We Are Optimizers:

Re-Opening The Case For

Rational Genuine Satisficing

This paper critically reviews the arguments supporting rational genuine satisficing. The deconstructive effort unearths inherent problems with the position in both static and dynamic contexts. Many of these arguments build on Herbert Simon’s canonical arguments surrounding incommensurability and demandingness problems. Optimizing is re-constructed using the principles of instrumental satisficing to answer these charges. The resulting conception is both obviously undemanding and a recognizable response to focused decision making.

How might a house be sold? An optimizer selects the best possible price. A satisficer stops searching when a price is good enough (Slote 1984: 142). This could be instrumental to a generally optimal allocation of limited time and resources. But a genuine satisficer would stop searching even if even if the time saved had no greater purpose, and this is a sound judgement somehow (Weber 2004: 78). Since the difference between the instrumental and genuine satisficer is that the latter scorns optimizing at any level, the rational and genuine satisficing choice must be clearly justified and non-optimific. It seems to me that canonical and recent arguments are just the opposite.

Satisficing’s staunchest advocates claim rationality even when the best is on hand and as easily acquired as foregone. These *static contexts* are scenarios of perfect knowledge; features of the situation or agent are by definition precluded from hindering optimizing (Schmidtz 1995: 27). So advocates argue against the very necessity of optimizing. One tactic is to topple the foundations of rationality which suggest its necessity. Slote tackles objective justifiability, while Hubin and Bass grapple with preference transitivity. Greenspan and Brown’s strategy is to strike at the heart of selecting what you most prefer even if it is equally easy and more rewarding. Their common quest is a justification for satisficing which is independent of the status of optimizing.

Refuting each in turn reveals inherent problems with the general form. If one lowers the benchmark for rationality as Slote does, one wins a label with little normative value. If one relies on some behaviour as Hubin, Bass and Greenspan do, one needs irrevocable proof that such behaviour is both rational and an example of satisficing. A daunting task since satisficing or optimizing is a matter of invisible decision making. If one introduces some supplementary value unique to the satisficing option as Brown does, it becomes optimific in that aspect. Hence, the case for genuine satisficing looks moribund in a static context.

The more plausible arguments deal with genuine satisficing in a *dynamic context*, where the best option has to be sourced, so search costs and instrumental considerations are involved (Schmidtz 1995: 27). Insofar as optimizing fails some requirement of decision making in this context, satisficing is rationally required. Schmidtz and Michalos complain optimum is unreachable because instrumental considerations can always be improved. Another group, including Byron, Bass and Schwartz et al, flunk optimizing because it cannot handle incommensurability and is too complex. The shared view is optimizing is unfeasible.

The case for rational genuine satisficing needs to be re-opened because, contrary to Goldman (2008), the topic has not been put to rest.[[1]](#footnote-1) Although I agree with Goldman that the case “seems clearly false”, the advocates remain to be convinced that it is. Although the rationality of instrumental satisficing is “no longer philosophical news”, its implications have not been fully charted. Consequently, Simon’s canonical charge that optimizing is overly demanding and purely theoretical remains unanswered (1955: 103-104). Central to this view is an excessively narrow conception of optimizing. Schmidtz and Michalos limit themselves to an impossible ideal and the second group to expected utility maximization. Since satisficing can be instrumental to overall optimality, an ultimately optimal decision need not be thoroughly perfect. If I am successful in building a minimally demanding conception of optimizing, a plainly natural response to problems in focus, then we are indeed optimizers. Only then can the worries of Simon and the advocates of satisficing after him be laid to rest.

## Static Context Satisficing

If there are reasons for genuine satisficing that are independent of optimizing’s viability, these reasons should hold even in a static context like Moe selling his house under these conditions. :

A Perfect Sale:

1. There are 5 offers by successive buyers. OP5 is 20% greater than OP4 and OP4 20% greater than OP3 and so on.
2. The time difference (TD) between successive OPs is 0.
3. Price and utility are perfectly proportionate. Nothing outside price contributes utility or disutility, including time.
4. Buyers are committed to making good on their offer at any time.
5. The seller has perfect knowledge of the magnitude and timing of OPs.

One popular objection to choosing OP4 over OP5 states that doing so breaks the *Better Reasons Rule* of rationality (BRR). [[2]](#footnote-2) According to Schmidtz (2004: 39), “*whatever it is in virtue of which we deem that option superior is also a reason for us to choose it*.” In other words, because Moe recognizes that OP4 is good because of its price, he must also recognize that ceteris paribus 20% more is better. Essentially, since OP5 is superior in every way and there are no trade-offs in its selection, choosing OP4 is irrational because every value which recommends OP4 would better recommend OP5.

But this does not answer the contention, which is that Moe does not recognize better reasons to choose OP5 despite recognizing that ceteris paribus 20% more is better. A rationality that equates better reason with better price presupposes satisficing’s irrationality. Additionally, where values are incommensurable the superior option may lack some quality in the inferior. I may consider Paris the best holiday, while acknowledging that Dubai has qualities that Paris lacks. I will deal with incommensurability in the next section. Here my broader point is BRR poorly explicates the irrationality of static context satisficing.

More accurately, BRR indicates that commensurable option sets, at least with respect to that scale, must have a complete and transitive preference ordering. If the scale of commensuration is decision relevant, then where it is concerned:

1. B is preferred to A ↔ B-A = i & i > 0.

Rejecting BRR implies the cardinal superiority of B over A is insufficient reason for preference elsewhere or at other times in the option set.

1. ∃ C: C = B + i. C is not preferred to B → C – B ≤ 0 ↔ i ≤ 0

If the cardinal ordering of preferences is incomplete, C being greater than B does not imply C is greater than A, namely preference intransitivity. Davidson (1976: 250) would say that if cardinal ordering fails transitivity even once, then general rules of cardinal ordering are altogether inapplicable – what could 20 cm mean if it is taller than 15 cm but not 10 cm?[[3]](#footnote-3) While the problem may not be so meta, it still presents a conundrum for Moe. To avoid the contradiction of holding (1) and (2) in selecting OP4, Moe needs to objectively justify his selection without appeal to cardinal ordering.

OP4 is irrational precisely due to objectively unjustifiability. Optimizing is inherently rational, it’s simply the best, whereas satisficing comes with the caveat - justification sold separately. If sound reasoning singled out OP4, less must be insufficient and more unnecessary. To separate the good enough from the unsatisfactory, Moe may appeal to cardinal ordering. That is to cite BRR with regards to OP3 and OP4, but logical consistency would then require preferring OP5 over OP4. We can straightforwardly dismiss features of the situation or agent that preclude selection of OP5. Not only does this flout the spirit of the static context, OP4 becomes king by abdication. One credible strategy is to deny the irrationality of cyclical preferences. Another is to resist the jump from OP4 to OP5 even if one takes BRR to be true. This can be done by introducing another incommensurable value such as friendship with the buyer or some virtue that favours OP4. Notice though that this value does nothing to justify OP4’s on the basis of price. If any of these work, and I think not, then satisficing is objectively justifiable hence rational.

