A MINIMALIST APPROACH TO IMPROVING PERFORMANCE IN MODERN AMERICAN SCHOOLS

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ABSTRACT

This paper outlines three potentially useful approaches to improving the performance of organizations, and then uses these approaches together comprehensively to design a modern urban American high school. The first approach is an adaptation of the iterative (and gradualist) approach used in engineering systems. The second is a negative reinforcement strategy that minimizes the need for negative reinforcement. The third is the TPO model-things, places and outcomes- used in conjunction with the other two approaches. All three of these methods are interpreted along the lines of the minimalist design philosophy expressed by the author.

Minimalism is defined here as a philosophy of looking for simplicity in a very complex system by focusing on the most relevant relationships to the design system. Once a very relevant relationship between factors and results is theorized using the TPO model or negative reinforcement model, iterative gradualist design methods are used to further theorize and implement the design or design change. The interpretation of the TPO model used here focuses on the manipulation of nonhuman objects, such as books and organizational structures and relies on the relationships between these objects and the desired outputs of the individuals, in order to achieve the results desired for the organization. In this approach, the needs or wants of the individual are given first priority over those of the organization. To this end organization structures, and objects within the organization are manipulated so that the organization's needs conform to the individual's self-perceived goals. Reevaluation of organizational needs is also part of this process.

Negative reinforcement, which is more limited in application, is used only when necessary. Iteration is the changing of one variable at a time to measure in the result the necessity for more change of that variable, or the need to switch to changing another variable. In human systems it is also necessary to do this in a gradual manner, by using a minimalist approach to again avoid unintended consequences. These concepts will be explained further and exemplified with a theoretical application to the Los Angeles South Central High School setting, and a relevant detailed discussion.

Keywords: minimalism, education, systems science

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INTRODUCTION

We live in an era of mass media and diverse information systems. Television zaps us with a constant connection to the rest of the world, or at least some part of it. Modern societies are bombarded with the knowledge of countless subjects. With all this knowledge it is an enormous contradiction that major aspects of our society do not seem to advance, while other parts even regress. In America, the land of invention and prosperity, some schools are in near chaos. All this knowledge seems to create so little learning. The great availability of information, by itself, could not be responsible for the lack of learning in some schools. Is it possible we are getting too much of the wrong information? Often, when we do things in the name of progress, we get things right and wrong. That seems to be the case in the most of the United States and similar societies. Maybe, in these societies it is not the lack of information, but the choice of information that is the problem. So, how can we go about choosing the right information to run our organizations? Much of such a discussion is beyond the breadth of any paper, because this topic is a part of all cultures and touches on so many disciplines. Nonetheless, it is wise to have a strategy, which focuses our efforts in the most useful areas.

The goal of this paper is to introduce a minimalist strategy incorporating ideas from sciences such as engineering, historical analysis, psychology and system science. Specifically, minimalism, gradualism, and iteration come from design, engineering and historical analysis. Positive reinforcement and negative reinforcement come from the field of psychology. The TPO model comes from the study of systems sciences.

MINIMALISM, GRADUALISM, AND ITERATION

The idea of too much wrong information seems to beg the discussion of minimalism. In design, this philosophy tells us “less is more” (Mies van der Rohe, 2007). Relating this to information, sometimes we get more accurate information by selecting less information. When it comes to organizations, this is somewhat the idea of minimalism that applies. By focusing on the relationship that has the most effect on the desired outcome, we are more likely to be having a positive effect and not a negative effect by instituting changes. Not only does this apply to scrutinizing changes to organizations, but it also applies to making the change itself. Making the change less involved requires less energy, and usually less of everything else, too. This is the foundation to this paper’s approach.

