

# A puzzle about guessing and inquiry

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## 1 Good guesses?

I want to point out what I think is a pressing puzzle for theories of question-sensitive attitudes like guessing – though I think the puzzle also applies to other question-sensitive attitudes, which might include belief, knowledge, and desire, and so should be of interest to anyone working on the nature of such attitudes.<sup>1</sup> The puzzle can be appreciated by reflecting on some data about patterns of intuitively acceptable and unacceptable guesses to questions. For example, in their (2021), Dorst and Mandelkern build on the work of Holguín (2022) to give an account of good guessing based on such data. As part of this account, they want to explain a variety of constraints on guessing that explain these data points. But accounts like that of Dorst and Mandelkern don't address this puzzle. Indeed, the data giving rise to it are rather taken for granted and built into the framework of principles on which they base their subsequent theory of good guesses. Instead, I think that a fully satisfactory account of guessing or other question-sensitive attitudes should aim to address and solve this puzzle.

Before unpacking the issue more carefully, the gist of the puzzle is this: given a possible probability distribution (representing one's evidence) about the different answers to the question *where will Latif go to law school*, it can be rational to guess that Latif will go to Yale. And yet, given the same probability distribution it can be rational to guess – in response to the question of *whether*

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<sup>1</sup>See Schaffer (2004), Yalcin (2018), and Friedman (2013, 2019)

*Latif will go to Yale* – that Latif will *not* go to Yale. This can happen when (i) Yale is the school Latif is most likely to go to and (ii) he’s still more likely not to go to Yale than to go to Yale. The reason this is a puzzle is that one’s best guess about whether Latif will go to Yale can be part of a rational inquiry that leads to one’s best guess about where Latif will go to law school, suggesting that these guessing data are in tension with some plausible inquisitive norms. Succinctly: a guess that is rational in isolation (not Yale) becomes irrational when it forms part of a broader inquiry (where will he go?).<sup>2</sup>

To examine this in slightly more detail, we can take the opening example in Dorst and Mandelkern. Again, the question being guessed is: where will Latif go to law school? For the possible answers, we are given that Latif has been accepted to four schools: Yale, Harvard, Stanford, and NYU. We are also given evidence in the form of probabilities, i.e. the rates at which applicants with the same options as Latif chose among these schools in previous years:

Yale	Harvard	Stanford	NYU
38%	30%	20%	12%

Based solely on this information, the intuitive data points about which guesses are reasonable or acceptable are as follows:

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<sup>2</sup>In general, given a constituent question whose alternatives are  $\{a, b, c\}$  it can be rational to guess  $a$ . However given a polar question whose alternatives are just  $\{a, \neg a\}$  it can be rational to guess  $\neg a$ . And yet, as I will claim, rationally guessing the answer to the latter question can form part of a rational strategy for answering the former.

- a. Yale ✓
- b. Yale or Harvard ✓
- c. Yale or Harvard or Stanford ✓
- d. Yale or Harvard or Stanford or NYU ✓

And here are some of the intuitive data points about unacceptable guesses:

- a. Harvard ✗
- b. Stanford ✗
- c. Yale or NYU ✗
- d. Not Yale ✗<sup>3</sup>

Let's suppose that these are indeed unacceptable guesses given the case as defined. What interests me specifically here is the supposed unacceptability of guesses like d, 'Not Yale'.<sup>4</sup> A constraint on guessing that helps to explain this pattern of judgments is derived from Holguín (2022)<sup>5</sup>:

### Filtering

A guess,  $p$ , about  $Q$  is permissible only if for any  $q, q' \in Q$ : if  $P(q') > P(q)$  and  $q \subseteq p$ , then  $q' \subseteq p$ .

Letting  $p$  be  $\{Not\ Yale\}$ ,  $q$  be  $\{Harvard\}$  and  $q'$  be  $\{Yale\}$ , we can see that although  $P(\{Yale\}) > P(\{Harvard\})$  and  $\{Harvard\} \subseteq \{Not\ Yale\}$  we nevertheless have  $\{Yale\} \not\subseteq \{Not\ Yale\}$ , and so the guess 'Not Yale' fails to satisfy Filtering.