Slote (1989: 21-22) instead counters that satisficing is rational even if objectively unjustifiable. To him justification is necessarily perspective dependent; it depends on the beliefs held. If you believe that moderation is virtuous, satisfaction with modest wealth is justified. If *Money, Money, Money* rings in your ears, then satisfaction with maximal not modest wealth is justified. [[4]](#footnote-4) People without our beliefs lack the context that makes our justification reasonable, so what sense or need is there in justifying our choices.

But if what is reasonable for anyone is just what anyone happens to find reasonable, then rationality is normatively trivial. To be normatively trivial is to endorse whichever option is eventually selected (Hubin 2001: 451). This is what Slote’s examples describe, standards of reasonableness that some individuals happen to hold and hold only for them. They prescribe nothing about what those individuals ought to hold. If one is going blind from overwork, satisfaction with only maximal wealth is inadvisable regardless of one’s disposition towards greed. From Slote’s position this would still be rational though, since it merely consists of whatever one finds reasonable. Satisficing too would be rational solely because any selection is rational.

The less destructive strategy of Hubin and Bass challenges the transitivity and complete ordering of preferences. According to Hubin (2001, 450), such rules irrationalize cyclical preferences. He cites the case of Arnold at the All-You-Can-Enjoy Spa. Arnold initially prefers the Jacuzzi, then the sauna, then the pool and finally back to the Jacuzzi. Superficially there is nothing to differentiate Arnold’s behaviour from someone with inconsistent preferences like Moe who first prefers OP5 to OP4 and OP4 to OP3 then OP3 to OP5. Since Arnold is not irrational for cycling through the all-you-can-enjoy-spa, why is Moe irrational for having similarly cyclical preferences?

The critical difference between Arnold and Moe is satisfaction derived over time. On his day out Arnold relaxed in the Jacuzzi, sweated in the sauna, swam a few laps, and retired in the Jacuzzi. On the same day, Moe flip flopped between OP5, OP4 and OP3. While Arnold thoroughly enjoyed each change, probably cycling to avoid diminishing returns. Moe received only the anguish of indecision. Furthermore, if he finally sold at OP4 he deliberately deprived himself of 20% greater satisfaction. Preference transitivity allows preferences cycling over time, but not simultaneously circular preferences. What rational decision making strategy would have helped Arnold, if he simultaneously preferred Jacuzzi over sauna and sauna over pool but pool over Jacuzzi. Every option frustrates his preferences. If preferences are supposed to motivate choice, his preferences motivate non-choice or random choice.

Perhaps, as Hansson suggests, in thus attacking transitivity I am imposing a problem of choice guiding preferences onto a pairwise preference scenario. For example, one may prefer Channel A to B on account of A’s better news programme. But one favours B over C for music programmes and finally C over A for sports. The pairwise preferences are unproblematic until they are expected to guide choice over {A,B,C} (2007: 20-21). If this distinction indeed exists, then pairwise comparisons cannot be expected to completely order preferences.

The above statement seems intuitively right but not due to any distinction between pairwise comparison and choice guidance. Where I depart from Hansson is criterial constancy. Hansson claims that the same criterion of overall quality is applicable across all three pairwise comparisons, while marking the differences in justification down to differences in sub-criteria. For instance, never having watched sports on B, sports are irrelevant except in comparison between A and C. (ibid.) Let overall quality function q consist of sub-criteria scores for news (n), music (m) and sports (s), where n1 > n2. Under Hansson’s single relevant criterion approach:

q(A,B) = A : qA = {n1} & qB = {n2}

q(B,C) = B : qB = {m1} & qC = {m2}

q(C,D) = C : qC = {s1} & qA = {s2}

Instead, if the approach is three relevant criteria:

qA = {n1, 0, s2} ; qB = {n2, m1, 0} ; qC = {0, m2, S1}

Notice that the other sub-criteria disappear under Hansson’s approach, so there are effectively three different single criterion choices. Under the three criteria approach, the incommensurability of n, m and s explains the deadlock. No criterion cuts across all three, whereas each pairwise choice shares one and is soluble if the divergent criterion is ignored. Else, if the divergent criterion stays relevant and incommensurable then the pairwise choices are insoluble as well. So choice {A,B} is really between channels on the basis of news programs ceteris paribus and can be extended to other channels qua news programs. On the other hand, choice {A,B,C} is between channels all things considered. What the example intuits is each pairwise comparison can be a distinct decision problem despite the semblance of belonging to a superset.[[5]](#footnote-5)

One could still object as Bass does that complete preference ordering is unnecessary for rational choice. He cites the case of dieting George. George’s diet involves a preference not to snack. But when temptation calls, he prefers to snack. Since preference satisfaction is reasonable, succumbing to temptation is reasonable. A plan which prohibits reasonable action must be unreasonable. Yet, dieting is reasonable healthy behaviour. Therefore, to Bass accepting a rule of complete preference ordering requires abandoning plans involving temptation as irrational or making “provision that every step would be preferred to its alternatives when it would have to be taken.” (Bass 2005: 9-10)

First, George’s diet plan is perfectly compatible with a complete preference ordering. Following Frankfurt (1971: 7), let us suppose George has a simple or first order preference to diet (Dp1). Since George knows Dp1 necessitates not snacking (⌐S): Dp1 ⇔ ⌐Sp1. George also has a prior preference for snacking (Sp1). But he must want to get rid of it, since he wills Dp1 ⇔ ⌐Sp1. Moreover, temptation’s negative connotation, suggests he would rather not snack if he can help it. That is he has a second order preference against snacking (p2 ⇔ ⌐Sp1 ). [[6]](#footnote-6) Together we have [(Dp1 ⇔ ⌐Sp1) & Sp1 & (p2 ⇔ ⌐Sp1)] ⇒ ⌐Sp1. George’s diet plan is preference consistent. It is likely to succeed. The parallel story has George hating his diet compulsion. In this case: [p2 ⇔ ⌐Dp1 ⇔ ⌐(⌐Sp1)]. He will snack rather than diet. One can imagine both the George who wishes his weakness for snacks would not foil his diet and the George who wishes his compulsion to diet would not spoil his snacking. Thus, plans involving temptation are just cases where two first order preferences conflict forcing a second order preference to adjudicate between them.

