PREPARING FOR SUCCESS:
WHAT MAKES PEOPLE SUCCEED?

William M. Goodman

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WHAT MAKES PEOPLE SUCCEED?

by

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Increasingly, society looks to training to prepare people for success. But if these efforts are to be effective, we must first establish what <u>counts</u> as success in the roles people train for--that is, what makes people succeed. For, as usually defined, "training" prepares for tasks whose desired outcomes can be specified precisely in advance. I can train to shoot a target, for example. Thus, only after we identify the objective of training, can we get on with developing and evaluating a successful training program.

In practice, however, no goal is so precisely constrained as to require only training, as just defined, to prepare for it. Even the target shooter may have to adjust, in game conditions, to unexpected factors--ranging from crowd pressures, and personal emotions, to the effects of wind and temperature. Somehow, he or she must be prepared to make compensatory decisions which can lead to successful results. Moreover, it may be necessary to modify or critique one's actions, in reponse to social, environmental or moral concerns. Developing these

capacities, I would argue, is the goal of "education." But whatever we call the process, the goal of this booklet is to identify, in general, what can make preparation successful.

THOUGHT EXPERIMENT 1

In order to make this discussion more vivid, I will proceed by means of several parallel examples or "thought experiments." On the one hand, I refer to images of a game-play "Utopia" employed by Bernard Suits in his works on the nature of games.[1] In that world--where all instrumental needs for shelter, food, goods, and services are provided at will--the residents have nothing to do but play games.[2]

Now, what is so special about games, for our purposes, is that their goals are uniquely well defined. The players of each game (using Suits' definition) aim to accomplish--by rule-permitted means--precisely that definable state of affairs which Suits calls the "pre-lusory goal" (from the Latin "ludus" for "game"). In a race, for example, this goal might be to reach a certain line before your opponents do.

What the rules do is disallow from play more efficient means to attaining these pre-lusory goals. The players accept the rules just so they can engage in the game-play activity. A racer, for instance, could better ensure that he or she reached the line first by starting to run before the gun was sounded, or by sabotaging the opponents' running shoes...but for the sake of engaging in a true race, he or she obeys the rules, and avoids such options. What follows is that for the game player, we know exactly what his or her training must accomplish: Successful training is just that which facilitates attainment, in game-play conditions, of these pre-lusory ends.

Unfortunately, the training of real-world game players is rarely so straightforward. Irregularities of the playing surface, questionable judgements of officials, problems in one's home life, temptations for cheating and drug-taking--these all can create conditions which, though seemingly unrelated to the game as defined, can have clear impact on how it will be played, and so on how one should be preparing to play it. This is why I locate this first example in a game-play Utopia called "Gatopia." Here, we can abstract away those complexities and extraneous influences that affect "real world" game play; the goals of training itself become crystal clear, and the trainee is seeking mastery in their attainment. In this Gatopia, the key question for our world, "How can we attain success in real-world tasks?" becomes "How can one win in Gatopian games?"

The first Thought Experiment is based on this question: If two Gatopians, Achilles and Zeno, engage in a race, and if Achilles "wins," what could be the cause of that success?

THOUGHT EXPERIMENT 2A

While referring to the Gatopian example, I will compare our findings with those for several alternative cases in Thought Experiments 2A to 2D. Each example, in turn, will reintroduce some complexity from real-world situations. All these alternatives are based on the following problem:

Suppose that a computer firm, JBM, has two virtually identical warranty-repair facilities--one in Toronto, Canada, and one in London, England. As it happens, each site has just hired a new training-school graduate to work as a repair technician. JBM Toronto hired Adrienne C. Hilles and JBM London hired Lloyd Z. No. Unfortunately, due to financial problems at JBM, one of these two new employees must be let go.

Believing it obvious that that the best choice for JBM would be to keep only the "better" of the two new technicians, and lay off the "worse," the international management has decided on the following scheme: Both new hires would be kept on for six weeks, during which time their outputs would be closely monitored. The employee demonstrating the better <u>performance</u> during this time would be retained at (or transferred to) the London facility; the other would be released.

How would this "performance" be measured? The plan is to track, for each new hire, the following values during the trial period:

N = the number of units repaired;

V = the average value (wholesale cost, in dollars) of the units repaired; and

S = the "success ratio" (= the number of repairs which passed inspection divided by the number of repairs inspected).

Each worker's performance would then be calculated as:

$$P = (N) \times (V) \times (S)$$

The employee with the larger P value would avoid the layoff.