What is immediately odd, then, is that the data points on unacceptable guesses include guesses that are strictly more probable than some of the intuitively acceptable ones; the guess 'Not Yale' is considerably more probably than

<sup>3</sup>I haven't included all of the examples of unacceptable guess Dorst and Mandelkern give but these are enough my purposes.

<sup>4</sup>Which is of course short for 'Latif will not go to law school at Yale'

<sup>5</sup>See pp. 18-19

‘Yale’. Dorst and Mandelkern (p.5) take this as a sign that ‘it is sometimes permissible to answer  $p$  even when  $P(p) < 0.5$ ’.<sup>6</sup> But there’s more to the oddness of ‘Not Yale’ being unacceptable while ‘Yale’ is acceptable than the fact that the latter is more likely to be false than true.

As I see it, these data points about guessing lead to an unpalatable consequence. Namely, that in answer to the question of *where Latif will go* it is acceptable to guess that he will go to Yale but that in answer to the question of *whether he will go to Yale* it is also acceptable to guess that he will not go to Yale. Consequently, it looks like it’s acceptable to have guesses that are, *prima facie*, incoherent, i.e. to guess that  $p$  and to guess that  $\neg p$  about what is, intuitively, one and the same subject matter, i.e. the subject matter of whether Latif will go to Yale.

Of course, we might be tempted to reject this assessment on the grounds that whether Latif will go to Yale is distinct from the question of where Latif will go. This appears to let us say that the apparently incoherent guesses are in fact about different questions or subject matters and so maybe aren’t really incoherent after all. This option needs to be taken seriously. But I do think there are reasons to resist it.

Thinking of questions as partitions (i.e. sets of their possible complete answers), although these two questions are indeed distinct, they aren’t *properly* distinct. That is, they have at least one possible answer (one cell) in common, namely that Latif will go to Yale. This is no surprise. Since a given proposition can be an answer to different questions, it seems reasonable to think that our guesses to different questions can also be the same. Consequently, to say that an agent has incoherent guesses is just to say that their guess to some question is the proposition that  $p$  while their guess to another question is the proposition that  $\neg p$ , i.e. the negation of their first guess.

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<sup>6</sup> Cf. Kahneman and Tversky 1982

In other words, someone who has considered the question of where Latif will go and guessed that he will go to Yale has made a guess about whether Latif will go to Yale; namely that he will. If that same someone also considers the question of whether Latif will go to Yale and guesses that he won't, then this guess contradicts her previous guess. The idea that there are indeed incoherent guesses here is thus a consequence of two assumptions that seem to have a lot of intuitive clout, i.e. that what we guess are answers to questions, and that some questions can have answers in common.<sup>7</sup>

Both Holguín (pp. 15-17) and Dorst and Mandelkern (p.5, p.20) *do* address this issue of seemingly incoherent guesses. Broadly, both appeal to a kind of *context sensitivity* in 'guess' reports according to which the question-sensitivity of guessing and the distinctness of the questions *where Latif will go* and *whether Latif will go to Yale* can help explain why it is permissible to guess that Latif will go to Yale for the first question and that Latif will not go to Yale for the second. Holguín in particular discusses the concern that this question-sensitive account of guessing (and thinking) requires a good deal of semantic blindness on the part of competent speakers.<sup>8</sup> I will return to this point a little further on.

Despite this appeal to context-sensitivity, I think this problem of seemingly incoherent guesses is more severe than has been noted. In particular, its severity becomes apparent in the light of thinking about the nature of *inquiry* and the

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<sup>7</sup>To those keen on the idea that we should individuate guesses and other question-sensitive attitudes more finely, based on the questions they answer, the problem of how finely we should individuate questions becomes pressing. So, one way of appreciating the puzzle I am presenting here is that is particularly addressed to the plausible coarse-grained view of questions and answers on which different questions can have the same answer. See Teague (2022) for further discussion of problems faced by unstructured accounts of question-sensitive attitudes

<sup>8</sup>Dorst and Mandelkern phrase their response to the issue by saying that the naturalness of guessing that Latif *will* go to Yale when asked whether he will after having guessed Yale when asked where he will go is due to 'some stickiness' in the context resolution of the question under discussion: the first QUD 'Where will Latif go?' may remain salient even if the new question 'Will Latif go to Yale?', is explicitly asked.