Working on changing an organization assumes an organization already exists. If one does not already exist and is just being designed, the closest thing to using this method is to design based on a system that is already successful, by making minimal design

changes. In both cases, there is another concept that ties into minimalism and other concepts to be discussed here later on. Without naming it we have been just discussing the approach of gradualism. It is a concept that may be familiar to those who have studied the history of socialism. This was the opposite position to those socialists who proposed socialist revolution. They proposed socialist change, but in a gradual manner, for many reasons (Lindemann, 1983). One reason for slow careful change is evidenced in the history of revolutions in the Americas. The American Revolution was one of the least violent revolutions in the Americas, and we are one of the most stable countries in the world. In Canada, there was no revolution with the change in hands of power from the English to the Canadians. So, Canada is possibly the most democratic country in the Americas The Spanish-American colonies had very violent revolutions, and so very turbulent histories from that point on. It turns out, that there is a direct correlation between how violent and sudden the change of power was and how stable the society was after that (Bannon, 1963). This statement, along with many others in the social sciences, of course, is a generalization.

Another reason for using a gradualist approach is that the quicker and greater the change is, the less predictable the result is. As it will be explained later in this paper, outcomes in organizations are so complex that they are almost by definition unpredictable. Changing one variable, can have unknown consequences. But, changing two or more variables at a time, according to the laws of probability, can have exponentially different effects. Mathematically, if X doubles and the relationship between X and Y is (X times Y = 2X*Y), which double the original value of X times Y. But, if X and Y are doubled then (X times Y is 4 times the original value of X times Y. In the real world there not just one or two variables to consider, there are countless variables. How can a school monitor such changes?

The answer to that question might be to try to only change one variable at a time in order to minimize the unpredictability, and then change something else later. In engineering, this is similar to the technique of iteration. Using iteration, you have many variables to design with and guestimate a value of those variables to start with. You try to use as many known parameters as possible, which is similar to starting with an already working organization, or trying to replicate one. Then, when you measure the results of that design, you have an idea of how much to change your first guess, and go on from there. In engineering you substitute the values in mathematically, which entails a longer discussion, but the concept is the same. You measure the outcome from a set of input variables and only choose one to change to correct the output. Of course, a benefit here is to more closely regulate change, and make more proper associations between causes and effects. This is also is the case with gradualism and minimalism. Another benefit, again, is avoiding disruption and waste of energy. Specifically, if you make a change in a school, for example, people have to learn the new system, which can be a setback. Many other things, such as new books or whatever material changes, and usually unforeseeable changes, have to be produced or accounted for somehow.

There are disadvantages to the minimalist, gradualist and iterative approaches, too. Although, revolutions and violent change have obvious negative effects, they may sometimes even be the best alternative. If usually extreme change has overall negative effects on societies and organizations alike, exceptions exists, such as Costa Rica. Costa Rica was born of the same violent revolutions that gave Spanish America its independence from Spain. It also became a democracy via revolution, and now rivals the United States for the quality of its democracy.

Ultimately, this approach should be seen as a social system applicable to most organizations under most conditions. But, here we are dealing with soft sciences and therefore soft systems. Here the complexity of the results leaves us to depend on subtle forms of human intelligence, such as intuition and imagination, among others. It is really up to those who use a system, approach or methodology to be able to analyze properly how to implement it. Using the example of revolutions in the Americas, one could look at the relationship of the intensity of the revolutions with another factor. It is simply evident and historical fact that the intensity and violence of American revolutions also corresponds to the resistance each colonial power put up against each independence movement. This implies that it was necessary to have such violent revolution to overcome the power structure of the day. Clearly, here is where the analogy to, let's say, a modern day classroom breaks down. As designers of school systems we are the power structure, in so far as we implement our own plans. We come from the prerogative of someone who is part of the school management, and are looking at working within the political system already in place. So, we do not necessarily need to overpower the establishment. Again, because we are dealing with such a complex system, approaches besides gradual change, such as revolutionary change might sometimes be better, depending on the specific circumstances of the situation. It is only the assertion of this paper that it is generally better to use a gradualist, minimalist approach to changing systems like schools.

At the heart of this discussion is the assertion that human social systems are immensely complex. This is not the only reason to choose a gradualist or minimalist approach. By definition, such complexity entails so many factors, that no reasonable analysis could hope to include all of them or even most of the relevant ones. So, the approaches outlined in this paper are best viewed as a few out of the many tools to use, which will generally be successful, all other things being equal. It is still, as it probably always will be, the responsibility of the designer of a system to understand the particular system at many different levels, which will not be addressed in this paper. One of these disciplines that is crucial to understanding human systems is that of psychology.