On the face of it, this plan is entirely reasonable--given that one employee has to be released in any case, and that the company hopes to at least retain the best possible worker. The overriding goal of any warranty-repair department is to fix defective units as cheaply and effectively as possible, as an alternative to providing customers with more expensive replacement units. The preceding formula calculates how much each employee's performance is "worth" in terms of how much it would have cost to simply replace the units they repaired with new units. The performance score is lowered if either (1) the employee works slowly or (2) s/he works ineffectively (i.e. many of the "repairs" fail inspection).

Now compare this example with Thought Experiment 1, where we are asking how a Gatopian racer Achilles could "win" a race. The relation of means to ends is somewhat different in the case just described. Here, each of the two participants (the employees) is, like

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each of the racers, striving to accomplish a state of affairs (in this case, attainment of the higher "performance" rating, P). Yet, in the view of these participants, any restrictions of means are externally, rather than internally, imposed. Unlike Achilles or Zeno, Hilles would gladly use any (moral) means at her disposal--from using laser- solderers to having robots perform the diagnostic operations--if these would help her chances of success. If she refrains from using such tools, it is not "just so she can be playing the game" but rather due to a regrettable lack of opportunity-- whether because JBM does not own such tools, or they are not available to her, or she has not been trained to use them.

A Gatopian game player would never have the excuse, on losing (i.e., not-succeeding), that he labored without an essential tool or against an unreasonable restriction; for the Gatopian, in opting to play that game at all, has voluntarily accepted those conditions. But the same is not always true on earth: What if the Toronto JBM plant provides robot diagnostic tools but London does not? A.C. Hilles could then succeed for a reason not possible in Gatopia--the fact that Lloyd Z. No laboured, involuntarily, in more restrictive conditions.

Fortunately, let us assume, Mr. No did not labour under such inequity. Both JBM plants, I have said, are "virtually identical." Identical tools, part supplies, management support, and so on, are available to each employee. Thus, our analysis of how one player might succeed over another, laboring under equitable, if not personally desirable, conditions, really is analogous to an analysis of game-victory--had the work conditions been voluntarily accepted as well.

But this assumption of equitable test conditions is not made arbitrarily, that is, just so I can utilize my Gatopian analysis. For it is only by means of such fair test conditions that JBM's assessment scheme can perform its purpose: namely, to identify the more skilled of the two workers. Suppose that another company, DEL Computers, is facing problems similar to those at JBM, so its own managers decide to adapt JBM's scheme of performance assessment. But suppose, also, that in DEL's case, the two workers under scrutiny face markedly different work conditions. Perhaps one will be working with state-of- the-art computer diagnostic tools, while the other must perform without even a reliable oscilloscope. The outcome of this "test" is obvious: The more poorly equipped worker, regardless of his or her own merits, will inevitably achieve the worse performance ratings. This result tells more about DEL's mismanagement than about the workers' relative skills.

Any attempt, therefore, to assess which of two employees is "better" at their job is really a query into which employee can in some sense bring "more" to

identifiable circumstances. If the circumstances are not kept more-or-less constant during the assessment (i.e. if equity is lacking) then it is quite difficult to compare the contributions of different workers under those conditions. However, if this condition of equity is maintained, then the analogy of skill-test situations with Gatopian games can be applied.

Let us suppose, therefore, that the JBM testing goes forward as planned. After the six weeks of testing and observation, management studies the results. Their conclusion: A.C. Hilles has proven the more productive worker, based on the performance scale. Lloyd Z. No is laid off, though promised first call if an opening arises. The question for analysis is this: What might be the reasons which made possible Hilles' success (i.e. superior performance)?

=> Answer 1: Hilles was better trained.

In Gatopia, it can be argued, the cause for winning a game could not lie in training--at least not without serious qualification. For the more poorly trained participant would be facing an undesired obstacle (namely, their own lack of skill or knowledge), which their opponent would not have to face; and for Gatopians, this is inconceivable. Training may be a condition for game-play, but it should not be the explanation for winning.

But in our world, the problem is more complex. On the one hand, JBM management are seeking the "better" employee. We presumed that each of the job candidates had attended a training school just so he or she could gain proficiency at the tasks required. If one of the candidates emerged from the experience "less well trained" than the other, then that is precisely the sort of data that JBM wanted revealed. Naturally, management would prefer the "better trained" individual.

In practice, much screening does proceed on this basis. If a job entails Zamboni-driving, for example, an applicant who has had a course on this will get preference over others.

Yet, this common approach has a flaw. Consider the example just cited: Perhaps M'Bow is the person with Zamboni training, and Singh is a candidate who lacks it. If having better training is taken as a fair measure of success-potential, then Singh will be quickly ruled out of contention for the position. Yet, what if M'Bow, even after his training, drives poorly, while Singh (who already drives trucks, trains, and airplanes) could most certainly surpass M'Bow's skills with minimal coaching? If the need for Zamboni driving is immediate and urgent, then perhaps preference for the already-well-trained individual is justified; but if there is time to search for the inherently "better" person for the job--and training/coaching resources are available to fill in the gaps--then prior training may not be a fair measure of potential.

