergent problem is also a description of the "solution" to that problem.

Dr. Edelman states it this way: "The intellectual effort that enables you to recognize the nature of the problem you face – the effort that enables you to correctly describe the dilemma you face – will also show you that for this kind of problem – for a divergent problem – there just is nothing that we can rightly call a 'solution'? Indeed, if we understand the true nature of a divergent problem, do we not also understand that the concept of a 'solution' simply has no real place here? These problems are not "solved". These problems (including the problems of management) are addressed, perhaps. Or attacked. Or they are simply lived. But to talk of a 'solution' is to set off in the wrong direction altogether."⁹

Let's review, again some thoughts from E.F. Schumacher:

"The true problems of living – in politics, economics, education, marriage, etc. – are always problems of overcoming or reconciling opposites. They are divergent problems and have no solution in the ordinary sense of the word. They demand of man not merely the employment of his reasoning powers, but the commitment of his whole personality. Naturally, spurious solutions, by way of a clever formula, are always being put forward; but they never work for long, because they invariably neglect one of the two opposites and thus lose the very quality of human life. In economics, the solution offered may provide for freedom but not for planning, or vice versa. In industrial organizations, it may provide for discipline but not for workers' participation in management, or vice versa. In politics, it might provide for leadership without democracy, or again for democracy without leadership."¹³

¹² *Some Thoughts On Education*, John Locke, 1693.

¹³ "Education: Our Greatest Resource," *Small Is Beautiful*, Ernst Schumacher, 1989.

Dr. Edelman summarizes it this way: “Problems are not simply problems. They differ in their nature and the kind of response they demand from us. The great practical lesson to be learned from the mere recognition that the problems that we face are not all the same kind is: the failure to see differences in the problems we face, encourages wildly inappropriate expectations as to our ability and responsibility to solve them. If we view the world as just so many convergent problems, then we must exaggerate the predictive element in our knowledge of that world. Or we must deny the role of human beings as free agents in that world. In either case, we are headed for trouble because these inappropriate expectations will be experienced in the form of erroneous responsibility – I ought to be able to solve this problem. This also leads to debilitating notions of accountability – he or she holds me accountable for solving this problem. These ideas and these feelings are all but certain to encourage the wasteful and perfectly hopeless application of convergent solutions to divergent problems. This mistake – the application of convergent solutions to divergent problems – may be the largest unrecognized cost in the practice of business, education and government. Some examples would be: numerical ranking of teams or workers, and techniques of evaluating individuals.”⁹

Under what Dr. Edelman calls the “triple burden of erroneous sense of responsibility, debilitating sense of accountability, and an inadequate vocabulary of problems”; how can we help but take refuge in convergent solutions? What else could we do? Take refuge in formula, recipes, and rules. How could we expect ourselves and others to understand the reality of divergent problems? To acknowledge the limits of our knowledge and the limits of our control to the future? How can we expect ourselves and others to understand the limits of technique?⁹

Why are we tempted to treat divergent problems as convergent? We live in a culture that places a high value on efficiency, on results. This alone is enough to make divergent problems especially discouraging to us. In the face of this discouragement we are tempted to treat the divergent as convergent, and therefore devise some inappropriate convergent solutions to divergent problems. We would do well to recognize how thoroughly impractical that is. It is impractical because it is wasteful. Resources will be used in applying these convergent solutions to divergent problems, when we could have known beforehand that solution and problem passed one another by. Worse, the application of these convergent solutions to divergent problems will be quite destructive, people will be held accountable for affecting solutions, when we could have known beforehand that solutions were inappropriate to the problems.

Applying convergent solutions to divergent problems will be met with either cynicism or enthusiasm. And both are understandable. The enthusiasm will be felt by those in their enthusiasm or “invincible ignorance” welcome a solution. But after sufficient failure, even the enthusiasm will turn to cynicism. Which leads to the road to fear, discouragement, alienation, and a recipe for the “flavor of the month” management phenomenon (what we have called the “Comfort of the Comfort Zone”).¹

What then is to be done? We seem to face a dilemma. The failure to see the limits of technique, to see that the problems require cooperative efforts of human beings as divergent, is a failure that is likely to lead to frustration and discouragement. On the other hand, if you acknowledge the limit of technique in a culture that is impatient with complexity, and anxious for efficiency and results, that in itself may be discouraging. No one wants to hear that there are problems that cannot be solved. Are we left with no choice but discouragement or discouragement?