norms that govern it. Importantly, inquiry can involve multiple guesses in sequence, and this has an important dialectical function here. Namely, that even if one takes the guesses about the Latif scenario not to be genuinely incoherent when considered in isolation, in the course of a single line of inquiry, their genuine incoherence becomes hard to deny. Regarding inquiry's norms, one way these can be fruitfully explored is by considering judgments about 'wonder' reports – reports of the form *S wonders Q*, where *Q* is some question – and by considering plausible *strategic norms* for wondering, i.e. norms about how one ought (or ought not) to go about wondering *Q*. The next section brings this into focus.

## 2 Wonder reports and strategic inquiry

Superficially, I have two complaints against an account of guessing based on data points like those given above. However, I think that these complaints are really just two ways of making the same point about coherence requirements in inquiry. First, a theory which takes the data points in the previous section for granted not only fails to explain what is wrong with certain intuitively unacceptable attitude reports, but it apparently *requires* that the problematic combinations of attitudes reported in them are in fact acceptable. Second, as alluded to already, such an account is in tension with a plausible norm for wondering, which I call 'Divide and Conquer'.

Beginning with the attitude reports, consider the following:

- (1) # As to whether Latif will go to Yale or not, my guess is that he won't, but I wonder whether he'll go to Harvard, Stanford, NYU, or Yale.<sup>9</sup>

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<sup>9</sup>Here, to get the intended *alternative* reading of the interrogative phrase 'whether he will go to Harvard, Stanford, NYU, or Yale', it helps to pronounce 'Yale' with falling intonation.

This reporting phrase contains two interrogatives (the two ‘whether’ clauses), and attributes two attitudes, guessing and wondering, that seem in tension with each other over whether Latif will go to Yale. Intuitively, the guess part suggests that the speaker is in some way prepared to rule out Yale, i.e. that she is taking a stand on what to think about the question of whether Latif will go to Yale. But the wonder part indicates that, on the contrary, the speaker is not prepared to rule out Yale.

A couple of clarifications about this are in order. First, contrast (1) with:

(2) My guess is that Latif won’t go to Yale, but still, I wonder whether he might.

This sounds fine, presumably thanks to the modal and the concessive ‘still’. Indeed, both of these particles may be needed for felicity in this case. Thus, I am less sure about these two:

(3) ? My guess is that Latif will not go to Yale, but still, I wonder whether he will.

(4) ? My guess is that Latif will not go to Yale, but I wonder whether he might.

Certainly these don’t sound nearly as bad as (1), so it would be worthwhile trying to determine exactly what kind of semantic work these particles are doing, though I won’t do so here. Instead, I think that the badness of 1 stands on its own as a datum about guess-wonder reports without having to determine exactly how these reports interact with and are affected by still more semantic phenomena.<sup>10</sup>

Second, apparently coherent combinations of wondering and guessing like that reported in (1) suggest that the phenomenon arising here could be due to

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<sup>10</sup>Thanks to an anonymous reviewer for bringing this to my attention.

an as yet undetermined form of context-dependence. For example, if I toss a coin without showing you the result and tell you to guess how it landed, it seems coherent for you to guess heads while nevertheless wondering whether it landed heads or not. Naturally, this suggests there is a sense of ‘guess’ that is extremely weak and even voluntaristic.<sup>11</sup> In particular, in the context of guessing the coin toss, I think we effectively just ‘take our pick’ without the guess reflecting upon our reasons or deliberations. Note that it would be strange for the coin-tosser to ask instead what our *best* guess is. Asking *that* would suggest we might have evidence about the likely outcome of the toss. So I think (1) could also be given as:

(5) # As to whether Latif will go to Yale or not, my best guess is that he won’t, but I wonder whether he’ll go to Harvard, Stanford, NYU, or Yale.