(Just these sorts of arguments, in fact, are given to justify "Affirmative Action" type programs: Perhaps in future, say these policies, when all races and classes have equal educational opportunities, then all hiring can proceed strictly according to presently-demonstrated merit and training-levels. But so long as some people have unequal opportunity for initial training, then it is unfair to use their lack of standard preparation as the sole grounds for rejecting them. Presumably, with time and remediation, many of these people can demonstrate the ability to perform.)

These considerations suggest that until some more information is provided about this thought experiment, we cannot be sure if Answer 1 is applicable. To test, as objectively as possible, which candidate is "better" for the job, JBM has tried to create test conditions which are equitable: Both candidates (from recognized training schools) were to work on standard types of equipment, and on typical tasks expected of a graduate technician. But despite all precautions, training differentials are always possible. Perhaps, Hilles' training program emphasized microprocessors--in fact, just the model to be worked on during the JBM test period; No's program, on the other hand, may have been at an older school--still emphasizing radio and television technology. Hilles may also have studied under able and exciting teachers, and worked in a modern, well-equipped lab; but No trained in an old lab, staffed by mediocre teachers.

Under such lopsided conditions, Hilles would likely score higher in JBM's six-week evaluation. Yet, because of the testing inequity (due to the candidates' training histories), management could not know for sure whether these results really identify the "better worker" over the long term. If he could somehow be given time, experience, and coaching, No could perhaps make up admirably for his initial deficiencies in performance. To tell this, something like a "training test" may be needed--an activity to demonstrate how well each candidate can <u>learn</u> new material not known to him or her when hired.

In short, the applicability of Answer 1 to this experiment depends on JBM's specific motives. If they require new staff to perform <u>now</u>, with minimal extra training and expense, then, yes, the better trained candidate has improved chances for success. Though candidates with a poorer training background may have the potential to outperform the short-term winner, they may simply not get the chance to prove it. On the other hand, if JBM is sensitive to human-resource development issues, and has a substantial training and professional development budget, they could act so as to minimize prior training's effect on their performance ratings (perhaps by offering training tapes and coaching during the test period itself). Though

all such attempts would be imperfect, they could be used, in principle, to ensure long term, and just not short term, success.

=> Answer 2: Hilles has more TALENT.

By "talent" I mean those "mechanical attributes and learning acuities" which render a person <u>trainable</u> for a given task. By "mechanical attributes," I include all the effects (if any) on outcome contributed by muscle condition, state of health, reflexes, age, gender, and so on.[3] "Learning acuities," on the other hand, on the analogy of visual acuities, refer to abilities to distinguish and benefit from distinct learning "inputs."[4] For example, some necessary "mechanical attributes" for a trainee boxer include his muscle formation, speed, and quick reflexes. Yet these features by themselves do not constitute a "talent" for boxing--if they occur in the absence of a learning acuity for picking up the skills of the sport. On the other hand, the learning acuity by itself is at best a "latent" talent unless the trainee has or develops the associated mechanical attributes. For instance, a fit but very near-sighted man, we might say, <u>could be</u> a boxer (has a talent for it, if you will) <u>if only</u> his eye problem (a faulty mechanical attribute for a boxer) could be corrected.

In short, talent, on this view, is a sort of ratio: How much polished skill or knowledge can the individual output for a given 'unit' of training input? The talented technician may be able to fix a new machine on her own after only an hour in a lab with a training video. A less "talented" technician, whether due to physical infirmity, poor hand-eye coordination, lack of understanding, or some other cause, may come out of a similar session unable to effect such repairs.

As thus defined, talent is a relative concept. If, today, someone tried for an hour to teach me a new tune on the guitar, the learning output would be poor: That is, I would show little talent. Having no experience with the guitar, my fingers would respond awkwardly, and I would have to continually remind myself how the different notes are played. But perhaps after a year of general training on the guitar, I could learn that tune quite easily in one hour. My "talent" would, in effect, have increased. This accords with a commonly held view that we must measure "potential" by what has actually been accomplished.

There are other aspects of "talent," though, which appear fixed for individuals; and we usually think of these when we differentiate "talented" from "untalented" people. A clumsy person, it would seem, simply has no talent (i.e. has not "got what it takes") to be a ballet dancer. It does not matter how much preliminary training we give. Wayne Gretzky, on the other hand, has an indisputable talent for hockey; and we presume that he already had this even before he

learned to skate. We think of talent of this sense when we lament the "untapped" or "wasted" potential of someone who fails to perform.