Second, a rational plan should provide for every *necessary* step being preferred to its alternatives, at least when those plans were made. The reverse is planning to do something which involves what one dislikes and does not think ought to be liked. Such mentality resembles George wanting D where D ⇔ ⌐S and wanting S and having no higher order preference about either want. In willing D and maintaining preference for S, he wills S and ⌐S. If willing a contradiction reflects unsound judgement then as far as dieting is concerned George is irrational. Since people are allowed instances of irrationality, this is an acceptable explanation for plausible behaviour. Before concluding from some behaviour the rationality of genuine satisficing, the advocates have to prove the mentality behind it is certainly rational and definitely satisficing.

Even if one has clear preferences, Greenspan and Brown believes it is still rational to forego maximizing. Greenspan (2009: 308) cites resting content as an example. She was holidaying on the Italian Riviera when offered Rome. Despite the hassle, she would be happier in Rome, but rests content in Riviera. She labels this bird-in-hand satisficing to capture Riviera’s current satisfaction in contrast to Rome’s delayed enjoyment. Intuitively, her behaviour is reasonable, so there must be something acceptable about bird-in-hand satisficing.

Just as with Hubin’s and Bass’s examples, Riviera/Rome can be re-interpreted as optimizing. Lemma: A holiday’s utility is not exhausted upon arrival. Else we would leave upon reaching.

Assumptions and Definitions:

1. Each day in Rome has greater utility. Let Rome be worth 12 utils/day.
2. Riviera is good enough. This means not far from the best, here Rome. Let Riviera be worth 10 utils/day.
3. Let there be 7 days of holiday left. Let the Riviera-Rome journey take 1 day.
4. Hassle has minor disutility. Let the hassle cost 2 utils.
5. Delayed enjoyment has zero disutility.

Travelling to Rome is worth 72 utils minus the hassle or equal to Riviera. Therefore, though she would be happier in Rome, staying in Riviera is not satisficing. How Riviera’s satisficing or optimizing status hinges on 1 util of hassle more or less, illustrates how satisficing or optimizing is a matter of the decision logic not the option selected.

Greenspan would probably object to my re-interpretation. One way is to insist like Brown does that the moderation is strictly non-instrumental. Resting content in Riviera is a case of genuine satisficing, it is not optimizing at any level. Brown (1992, 3) justifies the genuine satisficing in terms of a second order desire about how to pursue the first order desire of holidaying, which is in turn due to a second order value that cannot be fulfilled by holiday satisfaction. Since the second order value is completely unrelated to first order value, staying in Riviera would be genuine satisficing in terms of holiday satisfaction.

Or one could say staying in Riviera is optimizing in terms of second order value. While Rivieradoes not optimize within both first and second order value systems, the systems conflict such that no dually optimal option exists. There remains the question of optimizing between value systems though. Value systems could be incomparable, that is, there is no way to tell if one is better, worse or equal to the other. If they are, there is no way to rationally select between the two. In Brown’s terms, an option with maximal first order value and insufficient second order value would be the paragon of immoderateness. Hence, second order value must be more important than first order value. Therefore, one can object that Brownian moderation in maximizing second order value actually optimizes both between and within value systems.

Eventually, advocates of satisficing that ask why optimize even when it is as easy as satisficing must answer why not. Unless the rationale behind the genuinely satisficing choice is asserted as a brute fact, there must be some good reason like resting content or moderation.[[7]](#footnote-7) Something cannot be good unless it has value. For this value to be a reason for choosing the satisficing option, it must account for the full difference in value between satisficing and optimal. Else some other reason is needed to account for the remainder. If the difference is fully accounted for then the initially satisficing choice becomes optimific. If this value is attributed in a different incommensurable value system then one is forced to choose between value systems but within the value system optimizing remains possible. Fundamentally, the emphasis falls on some supplementary or competing value that the superficially optimizing option cannot or insufficiently provides. This elevates the status of the satisficing option to equal or better than the ostensibly optimizing option.

## Dynamic Context Satisficing

If Moe were selling his house in reality, the situation would be more like:

 A Real Sale

1. He would receive prices one after another rather than having them all in view at once, so the TD between successive OPs is not zero. This is *sequential option discovery*.
2. The time difference has opportunity cost (CTD).
3. Because of sequential option discovery, even if Moe has a valuation in mind he cannot tell if or when it will be matched. This is the *uncertainty problem*.

Thus the principal difference between static and dynamic contexts is sequential option discovery, which results in the uncertainty problem.

One solution to the uncertainty problem is optimizing within bounds. Moe picks a stop point from one of our two variables, time and price. Assume he chooses to stop waiting at time *t*. Upon reaching *t,* he could choose from OP1 to OP*t.* The situation effectively becomes a static context, since Moe is choosing among pre-discovered options. Assume he chooses to stop waiting upon reaching OP*x* instead. After every OP received Moe will ask whether OP*x*is still worth the wait*.* At time *n*, if OP*x – CTD(n-x) ≤* OP*n* then OP*n* is more optimal than OP*x*. He may also use expected utility calculus to deal with the uncertainty surrounding whether OP*x* will arrive at all. Let his probability assessment of OP*x*’s arrival be PA*x*. At *n,* if PA*n*.OP*n* ≥ PA*x*.OP*x*, again OP*n* is more optimal than OP*x*. These are optimizing responses to sequential option discovery and uncertainty.

These responses can be problematic. There is the *boundary optimization problem*. Can we consider a decision optimal if the boundaries of the decision are not optimized? Such boundaries include when or where to stop the decision making process, what are relevant options and how to evaluate them. There are the problems of *incommensurability* and *incomparability*. Can we optimize if the variables cannot be measured on the same scale or compared at all? For example, if Moe cannot put a price tag on his time. There is the *demandingness problem*. Is optimization too difficult? Maybe Moe cannot calculate expected utility or finds optimizing too tedious. If these problems are insurmountable, one cannot optimize at any level and must non-instrumentally satisfice.

Advocates of satisficing claim that solving the *boundary optimization problem* requires an infinitely improving computation. Schmidtz (2004: 34-36) argues that our limited resources and multiple goals justify fixing a stop point to decision making. This sub-decision’s outcome is instrumental to the optimality of the greater decision making process, so it has to be optimized for truly optimal decision making. The amount of information considered and the stop point for this instrumental decision must also be optimally set, which implies optimizing the sub-decisions instrumental to the instrumental decision and so on ad infinitum. Michalos’ version states that the true optimum is selected from the optimal set of options, but deciding the optimal set is its own optimizing decision (1973: 229-230). Essentially, these arguments from finitude say that another iteration of decision making, another layer of information or another set of options, always improves the decision. Optimizing can be characterized as a decision chain that can be extended and improved infinitely – an infinitely improving computation.