I think 5 sounds as bad as 1, and I expect this is because it signals that the speaker is prepared to take the question of Yale as settled (e.g. by her evidence) in a way that is in tension with wondering whether Latif will go to Harvard, Stanford, NYU, or Yale.<sup>12</sup>

There has already been fruitful discussion of such tensions between question-sensitive propositional attitudes like believing (or thinking, or guessing) and questioning attitudes like wondering.<sup>13</sup> Whatever the correct interpretation of this tension, I think that the badness of reports like (1) and (5) is a datum that satisfactory theories of question-sensitive attitudes should not ignore.<sup>14</sup>

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<sup>11</sup>See Holguín p.22

<sup>12</sup>If guessing can be as weak as ‘taking your pick’ – i.e. choosing without the possibility of choosing badly – it might indeed be exempted from evidential norms relating belief type states and questioning attitudes like wondering, suggesting a potential difference between believing and guessing. (See Friedman 2019.) I am indebted to the same reviewer for pushing me to consider this case.

<sup>13</sup>See Archer (2018), Friedman (2019), and Lee (2020).

<sup>14</sup>For the view that knowledge is question-sensitive, see Schaffer (2004). For the view that belief is see Yalcin (2018). Holguín (2022) is also committed to the view that believing, guessing and thinking are question-sensitive in this way. For some problems with question-sensitivity see Teague (2022)



Guessing, as something we do in response to questions, is clearly an important attitude in inquiry. And wondering itself is a kind of inquiry. But while attitudes like guessing and believing can be question-sensitive in the sense that what we guess and believe are *answers* to questions, wondering is question-sensitive in the sense that what we wonder *are* questions.<sup>15</sup>

A natural thought is that guessing and believing are at least sometimes inquiry-*stopping* attitudes, albeit ones that might occasionally be tentative or partial inquiry-stoppers.<sup>16</sup> One might guess that the answer to  $Q$  is  $p$ , and *thereby* bring one's inquiry to a close, or *thereby* be prepared to rely in one's deliberations on  $p$ 's being the answer to  $Q$ .<sup>17</sup> And since wondering is a kind of inquiry and arguably a kind of deliberation, it seems plausible that what we guess does and at least sometimes *should* bear upon what we wonder and *vice versa*.

To impress this upon you further, I now turn to my second complaint against a theory that takes the puzzling guess-data for granted. Consider the following norm for wondering:

### **Divide and conquer (DAC)**

If you are wondering  $Q$ , and don't immediately come to an answer,  
then it is sometimes a good idea to subsequently wonder some  $R$ ,  
where for every  $r \in R$  there is a  $q \in Q$  such that  $q \subseteq r$ .<sup>18</sup>

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<sup>15</sup>Friedman (2013)'s nomenclature for attitudes whose contents are questions is 'question-directed'. Clearly though, we might naturally describe believing, guessing and other attitudes as being *directed* at questions too, since their contents are answers to questions. So I prefer describing 'wondering', 'considering' and attitudes whose contents are solely questions as *questioning* attitudes. Belief, guessing, and knowledge may be directed at or *about* questions, but they are not themselves questioning attitudes.

<sup>16</sup>See Friedman (2013)

<sup>17</sup>See Williamson (*forthcoming*: pp. 6-12)

<sup>18</sup>Like Holguín, Dorst and Mandelkern, I am also working with the assumption that we can model questions as partitions of logical space (à la Groenendijk and Stokhof (1984)). The cells in the partitions thus correspond to the *complete* answers to the question, while unions of these cells correspond to the question's *partial* answers. As Teague (2022, pp. 344-5) indicates, this *unstructured* possible worlds approach to questions results in problems akin to those afflicting similar theories of propositional attitudes.

Spelling this out informally, if you are wondering a constituent question, like *who is the murderer*, and you don't immediately or sufficiently quickly form a justified belief in some complete answer (e.g. *the butler is the murderer*), then it is sometimes a good idea to wonder some polar question (e.g. *whether the butler is the murderer*), such that believing an answer to the polar question takes you closer to believing an answer to the original constituent question. In other words, when faced with a stubborn constituent question, it's sometimes advisable to 'divide and conquer', i.e. break the constituent question up into smaller polar questions whose own complete answers will at least entail a partial answer to the constituent question.<sup>19</sup>

Why is DAC only 'sometimes' a good idea? In part, this is just to hedge my bets. Depending on one's goals, values, available evidence, and available means of advancing one's inquiry – e.g. an easily accessible and reliable expert who can settle the question for you – it might sometimes be rational not to exert the cognitive effort of wondering the polar question in order to get the answer to the constituent question. All that matters for me here though is that we can agree that following DAC is *sometimes* a good inquisitive strategy. Because then the question of *why* this is so arises. What, in other words, is the normative force of DAC?