Nonetheless, the difference between these two types of talent--relative vs. fixed--is really one of degree. Even Gretzky had to develop, sometime between birth and his NHL career, the reflexes and quickness of perception which are his trademark. And, occasionally, the most lanky and uncoordinated teenagers can develop remarkable grace. So, inevitably, no one's talent reduces to a single, lifelong value[5]: New skills increase trainability for yet other skills; while, unfortunately, aging or injury can reduce performance and trainability in some areas.

The effect of this analysis on Thought Experiment 2A is quite curious. JBM management have been seeking to identify the better job candidate. Suppose they were taking the long-term view, and willing to compensate for any training gaps at the time of hire. Then surely, it would seem, they are really looking for the more talented, as opposed to the simply better trained, individual. But this poses a new paradox; for we have just learned that talent, itself, is malleable, and can reflect an individual's past experience, training, and development. So even to focus on talent over training is, at the same time, to focus on training after all.

But it is unnecessary, I think, to be intimidated by this paradox. Granted, it is very difficult to draw the line between talent (which emphasizes a long-term, if not a permanent, capacity) and training (which focuses on the historical development of specific skills). But provided one knows one's own objectives, an effective division can be made: Look for the "trained" person if you require off-the-shelf results; prefer the more talented person to provide results in a variety of future circumstances.

If A.C. Hilles scored higher on JBM's performance scale due to "talent," then this implies more than a good match between what she was trained to do earlier and what she had to do now. Even a less talented person could perhaps do as well with such favorable conditions. But where the test situation offered something new and unexpected--something untrained for--Hilles, if more talented, may be quicker to adapt and find solutions.

Quite likely, it is just this sort of "talent" which JBM is looking for. Perhaps this too is a function of training history. Maybe Hilles was blessed with schools and family who encouraged a problem solving approach, while No--who could have blossomed in such an environment, as well--was in fact raised to accept things unquestioningly, so his problem-solving skills were not as sharp. Does this mean that JBM is unfairly basing its conclusions on something other than "core" talent? Regrettably, it would be impossible to

isolate "pure" talent potential from past training opportunities.

=> Answer 3: Hilles won "by chance."

Chance outcomes are those which occur without human intention or agency. In throwing a die, of course, one does intend that some one number, of the six possible, be displayed.   But that the "five" is the number tossed, for example, rather than the "four," is not the result of human intention.

In games, the presence of chance limits the effectiveness of skill or training.   One trains to accomplish intended results under known circumstances; with chance present, circumstances become unknowable (or unpredictable), and intentions can be thwarted. So, at best, training and talent increase the statistical probability of winning such games; they can never make victory certain.

From Gatopia to our world, the balance between chance and intention is effectively reversed.   In Gatopia, all game conditions can be specified to any desired level of certainty. If players wish, all dice could always land on "threes," or all playing surfaces be absolutely free of irregularities.   Where chance enters a Gatopian game, it does so only within limits prescribed by rules. In our world, on the other hand, the unavoidable tendency is towards entropy--towards chanciness.   Even where our world seems ordered, this "order" often consists of statistical probabilities, rather than certainties.

As an example, consider a technician working with transistors; he or she may be guided by the maxim that the voltage differential between the "base" and "emitter" of the transister should be .6 volts. On measurement, it rarely is; it is always a little more or a little less.   This is partly due to the "randomness" of the circuit, and partly, too, due to the random inaccuracies of the measuring devices.

What follows is that chance plays an immense role in determining real-world success.   We have already seen this in the previous two sections: Even when JBM management try their best to create fair assessment conditions, it seems impossible to do so. No one can pin down, exactly, the training/talent effects of the employees' biographies.   Was Mr. No's study time impeded by noisy neighbours, or because his own children became ill during critical exam periods? Did Hilles happen to have an extra-supportive eighth grade English teacher?   In any of these cases, it would be chance that the conditions arose. How could one even hope to catalog such chance influences on a person's life and training, let alone predict their effects dependably?

Not only is it impossible, due to chance, to fully know one's "entry level" for training or a job, but, even if entry equality is presumed, chance again limits the predictability of one's performance.   What if,

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during the evaluation period, Hilles sits next to a very helpful and articulate co-worker? This stroke of fortune will obviously help her adaptation to the job. On the other hand, if Hilles succeeds "by chance," it may that No got placed just weeks after a fire at the London plant.   This resulted not only in smoke damage to the test equipment, but also in complications to units left in for repair. Less extreme cases of chance descrepencies can arise from minute to minute: phone calls that interrupt repairs or one's train of thought; a chance "run" of hard-to-diagnose problems; a co-worker's timely correction or word of encouragement.   Most anything can arise to affect performance.