NEGATIVE REINFORCEMENT AND POSITIVE REINFORCEMENT IN DESIGN

There is so much to know about social systems, and the body of knowledge keeps getting bigger. As we try to find the relationships that are most relevant to the design of any particular social system, we must depend on scientific knowledge to build up a better understanding of our system. One very important piece of information coming from psychology is the effects of using positive reinforcement and negative reinforcement. Negative reinforcement, or punishment in laymen's terms, is necessary in our school system example, but has been found to have very different results depending on application. If a punishment is used very frequently to discourage it may have many negative outcomes. It could even be said there is a threshold, at which, when passed for the group or the individual, causes combativeness or apathy. This may be obvious as most of us will only endure so much negativity before we consider it destructive or even abusive. At which point, we will find ways to rebel against it also. More subtle is the understanding as to when even a little or moderate amount of negative reinforcement is too much. Here minimalism applies again when the idea is presented that we should use negative reinforcement as little as possible if there is a working alternative. One reason for this is that the more negative association a person has with a subject, the more they avoid thinking about it, which in school goes against our original goal of educating. Unfortunately, you will also have chaos, apathy and combativeness if you do not use punishment at all in the real world. It has been well documented, though, that if a punishment is given only some of the time in response to a certain unacceptable behavior, people tend to do it anyway. Maybe, they prefer to take their chances, or forget. Regardless, with negative reinforcement, if it is not applied consistently without exception, students will somehow tend to put it out of their mind. This is true even if the risk of punishment far outweighs the benefits derived from the unacceptable behavior. People regularly neglect taking into account probabilities of being caught in a rational comparison, when it comes to sporadically given negative reinforcement.

This is not true, however, when punishment is applied in a very consistent manner. When applied this way punishment can be as effective as positive reinforcement in that it consistently changes behavior. For example, if a teacher wants to prevent a child from hitting another child, it seems unlikely that it would be practical to award some type of positive reinforcement for that omission. Giving positive reinforcement for not hitting as an approach would mean you would have to give such an award to all students in the class for this same omission. This would not include throwing things or swearing in class or even the countless other behaviors we do not usually expect to occur, but would have to provide a reward for. We tend to count on negative reinforcement to stop one student from hitting another, because positive reinforcement would be impractical. The answer, which I might add seems obvious, would be to punish the one student for hitting the other student. In the usual public school classroom, there may be more than thirty students per

teacher, and punishment takes time, distracts the class and can have other negative consequences. In some schools where hitting occurs frequently, they might then distinguish between incidents on the basis of intent and force of the blow, or some other criteria, in order to not have to punish every incident severely. The effect of this is that a student does not know if he or she is going to be punished or cautioned, or even ignored. Students in this situation often take the chance of committing the punishable behavior. Whereas, if they knew that they were sure to be punished, they would much less likely hit one another. That is, if the punishment is always given when the particular unacceptable behavior is carried out, the behavior stops consistently. This has been proven time after time in different psychology experiments. The message is that if you're going to punish a certain behavior you better be prepared to punish it all of the time (Freedman, 1975).

On the other hand, there is positive reinforcement, commonly called reward. Unlike negative reinforcement, reward, or rewards, cause consistent changes in behavior even if they are given only occasionally. We can imagine the reason for this in a similar way to the opposite pattern, associated with negative reinforcement. One tends to remind oneself of positive happy moments and forget, blocking out negative depressing moments. The reward causes the happy associations that keep reminding us of the behavior itself, along with its reward. This finding is of great relevance. Not only is the more instinctual idea of keeping a positive attitude true, it is part of the most useful technique in psychology for designing social systems. An organization can do more influencing with less effort using positive reinforcement. In a school system it may seem hard to find adequate rewards for some students, while others will appreciate those same rewards more, so that it modifies their behavior. Still, overall this is a much more useful technique than negative reinforcement (Freedman, 1975).