The same could be said for satisficing. A satisfactory option can only be selected from a satisfactory set. Deciding the satisfactory set requires its own set, which must also be chosen from a satisfactory set and so on. It is a wonder how *final decisions*, decisions that end the decision chain can be made, because an infinite chain of *antecedent decisions* is conceivable for any decision. Even a quintessentially static context can hide antecedent decisions. When selecting from a French restaurant’s menu, our diner’s decision on whether to google what a Bouillabaisse is determines how informed he wants to be in making his decision. He could also turn dinner into a dynamic context by looking at other restaurants. In this case, he decided that the relevant dinner options should be expanded beyond the restaurant’s menu. Hypothetically, all decisions can be characterized as infinite decision chains.

In reality, non-decisions and split-second decisions help break the chain. A non-decision is to accept without deliberation (Schmidtz 2004: 39). At the antecedent level, it is not to deliberate on the boundaries of the decision. Just as one often takes as given that one's currently owned footwear form the relevant set of options for a soirée. This establishes a base above which there are finite steps to deciding. At the final level, it is to select without deliberation. One might slip unthinkingly into flips flops for a trip to the beach. In this manner, the infinite decision chain is broken, albeit non-deliberately.

The advocates could nevertheless object that unlike optimizing a satisficing decision process can break the infinite decision chain at any point and declare that threshold good enough. Actually, breaking the infinitely improving computation at any point is optimific. Any decision chain is infinitely improving because considering another iteration of antecedent decisions will improve it. Because it is infinitely improving, its last iteration is the optimum but an infinite chain has no last iteration. Imagine an infinite series of OPs, each subsequent price is 20% greater and received at intervals of TD.[[8]](#footnote-8) No OP is optimal because the seller could always wait TD hours for a better price. To help select a stop point, Schmidtz roped in a slightly more significant date, *d*. This gives OP*d* greater marginal value relative to OPd-1 than all other OPs relative to their predecessors. Otherwise no offer (OPa) has greater marginal value to any predecessor (OPa-n) than any other offer (OPb) to its equidistant predecessor (OPb-n). In other words, for any OP = X there is an OP’ ≥ X.OP and there are infinitely many such pairs no matter what function is used to relate them. If your justification for satisficing is because no choice is optimal then you recognize the relative equality of each option. Effectively, you are optimizing. Hence, optimizing does not involve an infinitely improving computation.

In decision terms, if some iteration improves the decision more than all other iterations than it would be optimal to stop there. Else it is optimific to stop anywhere. However, one may not have access to the marginal values for all iterations. In this case, the optimal stop point will depend on evidence of any pattern.

Pattern 1 = {1, 2, 3, 5, 6, 7, 8, 13...∞}

Given any ordered progression like Pattern 1, it would be optimal to stop after any spikes in marginal value. Every fourth iteration in this pattern. If the pattern is thought to hold indefinitely, any fourth iteration will suffice because there are infinitely many sets of four iterations.[[9]](#footnote-9) If the pattern is believed not to hold, then the last spike is optimal.

Pattern 2 = {2,37,6,8,76,4,1,5,1,3,10...∞}

Given expectation of randomness, one has no grounds for predicting future spikes. There are innumerably many possible pairs of OP with greater marginal value. For any OPn – OPn-1 = X there is a possible OPy – OPy-1 = X(OPn – OPn-1 ). Every option is as optimific as any other on marginal value terms. Therefore, access to the marginal value of all iterations is not required for optimizing.

Seeking the *ideal optimum* at the end of the infinite decision chain is not *humanly optimific*. We have multiple goals to achieve in finite time, to spend on any an amount of time disproportionate to its importance is suboptimal overall. Schmidtz (2004: 33) would call this *globally suboptimal*. It is also *locally suboptimal* or suboptimal for that particular goal to agonize for a lifetime on the decision boundaries without finally deciding. For example, one could spend a lifetime deciding the optimal goal resource distribution and the optimal goal resource distribution for this sub-decision and sub-sub-decisions ad infinitum. Pursuing the impossible displays neither sound nor optimal judgement.

Because satisficing locally can be optimizing globally, the humanly optimal decision requires only good enough decision boundaries. As seen, any decision (RS) can be characterized as a chain comprising at least two decisions – an antecedent decision (R) “what is the relevant set of options” and a final decision (S) “which of the relevant options to select”. R ideally requires every moment allocated to RS, but if R is ideally optimized then S is never made. After a threshold the global optimum of RS competes with the local optimum of R, so R is a *sacrificial goal*.[[10]](#footnote-10) Once R is good enough, abandoning further optimization improves the optimality of RS. Whereas when deciding S, no further decisions in its chain compete with it, so the global optimum of RS coincides with the local optimum of S. S is a *focal goal* to be optimized. If the following are true

1. Breaking the infinite chain of decisions at any point is optimific
2. Instrumentally satisficing the antecedent decisions optimize the decision overall

A decision is humanly optimal so long as the final decision is optimizing. In other words, optimizing within human bounds only requires that we select the best from whatever options we arbitrarily find good enough rather than from the optimal set.

Granted, antecedent or final is a matter of focus. When a final decision is sufficiently important, its antecedent decisions may be focal points. For example, because Curly promised a huge sum, Moe may ask “how long do I wait for Curly’s offer” (HL). This is initially antecedent to “what price do I select” (WP). But for hypothetical purposes, he suspends consideration of other offers. Moe assumes Curly’s price is right. This hypothetical answer to WP severs the decision chain linkage with HL.[[11]](#footnote-11) HL becomes a final decision to be optimized until his focus switches back. It is not that each link of the decision chain must be optimized. Sometimes an antecedent question is important enough to be treated as a distinct decision with its own chain. Other times we are aware that the crux is the final decision and antecedent questions are merely necessary. If this is true, whatever decision is our conscious focus is optimizing.

This is provided that optimizing is possible. It is claimed that incommensurability precludes objective determination of the best and therefore optimization. To borrow an example from Richardson (2004: 112), a highway engineer is selecting from the following road paving materials:

|  |  |
| --- | --- |
| Value | Value specific ranking (1 = best) |
|   | **Porous Asphalt** | **Hot-rolled asphalt** | **Concrete** |
| **Drainage** | 1 | 2 | 3 |
| **Ease of paving** | 3 | 1 | 2 |
| **Durability** | 3 | 2 | 1 |

The values are incommensurable because no two admit to common measure. A drainage scale measures neither durability nor ease. They are also incomparable if there is no decision relevant sense in which one is more, less or equally important than another (Byron 2005: 314). Porous asphalt’s superior drainage cannot be judged as more salient than its inferior ease and durability. Optimization axiomatically requires judgement of the best. Whereas satisficing being less demanding is open to strategies that do not require direct option comparison. Hence, value incommensurability and incomparability could preclude optimizing and justify satisficing.