My conclusion is not that talent and training are merely redundant. Even with luck, a shy and illiterate person is a bad bet to hire for Shakespearian acting. But as was true in Gatopia, chance makes performance a statistical matter: Perhaps the "better" technician will be, on this occasion, the one who muddles this repair; it can happen.   But over time, one hopes, performance will reflect the skill and training of the worker.

Thus, Answer 3 to this thought problem can be confirmed: It is certainly possible for Hilles to have outperformed No "due to chance."   Perhaps they are equal in ability and potential from virtually every perspective.   "Over time" (say, six weeks) this

equality was expected to result in nearly equal performance.   But due to variations of factors like support from co-workers, conditions of equipment, and difficulties of problem diagnosis, it just did not work out that way.   Hilles got "the breaks" and took advantage of them. For non-Gatopians, "That's life."

In real life, this chanciness of talent, training, and circumstance is all-pervasive.

=> Answer 4: Hilles had (displayed) more discipline.

=> Answer 5: Hilles had more confidence (or better morale).

In Gatopia, such factors as discipline, confidence, and morale could not normally account for success in games.   Initial inequity of preparation--whether to maintain confidence or discipline, or ward off depression--would signify an underlined unaccepted obstacle for one of the players.   She would presumably have it removed (somehow), and get on with the actual game play.

For the real world, however, we have already seen that imbalances among competitors' training histories, at the time of skill assessment, can seriously affect measurements of their success.   This is true no less for "discipline-training" or "morale training" (Answers 4 and 5) than for physical or mental skill training: If No does not "know how" to forget about a "bad day" and recover his momentum, this will clearly affect his work results.   Whenever the problem is subject to

correction by training (whether by relaxation techniques or by assertiveness training, or by diet, or by a regimen of rule-permitted drug-taking), then Answer 4 or 5 is a variant of Answer 1. On the other hand, one's debilitating moods can sometimes reflect a chemical imbalance or a genetic characteristic; in that case, talent (Answer 2), not training, is at issue.

Either way, should No have been suffering from discipline/morale problems--whether caused by drugs, vitamin deficiencies, "personal problems," or whatever--that may well be his undoing. Hilles' comparative high morale, in this case, would indeed be "the reason for her success."

As we have already seen, those who rate performance are at risk of turning away the "better" worker. A candidate who initially succumbs to avoidable depressions,[6] and so on, could potentially shine once shown how to overcome these problems. So long as people are hurried to judge "success," initial failings can have large effects.

=> Answer 6: Hilles made better decisions.

Suppose, in Thought Experment 1, that Achilles and Zeno were tied in their marathon race--with Achilles running to the left of Zeno--until Achilles "decided" to veer right. This meant that Zeno had to swerve to avoid hitting either Achilles, on his left, or a tree, on his own right. While Zeno was executing this "swerve," Achilles had the chance he needed to take the lead--and this is what led to his winning.

Clearly, in this example, Achilles' "decision" to swerve was the key to his victory. Presuming that there was also a tree on Achilles' side of the race path, we can eliminate "chance" as the deciding factor; each player had equal opportunity, so far as tree placement was concerned, to make the same, game-winning decision. Similarly, let us presume that Zeno and Achilles had equal talent and training for physically executing the maneuvre. Yet the fact remains that Achilles, and not Zeno, made the correct, timely decision and won the race.

In short, I am proposing that "better decision-making" could, in fact, be one means for achieving success. But what is meant by "decision making"? What constitutes a "decision"?

If you ask me what I had for breakfast, I might say that I "decided" to have a cup of tea. But it would be more accurate to say that I just "felt like" having the tea (I had an "urge" if you will), and I acted accordingly--in the absence of opposing influences. In fact, it was just my "habit" to have tea at that time of day.

In other words, for "making a decision" to be meaningful more than one alternative must be under serious consideration. To make the decision involves (1) acknowledging the comparative merits of the competing alternatives, yet (2) turning one's attention

in the end towards executing the one option that is decided-for. In the absence of (1), there is action on impulse (or by habituation) rather than decision; without (2) one is "waffling," not deciding.[7]

It is this nature of decision making which brings into sharp relief what I call the training paradox: Since all instrumental needs can be met instantaneously in our imagined Gatopia, all traditional training could, in theory, be automated. People could simply plug in a training device of some kind--which imparts, at once, all skills for which they are trainable--and then they could set out immediately to play their preferred games. But even in such a Gatopia, no "automatic training" for decision making could occur. For decision making, like creativity, demands a new response to a new situation, whereas any "canned" solution (such as built into a training program) would be, by definition, bound and framed by old assumptions. In our experiment, if a decision-training device could have "trained" Achilles to decide-to-swerve when he did, then (presuming fairness) both players would have access to the device, and both would have simultaneously made the same move--given their equal opportunity, and equal prompting from their device. But unless the players are making a true choice among competing alternatives, they are not truly making a "decision" at all, and we are no longer considering the case where a player's decision

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determined the outcome.