THE TPO MODEL INTERPRETED WITH A MINIMALIST APPROACH

How do we tie this in with minimalism and the TPO model? There is a long answer and a short answer to that question. I do not know the short answer, so I'll give you the long one. Referring to some of the ideas that describe a minimalist philosophy, it seems difficult to overlook Buddhism. In Buddhism, one of the goals in life on the path to enlightenment is to overcome one's desires. Another way of looking at this is to say that there are some desires in life that are superficial to more important ones, such as the desire to be enlightened.. If we focus our analysis on taking a deeper look at the relationships and needs we take for granted, we may be able to find some more central relationship or need. Buddhism was to its cultural milieu, as it has been to our culture, a chance to reanalyze what desires are most important to us. In the context of systems analysis, minimalism often follows a similar strategy of solving problems. As mentioned earlier, minimalism strives to keep things simple even in, and especially in, a complicated social system. It does this, in part, by breaking with the assumptions of the social system

it is attempting to improve. So, we focus on key relationships, but in what direction do we focus?

The TPO (things, people, and outcomes) model (Gabriele, 2007). gives us a strategy to find that direction. Things, people, and outcomes are three convenient and useful categories in a social system, in that they are very different. Things are much more predictable, and are therefore more easily designed, according to prescribed criteria, such as the needs of the individual or the organization. On the other hand, people are not so predictable and can hardly be designed. People are complex beyond the use of models applicable to things, though their behavior is generally predictable as acting to meet their own individual goals or needs. Individuals strive for survival, safety, belonging, achievement, self-actualization and transcendence (Maslow in Valle, 1989).

If things are sometimes complex, or simple, while people are always complex, outcomes have the capacity to be even more complex. Simple outcomes are easier to deal with, though uncommon. We can make outcomes seem less complex by categorizing them into three basic types. The first, transcending outcomes, exist when the individual's needs within the system are being met in a clearly satisfactory manner. Second can be called average outcomes, wherein many needs are met in a satisfactory manner, but some significant needs are not being addressed. Declining outcomes are those where the individual's needs are significantly deprived (Gabriele, 2007). In declining outcomes, because the individual's needs are not being met, we need to design our system to meet these needs, as a crucial part of our system. In these cases, a revolutionary approach may be needed depending on the gravity of the situation. Here, unfortunately, chaos may still entail with or without our design as we go through the process of applying theory into practice. More commonly, we deal with an average system where some needs are being met, but some are not. In these cases, we can try the minimalist, gradualist and iterative approach described earlier in this paper, to design for the needs not being met. In the ideal case, transcending outcomes, almost all of the most important needs are being met, and we have only to design our system around the one already existing. That is, we do not need to change that system, but we may add to it gradually, in a way that does not change any of the parameters of the existing system.

Beyond the details, the TPO model focuses on using the individual's needs in order to design the system. To understand this in a more concrete way, we assign the personal needs of the individual as fixed parameters, and use the things in the individual's environment as possible variable or fixed parameters, depending on which thing it is. This way we overcome much of the complexity involved in changing people, instead accommodating the organization to their needs, in such a way that the organizations needs are met too.

HYPOTHETICAL APPLICATION TO A SOUTH CENTRAL LOS ANGELES SECONDARY SCHOOL

We can see the value of this paper's approach with application of a very pertinent example. Using an unnamed Los Angeles High School to try out our model we have to first give an accurate description of the relevant aspects of the school. In such a school, demographically the students are typically Latino or African-American, and poor by American standards, but rich by the world's standards. There is also a relatively high crime rate, including violent crimes, but the neighborhood is very peaceful compared to some places in the world. The schools have limited resources, but then again compared to a majority of places in the world, these schools are rich. Every classroom is full of books, tables and chairs, albeit true these are often vandalized. Even so, the students at this school are falling far behind others in California, which is behind the rest of the country, which is also falling behind academically compared with many poor countries. If we look at the TPO model, this school seems to be an average school in terms of needs being met. That is to say, they are not hungry, they are relatively safe and they have most of the necessary resources. Why do not they perform so well academically? Although this is a valid topic for another discussion, it seems pretty obvious when you teach there. The parents usually have low expectations, along with the teachers, principals, students and their peers. This is an immediate cause that you notice on site, but it cannot be a root cause, because the expectations follow performance and other situational factors. In reality, there must be countless causes, as we are dealing with a very complex situation.