Dr. Edelman points out that “there is a long philosophical tradition espousing such knowledge – such practical wisdom – about what can and should be done in this or that circumstance, this wisdom is known as “prudence.” While the learning of prudence can be a painful and discouraging experience, its also a learning that provides the only solid foundation for hope in the future related to the problems that beset us.”⁹

A person who took up a study of the theory of knowledge or related branches of philosophy, might provide a great benefit to businesses, government, healthcare and education. Such individuals could provide the means to recognize and understand the real nature of the problems we face which are very different in their nature. To master a vocabulary of differences, to be able to see and explain to others that problems are not just problems, that they differ in kind and they require different kinds of solutions. In fact, solutions so different we may not want to call them solutions. To be able to provide that to others in business, healthcare, government and education would be a great service and a cause

for hope. The hope that waste could be reduced, that misplaced accountability and an erroneous sense of responsibility could be seen for what they are – causes of fear, discouragement, alienation and cynicism.

Practical Implications

What are the implications of a better understanding of the Theory of Knowledge?

1. In our first White Paper “Foundations for Transformation”¹ we described the common pattern of the use of tools and techniques to produce desired results. The common term for this is “flavor of the month” management. Is it possible that we are throwing convergent solutions at divergent problems? What is the total cost of not understanding the difference between types of problems we have and kinds of problems we need? Have we considered the cost of fear, frustration, alienation, as well as wasted time and resources? Do we understand the limits of technique in the face of divergent problems?
2. In that same paper, we observed that some executives and managers are “reversing the direction” of their continuous improvement work by understanding the power of purpose, as well as learning about and practicing an entirely different set of business principles. In our second White Paper “Evolving World View”² we described the need to see the limitations of the prevailing principles and practices of management (the industrial world view) and the pursuit of principles that help us address the problems of a “systems” world, and a world requiring true engagement and participation by everyone. We describe the sources of knowledge for these principles, including an understanding of the Theory of Knowledge.
3. What can we do to pursue this “practical wisdom?” How can we start applying a better understanding of the kinds of problems we are addressing and the kinds of knowledge we need? The use of the A3 method for problem-solving¹⁴ is often recommended in organizations that are trying to pursue a lean cultural transformation. One opportunity might be to practice “A3 conversations” before resorting to A3 tools. One of the common patterns we notice in organizations is the introduction of problem-solving tools and methods (PDSA, A3, 5-Why, etc.) This approach may not be wrong – in some situations. We have noticed that it is not uncommon for problems to disappear when this tactic is pursued. People just don’t have time for another tool! But perhaps we should be asking ourselves if we are pursuing spurious, convergent solutions to tackle complex problems. Have we fully grasped the situation we are dealing with? Have talked to enough people? Have we stayed on “the left-hand side” of the A3 (not on paper but in our head) long enough before jumping to solutions on the right-hand side?
4. There are many approaches to creating a culture of continuous in organizations. If we understand that this effort is a divergent problem, and we recognize the potential for waste, frustration and discouragement if we approach it as if it were convergent in nature (see Problem #4 at the beginning of this paper), what kind of knowledge will we need? We propose that the kinds of knowledge that are needed are outlined in our first two white papers “Foundations For Transformation”¹ and “Evolving World View.”² The topic of “deploying this knowledge” is beyond the scope of this paper, but we will address it in our next white paper.

¹⁴ https://en.wikipedia.org/wiki/A3_problem_solving

The Institute For Enterprise Excellence

The Institute for Enterprise Excellence (IEX) was established in 2013 as a research, education and coaching institution that focuses on helping organizations build principle-based architecture to achieve world-class results.

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