This finding is highly relevant, also, in the real world, but I introduce the notion of a training "paradox" in Gatopia, because there it appears more vividly. "Training" in practice never occurs as a pure process, isolated from other aspects and relationships of life. To the extent that we mean by "training" a highly focused process of preparation towards clearly specified objectives, then the issues of the "training paradox" apply: Such training does not prepare one to exhibit creativity and decision making. Yet, very often, the processes we call "training" may, in fact, contribute to these other goals, as well. The trainee, in other words, while pursuing the "official" training activities is also interacting socially with coaches and players, reflecting on past mistakes, experiencing success and failures, and, in short, living a full human life. Whether intentionally or by good fortune, this mix of experience may well provide what s/he needs for judgement as well as skill.

If it is true, therefore, that pure training cannot prepare one for judgement and decision, then Answer 6 (an ability to make better decisions) would not be just a special case under Answer 1 (having been better trained). Each is a unique reason for success. Both Hilles and No, for instance, may have equal training in electronic repair--where this refers to everything from knowledge of electronic principles and dexterity in

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soldering to memorization of common troubleshooting procedures and heuristics. Perhaps they even trained on the same equipment, and used the same texts. Still, Hilles may have the edge: Somehow, she can solve problems and devise solutions which elude Mr. No. How could this be possible?

On the one hand, of course, Hilles' comparative success at creative problem solving could be due to a superior "talent"--some kind of native attribute; this case, however, has already been discussed under Answer 2. But there is another possibility. Hilles' preparation may have included another element, missing from No's. For example, No may have worked solely from his "programmed-learning" materials--not leaving anything out, exactly, but never being called on to initiate anything. In contrast, Hilles' teachers may have encouraged students to supplement class activity by building actual circuits from magazines, and experimenting. Perhaps, also, Hilles took optional courses on logic and other sciences, which sometimes give her another perspective on current puzzles.

How far these additional sorts of activities can prepare one for on-the-field judgement and decision making is an open question. For now, I wish only to emphasize my conclusion that Answer 6 is indeed distinct from Answer 1: You can train an individual to respond (to the limits of their talent, confidence, and good fortune) in specific ways to specific problems.

But such training alone does not prepare one for creative response to new circumstances. Some "trainers" are consciously or unconsciously aware of this, and shape their course activities accordingly; some do not.

What all this means for JBM's management, in our experiment, is that their attempt at ensuring equity of test-conditions becomes even more difficult than before. Once again, they could hire based simply on the tested performance score; but, if they seek the "better" worker overall, they must acknowledge that candidates' decision-preparation histories could bias the test results. Yet such acknowledgement would, itself, raise two new problems: (1) How can JBM tell who has the greater "aptitude" for judgement where this judgement is presently lacking? (2) What regimen could be offered to remedy the problem?

Without attempting to answer these questions here, an additional point should be noted. The relation between good judgement and chance is effectively analogous to the relations between talent and chance and good training and chance. Chance, we have seen, can render the effects of talent and training statistical rather than certain. Over time, the more talented and well-trained welder will more often weld metal successfully; but due to chance factors of the environment or the welder's own attention-span, and so on, there may be times when the lesser trained and less

talented welder will outperform the superior one. The case is similar for decision skills: There will be times when a "wisely made" choice leads to failure; but over time, we expect, the wise choice-maker's decisions will lead to success more often than to failure.

Thus, if Hilles performed better than No, not through better understanding of circuits, but because she more wisely budgeted her time and took creative approaches to troubleshooting, then this would be a case where "better decision making" explained her success. Had she made those same decisions, but fell behind No, anyway, due to a run of unusual repair complications, then No would succeed--but due, in his case, to Answer 3 (good fortune) rather than to Answer 6 (better decision making).

ADDITIONAL EXPERIMENTS

So far, I believe, we have identified the major contributors to success in precisely defined tasks (such as outscoring competitors in a performance assessment test). These same elements, we saw, could also determine success in our imagined game-play Utopia (Thought Experiment 1). In real life, however, our circumstances are rarely so clear-cut. The purpose of the following modifications to Experiment 2A is to reveal some additional training issues which can arise. Again, our concern is to identify the possible causes of success in these contexts.

Experiment 2B: Long Term Goals

Experiment 2A was constructed to maximize the analogy between lusory (game play) tasks and real-life, instrumental tasks. What Hilles needed to succeed was as clear-cut as what Achilles needed to win. In the former case, the higher performance score after six weeks (using the formula described previously) would do the job.