If we are going to take a minimalist approach, we will focus on the most important relationships effecting performance. Since, these students are all very capable of performing physically, and the resources are there, we can ignore those things for the purposes of this discussion. Using the TPO model, it is necessary to understand what the student's needs and goals are, to start design changes. This requires a little creativity. First of all, it should be stated that each student will want different things. Clearly some care about popularity the most, some would choose hobbies, and frankly some care about relations with the opposite sex the most. Still, others will also care most about academics. Grading and related types of positive and negative reinforcement only deal with the academic goals of the students. At the same time, students who are most at risk of bad performance academically, have the least interest in academics. These are the students, typically, who can be most disruptive to learning in the classroom. They are not afraid of being suspended usually, because according to public school law they can only be suspended temporarily, and the school may even not meet their needs. What are the perceived goals or needs of these students who are so interested in academics? If these less interested, more disruptive students could be controlled every classroom with them would progress. The school has very little leverage over these disinterested students. If it only knew what they wanted, there would be a chance for leverage. There are many things that could be done to improve the schools a little. Using our TPO model we should use their goals or needs to design. Minimalism teaches us to focus on the most

important relationship. So, what are the most important needs or goals to be obtained according to students? This is when the researcher might ask the students want in a survey. Unfortunately, this paper does not have that research, but we have something else. As a substitute teacher who has been teaching in South Central Los Angeles for the last year, these types of disinterested students have been telling me what they are most interested in all this time. Almost invariably they talk about other students just like when we were kids, or even when my mother was in school. They are most concerned about their peers. More specifically, they are concerned about their status among other students, and especially their clique. Each clique has different interests such as: different types of music, dancing, sports, cars, skateboards, dating and, unfortunately, gangs. This is what the students want. If one could incorporate these things into the school's activities, the students would be more interested in school activities and the school would have leverage to demand academic performance and discipline. Once again, you make the organization fit the individual's needs or goals, so that you can also accomplish the organization's goals.

Maybe, this does not seem realistic at first. One problem that this minimalist approach is trying to overcome is that of preconceived ideas. It is necessary sometimes to reanalyze what we have already deemed as necessary, in order to gain some needed flexibility. We know what our troubled kids really want, so we do not try to change those desires, but like the Buddhist overcomes some of his or her desires, the organization can overcome some of its more superficial needs. Do we really need to have physical education classes in sports that are not interesting to the students? If the main objective of physical education is physical fitness, why can we not have dance, skateboarding classes, and martial arts classes, when those are more likely to get those students to participate? Is it also necessary to only have one team that plays competitively for only one season? Taking the example of soccer, high school teams only accept enough players onto the team so as to fill the roster, but when they scrimmage, they then have to play against themselves. Why not have them practice all year as they do in Japan, for instance? Make the roster bigger or have a second team, training against the first. The fact that they do not do this is one of the reasons that colleges do not go to high schools so much to find the best players. The best way to get into college soccer is via clubs, who naturally meet this need to play all year round, because they specialize and understand that much about the game. If you make the soccer program valuable, then students who are interested will not jeopardize their participation in academics. This does not take extra money. It just takes reorganizing physical education schedules a little.

This idea can be expanded to other activities the same way. Status in high school is very important to academically troubled students, only they get status among their peers in ways other than academics. As every group has its clique, peers pressure from that particular clique is the most important, but it is also important to gain status among all the students. Extracurricular activities if organized correctly can at least partially fill the void that gangs and other groups fill. So, as another example of this, why not have more

cheerleader/dance teams to come and cheer at all the sporting events, including this team as one of the physical education classes. This will bring students together with purpose and meaning, while catering to their own needs to have purpose and meaning in their lives. This way the school has more control of something ever more important to the students. You can even have martial arts classes, for those students who have safety or self-image needs. They will get physical education training, self-defense training and will learn the best strategy of self defense, is not fighting, taught painstakingly in martial arts schools. If you do this, you will find that students will find many productive ways to achieve their goals, and in doing so, become more successful at meeting the schools academic needs.