Removing either incommensurability or incomparability would be sufficient for optimization. Should options submit to fundamental measure, comparison would be simple mathematics. Even if they do not, if incomparability is removed qua personal decision making, there is conceptual space for intuitive or indirect comparison.

Of the two, incommensurability is more resilient, because it relies only on the observation that people experience difficulty choosing between options that are good in different ways. Contrary to Ellis (2008: 32-33), the main argument for incommensurability does not require the claim that our values demand unqualified attention. An unqualified value demands that we maximize it and nothing else. Ellis’ offers an alternative characterization of a value as a ceteris paribus endorsement of a particular outcome insofar as that outcome has more of it than other options (2008: 35). However, adopting this characterization does not resolve incommensurability. Sometimes, like our highway example, each value endorses a different option. In these scenarios, each option is good in a different way. Pushing incommensurability is just positing the lack of common measure as the underlying explanation for this feeling. This feeling, henceforth *subjective incommensurability*, is the decision making problem.

Because subjective incommensurability is sufficient, the supposition of a fundamental intrinsic value (FIV) is insufficient to remove incommensurability as a decision making problem. Recently, KIocksiem (2011) put forth Moorean intrinsic value as a solution to incommensurability. Moore’s account states that there is a moral FIV – good simplicter (GS). Since all values are essentially bearers of GS, optimization simply involves distilling options into quantities of GS. This approach has several problems. The most deep-seated is the existence of FIV. Proponents of incommensurability argue exactly the opposite, so insisting FIV exists is not refuting their argument. It is my word against yours. I will not investigate FIV’s existence here because subjective incommensurability still arises if options are difficult to distil into amounts of FIV. To refute subjective incommensurability, Klocksiem must prove that values can be reliably boiled down to quantities of GS such that it is easy to objectively answer “does friendship have more GS than justice.” If the quantity of GS in options is not easily and consistently seen, it does not solve subjective incommensurability. If GS is easily accessible, it would always be maximized directly. Yet, people do pursue the values themselves. Either the values contain only GS or they do not. If they do, then maximize GS. Else, if the values contain some other FIV (GS2) that motivates their pursuit aside from their portion of GS, then GS2 must be incommensurable with GS. If GS2 and GS were commensurable, whatever they commensurate into would be the true FIV and we would ask of it the same questions as GS. Thus, FIV’s existence is insufficient to defeat subjective incommensurability.

Correspondingly, even if values were *objectively incomparable*, they may be *subjectively comparable*. The former means no value is universally better, worse or equally important. The latter means a value can be more, less or equally important to me. Our beliefs shape our value rankings. An atheist would favour freedom over piety. These ranking need not be cardinal or universal but just ordinal and situational, based on our beliefs within a particular context. For example, one can simultaneously believe that friendship and justice are generally incomparable and that picking a friend in a ten pound raffle is a minor travesty. Similarly, though one valued friendship more in the raffle scenario, one may prioritize justice when adjudicating the national lottery. Regardless of whether we do so intuitively or through complex maxims, so long as personal beliefs can affect situational value assessments, values may be subjectively comparable.[[12]](#footnote-12)

Subjective comparability is sufficient for optimization. Values could be weighed quasi-objectively using complex models. As Richardson notes (2004: 119), highway engineering experts may have published on the suitability of various criteria and options for different scenarios. The following is a simplified weighted score that the engineer might arrive at. [[13]](#footnote-13)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Value | Weight | **Porous Asphalt** | **Hot-rolled asphalt** | **Concrete** |
| **Drainage** | **0.2** | 0.75 | 0.65 | 0.55 |
| **Ease of paving** | **0.1** | 0.55 | 0.75 | 0.65 |
| **Durability** | **0.7** | 0.55 | 0.65 | 0.75 |
| **Overall** |  | 0.59 | 0.66 | 0.70 |

They could also be weighed completely intuitively. For instance, a dress designer may intuitively prioritize different aesthetic elements and assess how well different materials exhibit them. Although such processes are imperfect or intuitive, they are still classifiable as optimizing.

Sometimes values cannot be weighed and options cannot be scored. One might consider a pork knuckle tasty but detrimental to health. As long as one can select between the two values within that choice context, optimization is still possible. If one can decide whether health or gustatory pleasure is more personally salient specifically with regards to that second pork knuckle, a situationally optimal choice is still possible. Where one’s priorities are clear, the best option will be clear as well. [[14]](#footnote-14)

Where the best option is completely unclear, satisficing is precluded as well. Subjective incomparability implies we cannot tell which option is better, worse or whether they are equally good even just for ourselves within that choice context. Resultantly, there is no optimum to be foregone. No option is good enough either. To say one option is good enough while the others are not entails its superiority. Since that which is better than the rest is axiomatically best, this is optimizing. Unless in labelling any option good enough all that is meant is that every option is good enough, which means every option is equally good. Because options are completely incomparable, they cannot have equal amounts of goodness. Rather, all the options are equally optimific in this choice context. Therefore, where no optimum is possible, anything good enough is optimific. A corollary is that satisficing requires an optimum to forego. Otherwise, as a concept that is definitively opposed to optimizing, it loses its raison d’être.

It may nonetheless be objected that subjectively comparing incommensurable options cannot deliver ideally optimal results, but nothing can. The highway engineer probably cannot tell if 20:10:70, 21:11:68 or 22:12:67 more accurately balances the three values. Maybe in modelling his decision he needs to consider more details, such as aesthetic, traffic load, budget and so on. The accuracy of his model can always be improved one degree or detail further. Bass (2005: 2-3) claims optimizing involves infinite precision in this sense. The truly best option trumps its competitors in all the infinitely many possible situations and criteria.

The truly best option in Bass’ conception is again the ideally optimal. Each extra degree of commensuration accuracy or possible situation considered incrementally improves the decision. Hence, this is in fact an infinitely improving computation, where any stop point that is good enough is also optimific.[[15]](#footnote-15) Conversely, abandoning commensuration entirely is often more suboptimal. Imagine a world where highways were built only for durability or drainage but never both. Even where attempting commensuration is not a prima facie requirement of an optimal outcome, improvement is always possible. For instance, while rejecting a second pork knuckle on health grounds, one could simultaneously regret the non-existence of a healthy and tasty pork knuckle. If it exists, it could be healthier and tastier. Eventually it should lay golden eggs. Clearly, the optimal that incommensurability precludes is the ideally optimal. Taking our modelling of or choices between incommensurable values as antecedent decisions to be instrumentally satisficed, the final decision could still be optimizing on our terms.

