Gaps in the Evidence

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§0 ***The Question***

Disputes about matters of fact in trial proceedings should be adjudicated in light of the evidence presented by the litigants. But, should the fact that some evidence was *not* presented also—at least in some circumstances—guide trial decisions? This the problem of gaps in the evidence or the problem of missing evidence.

To illustrate, consider this scenario:

> Target: A customer trips and falls in a Target store. The customer suffers serious injury and is transported to a hospital. The customer sues Target and seeks to recover damages. Video surveillance footage is only preserved in part. The rest is destroyed. It is impossible to reconstruct what happened before the incident. The plaintiff—the customer—seeks an adverse inference jury instruction against Target for failing to preserve the video.[1]

[1] Decker v. Target Corp, Case No. 1:16-cv-00171-JNP-BCW, Filed 10/10/2018.

The plan: the problem of missing evidence is not easy (§1); the law follows an elaborate framework (§2); prejudice and reliability are two competing criteria (§3); remedies for missing evidence should be informed by epistemic and policy considerations (§4); in particular, reliability and fortuitousness should be the two guiding criteria (§5).

§1 ***Dismissive Responses***

Some might claim that the problem of missing evidence[2] is not a difficult problem and can be quickly addressed: either (1) missing evidence is irrelevant and thus should play no role at in trial decision, or (2) if it is relevant, it functions just like any other evidence so it poses no peculiar problem. Let's consider each of this in turn.

[2] By "missing evidence" we shoud understand the known fact that some evidence is missing whose content is unknown.

(1) *Missing evidence is not relevant evidence*

The missing evidence could be in favor or against either party. All in all, missing evidence makes no difference and thus it is irrelevant:

> [I]f the evidence is missing it cannot be known which way it points. It appears equally possible that the missing evidence would confirm the current factual conclusion as contradict it. The competing possibilities cancel each other out. There is no warrant for the assumption that the missing evidence will point one way rather than the other.[3]

[3] Hamer, D. (2012). Probability, Anti-resilience, and the Weight of Expectation. *Law, Probability and Risk*, 11(2-3), 135–158, 139.

This, however, cannot be right in general. For consider again our stylized example from the beginning. Presumably, the shop owner

would be more likely to delete the video if the floor was slippery than if it was not. They have a reason to delete the recording in the former but not in the latter case. Thus, taking into account the fact the recording is missing should raise the probability that the floor was slippery. This shows that missing evidence is relevant evidence.

The only case in which the missing video would have null value is if there is no relation between the slippery floor and the owner's attempt to remove the video——that is, if it was just as likely that the owner would attempt to remove the recording when the floor was slippery than when it was not.

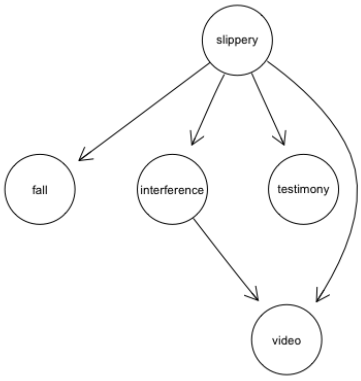

Figure 1: DAG of the Target case.

(2) *Missing evidence is just any other kind of evidence*

Let E_p the evidence presented at trial and let E_m describe known facts about missing evidence, for example, that the video recording is missing. The overall body of evidence should consist of $E_p \wedge E_m$. In making decisions about a hypothesis H, we should consider $Pr(H|E_p \wedge E_m)$ rather than simply $Pr(H|E_p)$.[4]

Can this be the whole story? Can the problem of missing evidence be that simple? Likely not. To see why not, let's take a look at the legal framework for handling missing evidence.

[4] Kaye, D. H. (1986). Do we Need a Calculus of Weight to Understand Proof Beyond a Reasonable Doubt? *Boston University Law Review*, 66, 657–672.

§2 *Legal Framework*

The legal framework for handling missing evidence is three-tiered:

> First, ask about the *prejudicial effects* of the missing evidence. Could the missing evidence have made a difference to the verdict?[5]
>
> Second, examine the *circumstances* that caused the evidence to be missing. Was it an accident or misconduct? Did one of the parties have a duty to preserve the missing evidence?
>
> Third, devise a *remedy* (such as an adverse jury instruction) to be granted to the litigant disadvantaged by the missing evidence.

[5] A related question is about *would-be-relevance*: would the missing evidence if presented be relevant? This question, however, can be subsumed under the question of prejudice.

§3 *Reliability or Prejudice?*

Below is an example from the case law about evidence whose absence is not considered prejudicial:

> Firearm: Defendant is charged with illegal possession of firearm. The police legally searched the defendant's vehicle and found a firearm. The defendant had no permit. The police searches the rest of the car and finds a backpack, but does not retain all the items in the backpack: keys, pieces of paper, trash. The defense complains that the evidence is incomplete: information about the contents of the backpack is missing. In particular, defense argues that the keys could be exculpatory

> evidence: if they did not belong to the defendant, the backpack did not either, and neither did the firearm.[6]

[6] Howard v. United States - No. 18-CF-157 District of Columbia Court of Appeals.

The Court reasoned that the inferences to be drawn from the missing evidence—say the missing keys—were 'wholly speculative' and thus the missing evidence was not prejudicial.[7]

[7] This conclusion seems sensible. It would be odd if any missing piece of information—given a broad enough interpretation—could alter the balance of the evidence and be prejudicial.

But, there is a worry about focusing on prejudice: even when adding the missing evidence could have make a difference to the verdict (prejudice), this addition could have also lowered the reliability of the decision-making process.[8] This claim can be illustrated with an example:[9]

[8] This is a challenge to the principle of total evidence. See, for example, Good, I. J. (1967). On the principle of total evidence. *British Journal for the Philosophy of Science*, 17(4), 319–321.

