Base values for the Statistical Resurrection Argument

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1 Introduction

When is a report reliable? We define the *credibility* of a report as a measure of how unlikely its appearance would be if the reported fact were false. Lots of false reports reach us every day, so, intuitively, for a report to be believable, the credibility should be high[2]. McGrew & McGrew (2009) evaluates the resurrection report r, establishing a high credibility, leading to the conclusion that r (and thus the resurrection, and thus the gospel message) is reliable.

This article fills two holes in the argument given there.

2 Prior probability

A general problem with Bayesian evaluations is the need for a prior probability. We shall call the hartley logit[3] of the prior probability the *prior*. Whereas for repeatable experiments successful repetitions can overcome any finite prior (Dawid 2018), with unrepeatable events any attempt to establish believability can be frustrated if an arbitrarily low prior may be chosen. It is therefore important to establish an objective minimum for the prior for Jesus' resurrection.

2.1 Naturalism

Here it is important to establish what kind of arguments do *not* count against the resurrection. A naturalist may claim that natural science has established some facts to such an extent that anything countering such facts (and both parties agree that Jesus' resurrection would probably counter them) has a negligible prior. That would be wrong, however, in the same way that a mathematical proof that 2+2=4 will not set the prior probability of one marble lacking from a bag in which twice two marbles had been placed to zero: something not covered by the model behind the proof might have happened.

The fat goose waddling towards the farmer on Christmas morning, expecting to be fed, may have developed a whole theory of how the daily rhythm works. This theory, however well established, does not make it more probable that on Christmas morning she will be fed as well.

2.2 Induction

The only thing that influences the probability of the goose being fed is induction. If her experience started on boxing day the previous year, she'll have reason to assume a probability of 355/356th of being fed – that is: a probability of 355/356 that the usual rules hold –, which is indeed the correct probability[4].

Likewise, in our case too we need the probability that the usual (naturalistic) rules hold in the case under investigation. The fact that we can, faithfully repeatably, establish that no Big Bang takes place is no disproof of it having taken place in the past.

The main claim against the resurrection, is *dead people don't rise*. That claim is an inductive one, based on a limited number of observations – taking the whole world population through the ages is certainly an overestimation. That population is thought to be in the order of 10^{11}, so an argument based on that could never bring the prior below -11.

"But wait!", one might object: the prior for *someone* rising might be that, but in all probability that person would not have been Jesus. Even *given* a resurrection, the prior for it being Jesus would again be -11,

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2 To be precise, the report should also not be unlikely under the alternative hypothesis. We assume that here.

3 McGrew & McGrew uses probabilities, but using logits (log odds) makes the formulas simpler both in form and in content. For probabilities close to 0 or to 1, the hartley logit is very close to the Napier logarithm of the probability, i.e. the exponent of the power of ten.

4 Remark that the fact that every day, *many* observations show that the rules hold doesn't make Christmas less plausible. The one thing that counts is the thing for which the probability is estimated, in the goose case: feedings. If she were fed three times a day, she would correctly find an 1067/1068th probability of being fed again. A more fine-grained look in fact would bring the prior up, since whereas a resurrection is unlikely to be missed, we might on a daily basis miss any number of minor deviations from the naturalistic rules, so the numerator would become much less than the denominator.

bringing the overall prior to -22. But that objection commits the Texas sharpshooter fallacy: the claim is that *someone* rose, and that person happened to be Jesus. Admittedly there is a positive probability that, given a resurrection, it was someone else who rose[5] while not being reported, while Jesus was falsely (yet so convincingly) reported to be risen, but that probability is surely way less than $1 - 10^{-11}$.[6]

More importantly, it would defeat the induction that led to the prior of 10^{-11} in the first place: if of the world population through the ages more people may have risen, that population may not be used to establish the strength of the induction. The very possibility that resurrection does not imply a report drastically reduces the base population for the induction to those people for which a resurrection is virtually impossible – i.e. that part of the modern world population whose dead bodies have recently been correctly identified. That number, even squared, will surely be considerably smaller than 10^{11}.

If we restrict ourselves to induction showing that people rising *and convincingly reporting that fact* is low, we are back at our estimation of 10^{-11}, yielding a prior $p(r)$ of -11.

3 Credibility and believability

Let the *credibility* $c(d)$ of a report d be the negative of the logit under the null hypothesis (i.e. the hypothesis that the report is not founded in truth) of that report reaching us. McGrew & McGrew establish a credibility $c(r)$ for the resurrection report of 44[7], which together with the prior of -11 gives an *intrinsic believability* $b(r) \triangleq p(r) + c(r)$ of 33.