Opponents could still object that even optimizing on the final decision would be too demanding. Their arguments typically follow Simon’s structure.

P1. Optimization requires complete option ranking by expected payoff.

P2. There is no probability distribution of all possible outcomes to base our expectations on. (Simon 1955: 117-118).

P3. Expected utility calculations are too complex for real decision making. (Simon 1955: 103-104).

C1. By P2 and P3, we cannot perform expected utility calculus.

P4. Options cannot be completed ranked because they cannot be compared in every aspect for all purposes (Bass 2005: 2-3).[[16]](#footnote-16)

C2. By P1, C1 and P4, we cannot optimize.

Schwartz et al (2011: 212-213) give a version of the above. They assert that radical uncertainty is the principal decision making problem. A situation is radically uncertain if you cannot measure the probability of any outcome. Since expected utility calculus is rendered useless for outcome selection, we should satisfice the outcome and maximize robustness instead. Maximizing robustness means to maximize the circumstances under which a satisfactory outcome can be maintained. The example given is an aspiring biologist choosing between Brown and Swarthmore universities. Brown is more robust as it has three biologists versus Swarthmore’s one, so the student’s interests and Brown’s faculty composition can change more without threatening a satisfactory biology education (Schwartz et al2011: 217). [[17]](#footnote-17) Since on their account robust satisficing does not require a probability distribution, it handles radical uncertainty better than optimizing.

Sniedovich (2007: 118-120) has shown that robust satisficing is minimax optimizing. [[18]](#footnote-18) In a radically uncertain situation, circumstances have equal likelihood of worsening as of maintaining or improving. A strategy that ignores this and selects an option that promises the highest utility only under the best of circumstances and unsatisfactory results when circumstances are not so fortuitous would likely deliver a suboptimal outcome. In contrast, a strategy that maximizes payoff even in the worst case scenario is more likely to actually deliver a maximal payoff. This robust optimizing strategy is called minimax, whereas a strategy that optimistically aims for the highest payoff in the best case scenario is called maximax.

Minimax also shows that complete option ranking is not required for optimization. It provides an alternative explanation to Henden’s example of genuine satisficing. Paris is a familiar but lukewarm holiday destination, whereas Dubai, Barcelona and Johannesburg are relatively unknown. Thirst for fresh adventure suggests one of the three must trump Paris, but which one? The following table captures the utility estimates:

|  |  |  |
| --- | --- | --- |
| Destination | Lower range | Higher range |
| Paris | 4 | 6 |
| Dubai, Barcelona or Johannesburg | 2 | 9 |

Henden describes this as a case of de dicto genuine satisficing, because the agent knows de dicto that a location other than Paris is the best but does not de re know which location. Hence, the best is foregone on grounds of familiarity. (2007: 350-351) Yet, Paris does maximize utility but in the worst case scenario, the very definition of minimax optimization. Alternatively, if Dubai, Barcelona or Johannesburg were equal to or better than Paris even in the worst case, picking any can never be worse than Paris. Hence, Henden’s example of incomplete option ranking has an optimizing solution. Therefore, P1 is false.

Assuming the salience of a situational feature is proportionate to its influence on the outcome, the strategy that best responds to the most salient feature of a situation would be most likely to deliver the best outcome. It would be optimizing. A decision making strategy selects between outcomes, it is neither innately satisficing nor optimizing. If the outcome selected is optimal in one instance, it is accurately described as optimizing in that instance, even if it is generally satisficing elsewhere. This is true unless we presuppose some definition of optimizing. This requires proof that all possible strategies are suboptimal in some way that does not presume any notion of optimality. Hence, even if P2 or C1 were true, whichever strategy best responds to the situation’s challenges would simply be optimizing, therefore C2 is false.

There is no reason to think that satisficing strategies are inherently less demanding. Simon’s strategy (1955: 107), for instance, requires us to walk through the consequences of each of our initial options and the options that follow to pick the initial option for which all possible outcomes at the cut-off point are satisfactory. Simon’s chessboard example demonstrates how demanding this actually is. Here is an actual chess game just before move 20 white. The real game was won at move 36, so let that be the cut-off point.[[19]](#footnote-19)



At move 20, White has 10 moveable pieces of which the knight alone has 8 possible moves, so White’s initial move set (M20) comprises 45 moves. Assume White’s actual move (m20) is rook at D1 capturing knight at D7. Black has 10 movable pieces to respond with for a move set (M21) of 29 moves. Assume Black queen captures rook at D7, White has 41 possible responses. There are over 50,000 possible routes from M20 to M22. Only after walking through M20 to M36 can our player go back and pick out the actual m20 for which the corresponding set of possible moves at turn 36 contains only forced mate moves.[[20]](#footnote-20) This shows that deliberately avoiding expected utility calculus may not be less demanding.

Simon’s strategy also shows that optimizing may actually decrease demandingness. If the player is willing to settle for stalemate, out of the 50,000 possible routes between M20 and M22 he would have to consider all those that lead to stalemate as well as checkmate. Conversely, if the player discards all the moves leading to stalemate, he has to calculate fewer possible routes. Likewise, aiming to satisfice or optimize is irrelevant for expected utility calculus, so long as one can do the calculus, one can choose either satisfactory or best. If one cannot, one can choose neither.

And there is no proof that we cannot. If utility and probability assessments were impossible, it would be a stretch to call most decisions rational. A graduating philosopher who chances first upon ditch digging would have no recourse to the higher utility of academia. Neither can he use probability to avoid playing the lottery professionally. Contrary to Michalos (1973: 238), using cost-benefit analysis to select the first option past a threshold cannot escape these outcomes either.[[21]](#footnote-21) There is no basis for a reasonably high threshold without knowing what constitutes high per se. Yet, people do make decisions based on assessments and comparisons involving notions of satisfactory and best. It is easy to forget that expected utility calculus models such decision making processes and not the other way around. The model could be a complicated and imperfect expression of a simple phenomenon.[[22]](#footnote-22) Or the model may express a practiced but unattained perfection. Either way there is no reason to accept P3.

P1 and P4 are also false. Situational criteria may predefine what is best without reference to other options, just as the rules of chess entail checkmate’s optimality. Checklists function identically. When people say “he or she is best for me” they often mean better than good enough, did not completely rank all possible options or perform complex calculus. Probably, the optimal partner is defined with certain characteristics. No complex calculus or in every aspect for all purposes comparison is required to systematically eliminate options without the relevant characteristics. Because simple strategies are available, optimizing need not require complete option ranking or be too demanding.