By defining success so narrowly, and providing a finite time for its assessment, JBM management could determine without ambiguity who "outperformed" the other. But as we discovered, they cannot be sure whether this better short-term performer will prove the most productive over the long term. Changes of fortune, remedial training and decision preparation, or improved morale, could all affect the future trends.

What if JBM management opt specifically to base their judgement on the two employees' long-term, rather than short-term (i.e. six weeks) capability? How could they proceed?

Any test period, of whatever length, is always shorter than the "long term." On the other hand, ongoing training, evaluation, and human resource development--if they can be afforded--can both remediate initial training disadvantages plus even increase "talent" baselines. This realization can lead to sensitive management, but it also poses real problems for talent-seekers, since some people are

simply going to perform better over the long term than others, with or without ongoing training. This is due, presumably, to a combination of their greater talent, decision skills, and other start-up abilities. So, in spite of the limitations--and dangers--of using short-term testing to assess long term potential, there may often be no alternative but to attempt it.

Experiment 2C: Alternative Perspectives

Besides relying on a short-term assessment of success, the JBM management, in Experiment 2A, also presumed that success was measureable by a uniquely definable criterion. This is, of course, the way game-play success is measured: The criterion for winning can be unambiguously set forth in a rule book. This means there can be no doubt about who "won" (at least in Gatopia, where faulty umpire calls are not possible).

In this same spirit, JBM defined "success" very narrowly: It simply meant outperforming the competitor according to a specific formula. True, this formula was intended to model the "value" of the candidate's repairs, presuming that this is the value one hopes for from a repair technician. But there are two problems with this: (1) How accurate is the model being used? and (2) From whose point of view is this model taken?

Perhaps point (1) has already been covered--when we acknowledged the "chanciness" of life which renders any model an approximation, at best. As a model, JBM's assessment formula is probably as reasonable as any. Presuming good faith in its implementation, it is essentially a matter of chance if, in practice, it turns out to somehow work to someone's advantage.

Point (2), on the other hand, is more contentious. Is a worker's "value" to the company just a function of their own performance at their own work station? How about their contribution to the team effort? Perhaps Hilles maintained her repair speed by raiding colleagues' parts kits instead of following standard procedures; this caused her repair team, as a whole, to have the lower score, compared with No's, although Hilles' personal score was higher.

This brings to light the importance of perspective. Experiment 2A presumed that the value of the individual's own output was to be the sole measure of their success. Now we see that other viewpoints can be just as rationally considered. For example, how much does one contribute to the net performance of the group. Fair measures for this will not be easy to come by; for, now, the test results would seem to be influenced by the varying morales and fortunes of all co-workers, as well as of the competitors themselves, during the assessment period.

Nor is this the only alternative perspective which might be raised: What if repair personnel must deal with customers, and repeat sales are a large portion of business?   Here, it is quite conceivable that an

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employee could be both personally productive and compatible with group productivity, yet unsuitable for the position. Indeed, they could appear to be efficient due to rudely cutting off customers on the phone to resume repair work. This bad public relations would be, by this perspective, an additional, and crucial measure of (non) success.

Clearly, there can be a number of such alternative perspectives on what counts as success. How many depends on who will be measuring the achievement, what their goals are, and what kinds of significant outcomes they can envision. One type of alternative outcome overlaps with Experiment 2B: Are the people under assessment expected to remain doing always what they do now? Or must they also be assessed for promotability to new functions later? For every perspective envisioned, a new model for calculating success must be devised.

Experiment 2D: Moral Problems

The challenge of integrating moral considerations with assessments of success could be taken as a variant of Experiment 2C--namely, as another perspective for making the judgement. Experiment 2D, however, will broaden that perspective.

Suppose--to take an extreme case--that two weeks into the assessment period, Hilles realized she was performing poorly. To recover, she proceeded by the following plan: Once a week, she would shoplift from a large, local department store a supply of products which are "clones" of JBM's. Then, at work, whenever she confronted a difficult repair, she would surreptitiously discard the workings of the faulty unit, and merely replace them with the innards from the stolen new items. By the end of the test period, she therefore _appeared_ to have the higher productivity score.

Now if this seems objectionable, this could not be from a narrow JBM perspective. Her method increases both her own productivity plus the net productivity of her department. In fact, customer relations would improve. Clients would receive, in effect, newer products in exchange for their old ones, so rates of repeat-repairs would diminish.

Still, if JBM knew about the scheme, it would surely object to it; and this would reflect their concerns for the long term (2B) and for a broader perspective (2C). They would wonder, for example, if she could keep this up forever. If not, her productivity would fall later. What if she gets caught? Would JBM be sued? What of their reputation?