[9] This example is liberally inspired by Lee Johnson v. Jeff Premo (2021 Oregon App. Ct.), Marion County Circuit Courto8C11553 - A159635.

> More Evidence More Errors: Reliable evidence links the defendant to the crime scene in a murder case: a genetic and a fingerprint match. There is no evidence, however, about the defendant's whereabouts before or after the crime nor about who else visited the crime scene. Compare this case with one in which the same evidence is presented but—in addition—a neighbor testifies that another person visited the victim's house before the defendant did. This additional evidence, though relevant, has a low probative value compared to the other evidence: the neighbor is an elderly man whose memory has proven unreliable in other circumstances. This testimony, if added, could change the verdict (prejudice) but would also make the decision process less reliabile than a decision based on just match evidence.[10]

[10] Suppose match evidence is 99% reliable, so $Pr(M^+|G) = Pr(M^-|I) = .99$. Testimonial evidence is only 51% reliable, so $Pr(T^+|G) = Pr(T^-|I) = .51$. Decisions based on M will be 99% reliable. Instead, decisions based on $M \wedge T$ will be less reliable. For sensitivity will be much worse than 99%, that is, $P(M^+ \wedge I^-|G) = .99 \times 0.51 \approx .5$ and specificity will be only slightly better than 99%, that is, $P(M^- \wedge I^-|I) + P(M^+ \wedge I^-|I) + P(M^- \wedge I^+|G) \approx .995$.

The moral of this example can be stated in the form of a slogan:

> "More Evidence, Fewer Errors" Is False.

Instead of prejudice, the question of reliability can become primary in deciding what to do about missing evidence:

> **Reliability First**: If the missing evidence, once added to the existing body of evidence, would have lowered the reliability of the decision—-say because the missing evidence was, in an objective sense, misleading or with lower reliability-—it should be disregarded. So, in cases of missing evidence, the question of reliability is primary. In procedural terms, absent any clear reason for thinking the missing evidence would enhance reliability, the missing evidence should be disregarded; otherwise, it should be taken into account. [11]

[11] The alternative is **Prejudice First**: A defendant may benefit from evidence even if it is misleading so long as the evidence, assessed on its face, appears to favor the defendant and tips the overall balance of evidence in their favor. This applies to all defendants. So, in cases of missing evidence, the question of prejudice is primary. In procedural terms, absent any clear reason for thinking the missing evidence could turn the verdict around (prejudice), the missing evidence should be disregarded; otherwise, it should be taken into account.

Evidence is routinely presented at trial that could be misleading or could lower the accuracy of the decision-making process. On the other hand, when evidence is actually presented in trial proceedings, it is subject to adversarial scrutiny. This process is intended to detect sources of unreliability in the evidence. But, missing evidence cannot be subject to adversarial testing:

> A primary function of jury instructions, as well as the rules of procedure and evidence, is to confine the jury's attention to firsthand

> testimony ... which may be probed on cross-examination, thereby excluding conjecture ... The risk is always present that the jury will give undue weight to the presumed content of testimony not presented, and insufficient weight to that which was presented.[12]

[12] Thomas v. United States, 447 A.2d 52, 58 (D.C. 1982).

How can this problem be addressed? On option is to block any appeal to missing evidence since missing evidence cannot be tested via cross-examination. A less extreme option is to require that the missing evidence—despite not being testable adversarially—is shown to likely improve the reliability of the decision-making process. This is the rationale behind Reliability First. So, the question of prejudice cannot stand alone.

§4 *Remedies: Epistemology or Policy?*

In devising remedies to missing evidence, two approaches exist:

Epistemic aproach: remedies can simply follow a conscientiousness assessment of the evidence. That some evidence is missing can itself be information (evidence) for drawing inferences together with other evidence.[13]. This approach is internal to the logic of evidence evaluation.

Policy approach: Gaps in the evidence are the result of objectionable out-of-court behavior that must be sanctioned.

[13] The epistemic response aligns with the dismissive response (2) "Missing evidence is just any other kind of evidence" in §1; see Figure 1.

The epistemic approach has limited applicability compared to the policy approach. The problem of gaps in the evidence is not merely epistemic because gaps in the evidence arise in different situations:

> *Bad faith*: a party destroyed evidence with intent to benefit from the destruction.
>
> *Negligence*: a party had a duty to preserve the evidence, but failed to comply with existing standards.[14]
>
> *Accident*: by fortuitous circumstances, the evidence was destroyed.
>
> *Systemic patterns*: some parties have less access to evidence than others (say, because of imbalances in resources).

[14] The epistemic approach would recommend no remedy in cases of negligence. For consider this case. A man voluntarily confesses to having stabbed an elderly woman while attempting to stole money from her apartment. The man gives a detailed story about the incident. The man is incriminated and tried for murder. The defense argues that the defendant's confession is unreliable: it is an attempt to cover for others. The defendant has two sons, both with a criminal record. Unfortunately, since the defendant confessed, the police did not think it was necessary to analyze the tin box that contained the money for fingerprints or genetic material. The fact that forensic analyses about the tin box are missing cannot be used to make an inference that they must have been exculpatory. So the epistemic approach would recommend no remedy here. But even though there was no bad faith intent here, there was negligence on the part of the police. The policy approach, then, could recommend that the case be resolved in favor of the defendant.

§5 *Two Guiding Questions*

Two questions can guide how to respond to gaps in the evidence:

> *Reliability*: Compare the body of available evidence (with gaps) and the would-be body of evidence (without gaps). Do we have reasons to believe that the complete body would be more reliable than the body of available evidence?
>
> *Causes* What is the cause that brought about gaps in the evidence? Is it a fortuitous fact or the result of a systemic pattern that advantages one or the other party in the trial?