It is even harder for optimizing to be too demanding when the rules of optimality are self-determined. Where what is best is not predefined, we can determine and amend the criteria. If the checklist is too rigid, criteria can be removed until unsatisfactory options become optimal. For example, if one realizes that stipulated requirements for a new hire are too stringent. If too lenient, criteria can be added instead. For instance, a search committee might decide that publication quality should decide between candidates with equally good recommendations and writing samples. Even options may be pliable. The highway engineer may commission the production of a synthetic material combining the strengths of existing materials. At other times, where no decision making strategy optimally responds to the situational features, boycotting may be the optimal response. People often respond to moral dilemmas in this manner. If officiating the company raffle forces a choice between justice and friendship, one may quit the post instead. Because we can optimize in many ways, optimizing is only as demanding as we want it to be.

## Conclusion

It is telling that the canonical and recent arguments for genuine satisficing largely ignore satisficing’s benefits. Centring on these benefits would invoke some supplementary value on satisficing’s side, which would make the initially satisficing choice equal or better than the initially optimizing choice. Instead, they centre on attacking optimizing or our rational capacities. Satisficing is chosen due to recognition of optimizing’s difficulty and of satisficing as the best alternative. Although satisficing on such grounds is not instrumental in the sense of making trade-offs in value, it is still instrumental in the sense that it is an optimal response to the proposed difficulties. Furthermore, even if these difficulties prevent agents from achieving ideal optima, their decision making mentalities may nonetheless be optimizing. This humble form of optimizing defeats satisficing chosen on account of optimizing’s demise.

The usual comeback is that people do not operate with such optimizing mentalities. Because satisficing or optimizing is a matter of how thought processes are interpreted. It is easy to transform apparently genuine satisficing behaviour into optimizing at a higher level by “attributing to people calculations they often do not perform (and do not have the information to perform) and intentions they often do not have” (Schmidtz 2004: 33). Equally, the satisficing story relies on denying people calculations that they often do perform with information and intention they often do have. Many enjoy the process of making optimific decisions. Bargain hunters enjoy calculating prices and comparing options for the best deal. The advocate of genuine satisficing who wants to argue from behaviour has to first prove that said behaviour cannot be optimizing and must be rational. Given the flexibility of interpretation, this is a grim endeavour.

Perhaps, it is also misguided. If rational has normative value, asserting the rationality of sacrifices that are entirely non-instrumental to furtherance at any other level praises poor decision making. Even when the sacrifices are instrumental to a greater good, it is in light of the greater good that the sacrifices are praise worthy. A programmer has to cut the number of code tests at some arbitrary point but the act of stopping is unremarkable. It is only laudable in the context of timely software delivery. The techniques are codifiable only if the point was methodically selected for some outstanding qualities rather than arbitrary. That is, if the point is in some way optimific. Although people must satisfice because of multiple goals and limited time, to highlight the practice of satisficing in itself is to lose the greater context. If decision theory aims to illuminate the conditions of good decision making, then the different ways of achieving optimific outcomes must be regular curriculum. Thus, given a choice between an instrumental satisficing and subtle optimizing characterization, decision theorists should say we are optimizers.

**REFERENCES**

Bass, R.. 2005. Maximizing, Satisficing and the Normative Distinction between Means and Ends. Paper presented at the 32nd Value Inquiry Conference, Louisiana State University, Baton Rouge, Louisiana, April 8-10, 2005: 9-10.

Brown, G. 1992. Satisficing rationality: In praise of folly. *The Journal of Value Inquiry* 26: 261-269.

Byron, M. 2005. Simon’s revenge: or, incommensurability and satisficing. *Analysis* 65: 311-315.

Davidson, D. 1976. Hempel on Explaining Action. *Erkenntnis* 10: 239-253.

Ellis, S. 2008. The main argument for value incommensurability (and why it fails). *The Southern Journal of Philosophy* 46: 27-43.

Frankfurt, H. G. 1971. Freedom of the Will and the Concept of a Person. *The Journal of Philosophy* 68: 5-20.

Goldman, A. 2008. Review of *Satisficing and Maximizing*, ed. M. Byron. *Utilitas* 20: 254-55.

Greenspan, P. 2009. Resting Content: Sensible Satisficing. *American Philosophical Quarterly* 46: 305-317.

Hansson, S. O. 2007. *The Structure of Values and Norms*. New York: Cambridge University Press.

Henden, E. 2007. Is Genuine Satisficing Rational. *Ethical Theory and Moral Practice* 10: 339-352.

Hubin, D. C. 2001. The Groundless Normativity of Instrumental Rationality. *The Journal of Philosophy* 98: 445-468

Klocksiem, J. 2011. Moorean pluralism as a solution to the incommensurability problem. *Philosophical Studies* 153: 335-349.

Michalos, A. C. 1973. Rationality between the Maximizers and the Satisficers. *Policy Sciences* 4: 229-244.

Narveson, J. 2004. Maxificing: Life on a Budget; or if you would Maximize, then Satisfice! In *Satisficing and Maximizing*, ed. M. Byron, 59-70. Cambridge: Cambridge University Press.

Richardson, H. S. 2004. Satisficing: Not good enough. In *Satisficing and Maximizing,* ed. M. Byron, 106-130. Cambridge: Cambridge University Press.

Schmidtz, D. 1995. *Rational Choice and Moral Agency*. Princeton, N.J.: Princeton University Press.

Schmidtz, D. 2004. Satisficing as a humanly rational strategy. In *Satisficing and Maximizing*, ed. M. Byron, 30-58. Cambridge: Cambridge University Press.

Schwartz, B., Y. Ben-Haim and C. Dacso. 2010. What Makes a Good Decision? Robust Satisficing as a Normative Standard of Rational Decision Making. *Journal for the Theory of Social Behaviour* 41: 209-227.

Sen, A. 2004. Incompleteness and reasoned Choice. *Synthese* 140: 43-59.

Slote, M. 1984. Satisficing Consequentialism. *Proceedings of the Aristotelian Society*, *Supplementary Volumes* 58: 139-163.

Slote, M. 1989. *Beyond optimizing.* Cambridge, MA: Harvard University Press.

Sniedovich, M. 2007. The Art and Science of Modeling Decision-Making Under Severe Uncertainty. *Decision Making in Manufacturing and Services* 1: 111-136.

Weber, M. 2004. A new defense of satisficing. In *Satisficing and Maximizing,* ed. M. Byron, 77-105. Cambridge: Cambridge University Press.