But suppose that Hilles has been a successful cheater for her whole life, so that JBM has nothing to fear from these pragmatic concerns. Even so, her scheme still appears objectionable from a moral perspective. Like Glaucon, who recounts the tale of Gyges' ring in Plato's _Republic_, we cannot accept that

an outcome based on scheming and theft is ever appropriate--even if totally successful. (Republic, 359c sq)

This moral intuition, in my view, is quite valid. It is another perspective, if you will, for judging success. But what distinguishes this new case from Experiment 2C is that JBM is now trying to judge from the largest, all-human perspective. Even if hiring Hilles unequivicably benefits JBM, they recognize that "society" (or some other larger unit) would be injured. For this reason alone, they would say she has failed.

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The problem for trainers, and society, is to decide how many perspectives, and how long a view, they must accommodate in judging success. And who is to decide this issue? We have seen a range of factors which can determine "success" in the accomplishment of one's tasks. These range from individual's own talent and potential, to the training and education which prepare the individual to use their gifts effectively and appropriately. The far-reaching role of chance to affect outcomes--not only directly, but also indirectly, as in affecting what teachers or upbringing one happens to experience--has also been explored.

The section on Alternative Experiments emphasized another determiner of success that is often overlooked. From what perspective to do we judge?

Clearly, our own choices, whether to evaluate from the long or short term viewpoint, or from individual or group standpoints, can make a big difference in our assessment. Even more so, when considerations of morality, ecology, and so on, are also brought to bear.

Each of these questions, I suggest, deserves crucial consideration from anyone who would design a meaningful training program. Does your program teach all aspects of what would count as successful performance? Do your evaluation instruments assess the decision-making skills that your graduates may require? Have your programs imparted the sensitivity to the larger social and moral issues that one expects of practitioners in your field? Are your trainees made aware of risk, and equipped with strategies and attitudes to deal with this?

No solutions are posed here to specific training problems. Each course or program designer must make the final decisions of what to include or omit. But the first task is to identify what counts as "successful" in the trainees' exit behaviour. We have seen that this is not at all a simple or single criterion. Yet only the attempt to identify these criteria, and design our programs to reflect them, can hope to produce the successful, "well-trained" contributors whom our societies so urgently require.

1   This notion is discussed at length in Suits' The Grasshopper: Games, Life and Utopia. (Suits 1978)   He expands on the ideas in his article "Games   and   Utopia: Posthumous Reflections." (Suits 1984)

2   Even in Suits' Utopia, one might argue, there remains the potential for engaging in non-directed "play," such as simple jumping up and down for joy.   But as soon as this activity takes on some direction (e.g. "jump up and down ten times"), its new goals become game goals--accomplished just for the sake of the activity.

3   These prerequisites for trainability should not be thought of as "mechanical" attributes in too literal a sense.   Besides such obvious physical factors as size, height and weight, researchers such as Davies (Davies 1945), Johnson (G. Johnson 1960), and Knapp (Knapp 1970) have also considered the effects on trainability of general intelligence, age, gender, and "individual differences."   In the adult education field, other such factors as "cognitive styles" (Squires 1981), "life stages" (Weathersby 1978), and "personality factors" (Merriam 1984) have also been identified as affecting, potentially, trainees' success rates and outcomes.

4   Visual acuity refers, technically, to the resolving power of the eye. That is, it concerns the power of the eye to distinguish detail by resolving stimuli separated in space. (Davson 1982: 104)

5   This conclusion appears to oppose Plato's in his assignment of tasks in the ideal state; but even he would impose starting and retirement ages, presumably.   So, to that extent, his ability assignments are not fixed throughout all life.

6   This reference to "avoidable" depressions is significant.   Suppose two individuals have "the most possible" resilience to "bad fortune," but that some occurrences (say, tornadoes in one's hometown) would form a distraction for anyone. If so, then if an individual's performance suffers from this sort of "unavoidable" depression, we are really dealing with chance outcomes: The result depended on who was unfortunate enough to be confronted with this sort of situation. However, if one competitor succumbs to a difficulty the

other might have weathered, then this is possibly a case of "avoidable depression".

7   Following a summary of several other definitions for decision making, Robert Thierauf concludes, in Effective Management Information Systems, that "decision making is the process by which the decision maker moves from a current position to the position in which he or she wants to be. The essential ingredients in this generalized definition are that the decision maker has several alternatives and that a choice involves a comparison between the comparatives and the evaluation of their outcomes." (Thierauf 1984: 79f)

These same basic ingredients are identified in R.F. Dearden's definition of "choice." Choice, he says, "implies not only that there be real alternatives open to us, but that we know what they are and that we have a range of criteria by which to judge them." (Dearden 1972: 110)

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