I think DAC only makes sense as a norm that governs wondering and inquiry if what we believe about *R* constrains what we believe about *Q*. That is, your guesses/beliefs (i.e. what you think) about *Q* are required to *match* or *cohere* with your guesses/beliefs (what you think) about *R*.<sup>20</sup> To me, this seems like the most plausible explanation for why DAC is a norm for inquiry in the first place. If you're wondering where Latif will go to law school, it makes sense,

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<sup>19</sup>This strategy of inquiry is of course the principle underlying the question-and-answer game *Twenty Questions*. Optimal play requires asking questions that divide the space of possible answers as evenly as possible, so that a skilled questioner can, with twenty well placed questions, distinguish between well over a million possibilities.

<sup>20</sup>A norm explored in slightly different terms by Hoek (forthcoming).

as part of this activity, to wonder whether he will go to Yale. And this is so because the beliefs you form about this latter question should match those you form about the former.

Pre-theoretically, a norm like DAC is very intuitive. *Of course* explicitly wondering about specific possible answers to a constituent question – considering them separately and proceeding by a process of elimination – is a good way to inquire. And we do this all the time.<sup>21</sup> But this is quite at odds with any account of guessing on which we are trying to capture the idea that it is acceptable to guess an answer to  $R$  that is incompatible with the answer you guess to  $Q$ , given that any complete answer to  $Q$  entails some complete answer to  $R$ .<sup>22</sup>

Another way of seeing the issue is to think of questions mereologically.<sup>23</sup> A constituent question,  $Q$ , like *where Latif will go to law school*, has as its *parts* various polar questions, i.e. those whose complete answers entail at least a partial answer to  $Q$ . The constituent question is thus the whole, and its polar questions are the parts. In this terminology then, and given the normativity of DAC, there *seem* to be two sorts of closure principle that govern question-sensitive attitudes like guessing:

#### **Whole-to-part (WTP)**

If your guess to  $Q$  is  $p$ , and for every  $q \in Q$  there is an  $r \in R$  such that  $q \subseteq r$ , then your guess to  $R$  should be compatible with  $p$ .<sup>24</sup>

#### **Part-to-whole (PTW)**

If your guess to  $R$  is that  $p$ , and for every  $q \in Q$  there is an  $r \in R$

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<sup>21</sup>It's also the kind of reasoning at work in proofs by cases, which allow us to prove something about a disjunction by proving it about each of the disjuncts. If a condition holding of each disjunct did not allow us to infer that it holds of the disjunction, this method of proof wouldn't hold any water.

<sup>22</sup>Or conversely, given that any complete answer to  $R$  entails some at least partial answer to  $Q$ .

<sup>23</sup>See Lewis (1988)

<sup>24</sup>This is a principle almost exactly like that for question-sensitive belief proposed by Hoek (forthcoming.), which he calls 'Harmonic parts.'

such that  $q \subseteq r$ , your guess to  $Q$  should be compatible with  $p$ .

As examples: if your guess to where Latif will go to law school is that he will go to Yale, then your guess to whether Latif will go to law school at Yale should not be that he won't. And if your guess to whether Latif will go to law school at Yale is that he won't, then your guess to where Latif will go to law school should not be that he will go to Yale.<sup>25</sup>

Similarly, for combinations of question-sensitive attitudes like guessing and wondering, what the unacceptability of (1) suggests is a principle like the following:

**Wondering and Guessing (WAG)**

If your guess to  $R$  is  $p$ , and there is a  $q \in Q$  such that  $p$  and  $q$  are incompatible, then you ought not to wonder  $Q$ .

Here is an example: if your guess to whether Latif will go to law school at Yale is that he won't, then you ought not to wonder whether Latif will go to law school at Harvard, Stanford, or Yale. Symmetrically, if your guess to whether Latif will go to law school at Harvard, Stanford, or Yale is that he will go to Yale, then you ought not to wonder whether Latif will go to law school at Yale. I don't have much to say about how exactly to interpret the 'ought' here or what the exact normative force of WAG is.<sup>26</sup> Whatever it is, it is at least whatever is needed to rule out (1) as unacceptable, which I think it clearly is.