1. Goldman wrote in his review of *Satisficing and Maximizing* ed. Michael Byron that “it should put the topic to rest for philosophers, at least for the foreseeable future. On the one hand, a weak thesis regarding satisficing is universally acknowledged to be true, but no longer philosophical news. On the other hand, a stronger thesis seems clearly false despite heroic efforts by its few advocates to revive it with different justifications (initially only unconvincing purported examples) each time.” *Utilitas* 20: 254-55. The weaker thesis refers to the rationality of instrumental satisficing and the stronger thesis that of genuine satisficing. [↑](#footnote-ref-1)
2. See Henden (2007: 342) for a listing of other proponents of this view. [↑](#footnote-ref-2)
3. Davidson’s assertion that transitivity is necessary for preference comprehensibility is certainly controversial. Hansson (2007: 30-31) argues that choice can arise from intransitive preferences. My point though is much narrower. Surely, transitivity is necessary for the comprehensibility of cardinal orderings and preferences so based. [↑](#footnote-ref-3)
4. Henden has this to say about Slote’s argument: “she (the satisficer) must compare the value of the moderate action with the value of the immoderate action. The reason is that there otherwise seems to be no basis for talk about a rational choice at all; it would be a case of ‘picking’ rather than choosing” (2007: 344). While I am sympathetic, advocates may bite the bullet and deny anything wrong with picking. For example, if their satisficing rule is to choose the first option above their aspiration level and multiple options meet the aspiration level simultaneously. The satisficer just picks any one. [↑](#footnote-ref-4)
5. This may be an instance of the gap between object and meta language, which Hansson has documented elsewhere (2007: 39-41). It is easy to describe other imaginary members of the choice qua news programs in plain terms. But once these imaginary members are given identity in set notation the extended Choice {A,B} is no longer a subset of Choice {A,B,C}. One would seem then to be pushing the point artificially. [↑](#footnote-ref-5)
6. A second order preference determines what we prefer to prefer, that is, what we most prefer (Frankfurt 1971: 7). This answers Bass’ question about why it is the higher order preference that determines what we most prefer (2005: 15-16). [↑](#footnote-ref-6)
7. It may be the case that brute facts of our character sometimes determine that we will satisfice unthinkingly but there is nothing obviously rational about such brute choices. [↑](#footnote-ref-7)
8. This example is adapted from one Schmidtz uses to argue to the opposite effect, that is, optimizing is impossible because it requires an infinitely improving computation (2004: 42). [↑](#footnote-ref-8)
9. If the pattern is thought to hold up till point X, the optimal stop point is the last fourth iteration before X. [↑](#footnote-ref-9)
10. Naturally, the determination of the threshold could itself be an antecedent decision. [↑](#footnote-ref-10)
11. The point is not so obviously seen if I phrase the antecedent decision as “what is the relevant set of options”. This question does not require the assumption of any option and the options in this antecedent decision are elements of the final decision. The point can still be similarly made. The important operation is the hypothetical suspension of considering the final decision’s options. Take picking a job for example. Before one decides which company, one may ask which industry. Our job choice function takes the entire super set of all industries and companies as its object. However, because the set of industries is not coextensive with the set of companies, the industry choice function can have as its object only industries and the company choice function can have as its object only companies. Plainly, when one thinks in terms of industries one is not thinking in terms of companies. That said, one can easily conceive of an industry with only one company. If one thinks Technology-Macs, one also thinks Apple. However, the same entity has two different referents depending on the decision perspective. The former is a subset of all industries with 1 member. The latter is an element of this subset. Technology-Macs ∊ {Technology-PCs, Technology-Scientific…} while Apple ∊ {Microsoft, Texas Instruments…}. [↑](#footnote-ref-11)
12. This is the flip side of Hansson’s observation that complete preference ordering in any given number of choice scenarios does not equate to complete ordering of the elements of those choices in all choice scenarios (2007: 84-85). In other words, my ranking justice over friendship in any number of scenarios is insufficient to conclude that I rank justice over friendship absolutely. [↑](#footnote-ref-12)
13. See Isaac Levi’s Weighted Average Principle. (Sen 2004: 48) [↑](#footnote-ref-13)
14. “The distinct dimensions of values may not be reducible into one another, and yet there may be no problem whatsoever in deciding what one should sensibly do when our priorities or weights over these values are clear enough.” (Sen, 2004: 44) [↑](#footnote-ref-14)
15. One may nevertheless speak of a highway model as unsatisfactory or optimal. In the former case, the degree of accuracy can be interpreted as below the absolute threshold for satisfaction. In the latter case, the model is regarded as meeting the absolute threshold for optimality. That is, one takes further considerations as irrelevant or supererogatory for that specific highway. [↑](#footnote-ref-15)
16. Simon (1955: 108-110, 112) actually claims that options cannot be completely ranked because of incommensurability. But I have already dealt with this earlier. [↑](#footnote-ref-16)
17. Their example is actually probabilistic. To say that the student will have recourse at Brown if a biologist leaves but not at Swarthmore is exactly to say the probability of a satisfactory biology education after 1 biologist leaves at Brown is 1/2 whereas at Swarthmore it is 0. [↑](#footnote-ref-17)
18. Besides laying out the logic and application of minimax Sniedovich formally refutes the school of thought espoused by Schwartz et al, which is Info-Gap Theory. Firstly, he proves that Info-Gap’s satisficing strategy is equivalent to minimax. (2007: 118-120) Secondly, he proves that it fails in its avowed purpose of dealing with radical uncertainty. Basically, Info-Gap is based on decision making within the vicinity of a single point estimate taken from a non-comprehensive sample within the area of radical uncertainty. Given that both the distribution of satisfactory outcomes and the boundaries of the decision area are completely unknown, the point estimate is as robust as a wild guess. Effectively, the decision is made within the confines of a wild conjecture about what one’s options truly are. (2007: 123-125). [↑](#footnote-ref-18)
19. *Chess News Blog:chessblog.com*. February 18, 2010. http://www.chessblog.com/2010/02/january-2010-best-chess-games.html [↑](#footnote-ref-19)
20. A similar job search would have us consider for Job A all the options it opens in the next year (job switches, promotions, retrenchment, relocation) and the options those open in the year after and continue walking through new options sets until our time horizon, such as retirement. We then repeat for Job B until we find a job that only has satisfactory outcomes at our time horizon. What constitutes a satisfactory outcome in job search needs definition though, whereas checkmate is indisputably satisfactory in chess. Defining satisfactory may require utility and probability calculations. [↑](#footnote-ref-20)
21. While Michalos does allow selecting an academic position to be more rational than ditch digger, why should the comparison even arise? He eschews formulating a set of relevant options (1973: 238). [↑](#footnote-ref-21)
22. I am indebted to Jerry Gaus for this point. [↑](#footnote-ref-22)