4 Significance

It might seem that this high intrinsic believability would make the resurrection very likely. That does not follow, however. The claim that God used a credible report of an *a priori* very unlikely event to prove the truth of the gospel message defines a population R of possible highly intrinsically believable reports[8] $r_i \in R$ with $\forall_i : c(r_i) \geq c(r)$ undergirding the gospel message. Jesus' resurrection is merely an after-the-fact recognition of how God proved His Gospel claim – He could have used any of a large number of such events, and not taking that into account would be the base rate fallacy – after all, R being large[9], most of those reports would be false, and Bayesian testing *can* give false positives. Given $|R| \gg 0$, $\forall_i : c(r_i) \geq c(r)$ doesn't imply $c(R) \triangleq c(\exists_i : r_i) \gg 0$. What we need is a low probability of *any* false report with a credibility of at least 44 undergirding the gospel message occurring, i.e. a high $c(R)$.

The way we established the prior covers all reports in R that include a resurrection, including e.g. reports of *other women finding the empty grave* or *Jesus appearing to the High Priest*, but also *John the Baptist declaring himself the Son of God, dying and resurrecting* or *Jesus reappearing alive despite His dead body having been eaten by dogs*. In fact, there is quite a bit of variation possible. The Christ might have appeared some generations earlier or later. Instead of the Israelites, an Indian tribe might have received what amounts m.m. to the Old Testament message, and the Saviour might have appeared there, with credible reports of His death and resurrection. Instead of appearing to His disciples after the resurrection, He might have left a message in the sky. As long as these variations include a resurrection, they are covered by our established prior. But what about possibilities other than a resurrection? Presumably, God could have used other ways to prove His point, such as Jesus *not* dying despite clearly being decapitated, or His disciples obtaining the ability to visibly change bread and wine into flesh and blood.

All these potential reports $r_i \in R$ that are at least as credible as the actual one r form the (generalised) tail of the probability distribution, and to claim significance for r it must be shown that $c(R)$ is high. But how to prove such a thing? The world is such a rich and varied place, that computing the credibility of the generalised tail R seems impossible.

Fortunately, while the tail may be impossible to *compute*, it is still possible to *bound* it. Let Q be the set of reports q_i with $c(q_i) \geq c(r)$ reporting *any miracle whatsoever*. Clearly, $|Q| \gg |R|$, and $c(Q) \ll c(R)$. And

5 Which in itself would refute naturalism, making the truth of Christianity more likely.

6 For one thing, it is lower than the probability of a genuine resurrection report being lost. Depending on the scenario (was it God who resurrected? A statistical quantum fluke?) such being lost may have a low probability itself.

7 Corresponding to a probability of 10^{-44} that the report would exist if the resurrection hadn't taken place.

8 Actually, the relevant metric would be convincingness, which consists of believability on the one hand, and gospel-provingness on the other. An exceedingly reliable report that someone ate an ice cream would not be convincing in that sense. Here I'll take convincingness to include (but be much more specific than) convincingness that a miracle happened, so that $R \subset Q$ (for the Q to be defined later).

9 We assume finiteness of R, and later of Q. This can be achieved e.g. by some capping on complexity of the fact reported. One could then take the limit for this complexity cap going to infinity.

$P(\textit{false positive}) \leq P(R)=P(\exists_i{:}r_i) \ll P(\exists_i{:}q_i) = P(Q)$. Given the fact that we have no q_i other than r at all, with high probability $P(Q)$ is not high, and $P(R) \ll P(Q)$.

Even if we allow in Q all sufficiently credible reports of not-so-coherent events (e.g. someone prophesying his death in the next week, yet living for several centuries, or levitating), which would again magnify the size by many orders of magnitude, still none has occurred. This gives us a lower bound of $c(R) \geq \log(|Q|/|R|)$. It should be quite feasible to show this number to be at least 15 or so[10]. If that can be done, we may conclude that r is reliable.

5 References

McGrew, Timothy & McGrew, Lydia (2009). The Argument from Miracles: A Cumulative Case for the Resurrection of Jesus of Nazareth. In William Lane Craig & J. P. Moreland (eds.), *The Blackwell Companion to Natural Theology*. Blackwell. pp. 593–662.

Dawid, Richard & Hartmann, Stephan (2018). *The No Miracles Argument without the Base Rate Fallacy*. In Synthese 195 (9). pp. 4063-4079.

10 By giving a systematic injective 1:n mapping from r_1 to $q_{i1}, q_{i2}, ..$, e.g.: it could have happened in any other religion (giving maybe 3 credibility points); instead of undergirding it could reject or be irrelevant, and/or make ridiculous, and/or make disrespectful, giving another credibility point; the message preached could have been any of a huge number that is incompatible with the Gospel message; and so on. Basically any change that would clash with the gospel message would work. The mapping would not be mathematically precise, but whereas some combinations may be impossible, others members of Q will not be captured, and it would serve well for a rough estimate.