Now, we might be tempted to think that we have the means to do without such closure principles by appealing to some sort of contextualism about question-sensitive attitudes like guessing. In effect, this is what contrastivist theories of knowledge and belief do, interpreting the contrast classes relative to which re-

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<sup>25</sup>PTW in particular can help explain why DAC is true. If answering  $R$  is part of the goal of answering  $Q$ , then, predictably, it is sometimes a good idea to wonder  $R$  if your goal is to answer  $Q$ . Without something like PTW in play, DAC would be mysterious.

<sup>26</sup>See Archer (2018), Friedman (2019), and Lee (2020) for discussion of the incompatibility of such attitudes.

ports of such attitudes are interpreted as questions, i.e. questions whose answers are the propositions in the contrast class.<sup>27</sup> The patterns in the acceptability or unacceptability of the guesses in section 1 might then be reconciled with the badness of (1) and the normativity of DAC by appealing to some sort of semantic blindness. We might say, in other words, that speakers (or guessers) are blind to the contextual parameters that determine the contents of their attitudes.

But semantic blindness doesn't seem plausible to me at all here, because the contextual parameters to which speakers (and guessers) would need to be blind are the very questions they are explicitly guessing and wondering about. Take (1) again

(1) # As to whether Latif will go to Yale, my guess is that he won't,  
but I wonder whether he'll go to Harvard, Stanford, NYU, or Yale.

Here it seems wildly implausible to suggest that we hear this as bad only because of some blindness to the fact that the answer being guessed – that Latif will not go to Yale – is also an answer (albeit a partial one) to the question being wondered – whether Latif will go to Harvard, Stanford, NYU, or Yale. A competent speaker wouldn't utter (1). And plausibly this is because of some norm or principle that is more or less like WAG.<sup>28</sup>

Likewise for the normativity of DAC. Whatever that normativity amounts to, it has to explain why it is sometimes a good idea to wonder about the polar question if one is trying to answer the constituent question. If it really is accept-

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<sup>27</sup>See Schaffer (2004) Indeed, if one is a contextualist about attitudes like guessing and believing, where the contextual parameter is the question to which these attitudes are directed, and if and holds that there are norms connecting these attitudes to wondering, then one might for this very reason be tempted to be a contextualist about wondering too; in the sense that it too is question-sensitive and so the norms relating it to guessing and believing should reflect this. In other words, one might want to take the view that an agent only wonders  $Q$  relative to some further question or partition  $Q'$ . But, as Teague (*ibid.* pp.13-16) argues, it is not at all clear that this approach to wondering will resolve the coherence puzzles of the sort at issue here.

<sup>28</sup>Though perhaps to explain the badness of (1) WAG needs to be qualified to be about *explicit* or *occurrent* guesses. See Lee (2020) for discussion of this exact sort of qualification and its bearing upon such norms.

able to have incoherent guesses about these questions – guessing that Latif will not go to Yale for one of them while guessing that he will go to Yale for the other – then this isn't plausibly due to semantic blindness understood as blindness to the questions our guesses are about. If that were so, we would struggle to make sense of the fact that a good strategy for answering a constituent question is to explicitly consider at least one of its possible answers,  $p$ , and to wonder whether or not  $p$ . If one's best guess to this polar question is that  $p$ , then blindness to the questions one's guesses are about would make it utterly mysterious how this sort of inquisitive strategy can be effective as a way of answering a constituent question, which it clearly often is.

Personally, I do not yet know what to say about the intuitive data in section 1 concerning acceptable and unacceptable guesses which Mandelkern and Dorst's theory of good guesses is intended to capture. To me, these patterns really *do* seem intuitively correct. And Holguin's Filtering constraint on admissible guesses really does help to capture them. But the explicitness and salience in inquiry and wonder-reports of the questions our guesses are about makes it implausible that the mutually incoherent "good guesses" that these data points suggest arise from some blindness to the questions our guesses are about. So what's going on?

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