CONCLUDING REMARKS

All of the above hypothetical applications included use of the TPO model interpreted in conjunction with the author's ideology of combining minimalism, gradualism, iteration, positive reinforcement and negative reinforcement. The TPO model and minimalism were well exemplified, but the others less so. Gradualism would basically entail making the above changes, but minimizing those changes hopefully in an iterative process, allowing teachers, students and administrators to adjust and evaluate change as they go. Positive reinforcement, though not specifically defined as such earlier here, is a necessary element in the TPO model. In the TPO model we use the positive reinforcement that the students themselves seek already as their most important needs and goals. However, a good example of how to use negative reinforcement with this paper's approach, has not been given. Remembering that the organization's goals are primarily academic achievement, we should again use a sort of minimalist approach to focus on the most important relationship where negative reinforcement could be used.

So, once again I fall back on my experience substitute teaching in various schools. There are many things a student could do to disrupt the classroom. But, in practice, the most destructive behavior I have noticed seems like one that could be easily rectified with a consistent program of negative reinforcement. In most, but not all of the schools I teach at, some students are constantly interrupting the class be talking or yelling out loud during class. This is especially disruptive when the teacher is talking. There are days it may take me fifteen or twenty minutes to take roll because of the constant interruption. When I introduce the concept of students raising their hands and then waiting for the teacher to call on them, they do not seem surprised, but incredulous. If I then give them negative consequences for their constant disruptions, they often think it is unfair or unexpected. A reason for this, is evidenced by the reaction by one person in charge of security at a school. I told him how important it was for the students to not interrupt the class and instead raise their hand, as is done in most the rest of the world. His response was to insinuate I had some psychological need to control the students. This is why the students seem surprised that I might ask them to leave the classroom for continuing to

interrupt. Either they are genuinely not used to such consequences or they are used to being able to feign surprise to avoid such consequences. In either case, the design problem is clear. In order to stop this disruptive behavior everyone has to be on board. Students have to know that whenever they interrupt the class, there will be consequences. If not, some of them will attempt to push this behavior to see if they can get away with it, while others will just forget that they are not supposed to interrupt the class. The idea is simple. In classrooms around the world, the teacher can expect to have the attention of at least most of the students, because they are not being constantly interrupted. This standard must be enforced throughout the whole school, unless otherwise specified as an exception by the particular teacher. The negative reinforcement must be standardized also. If a student interrupts twice in one class period, they must get whatever consequences the school decides. The negative reinforcement, or punishment as most people call it, would have to be standard throughout the whole school for the reasons of effectiveness illustrated earlier here.

Although, many people have a negative association with anything that could be considered punishment, while some just do not like the word itself, it is important to avoid preconceptions about this technique. Using negative reinforcement is unavoidable and it is only a question of using it in an effective manner or not. Unfortunately, so many such preconceptions exist as we wrongfully bounce between these ideas and others, then rushing whole heartedly into action based on them. There is a useful scientific process in which we state our assumptions, make our hypothesis and present our research. Hopefully, people will use it correctly. But, reality is infinitely more complex than a process of analysis and one solution. There could be many other ways to see and solve a problem, if we learn to doubt previous assumptions. Fundamental to an understanding of this minimalist approach is the ability to do away with unnecessary restrictions. These restrictions manifest themselves as the needs of the organization or the flawed assumptions of designers, such as politicians, administrators and teachers. Although, this approach is not revolutionary, it hopes to be revolutionary in helping to overcome the cultural and socio-political barriers to creative thinking. If in the beginning this paper attempted to explain the theory of minimalism, this last statement would represent the spirit of minimalism, opening our minds as if to say, less assumption is more creative.

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