Metaphysics // Fall 2018

Handout 4

Origins of life: White

Three kinds of pebble arrangement. Imitating Paley's procedure, suppose we find pebbles arranged on the road in no particular order (Pattern 1, Figure 1). That is, *we* cannot identify any interesting pattern in the arrangement. One thing we say about this is that the arrangement was highly improbable. There could have been very many other ways to arrange the pebbles. So the fact that they ended up in exactly this shape *is* improbable. And yet, despite that, we are content to say that the arrangement was chancy. Thus: chance coexists with high improbability. 454

Question 1. Where else did we see the last claim?

Suppose we find pebbles arranged in such a way that the larger ones are further from the shoreline (Pattern 2, Figure 2). Then we *do* have a reason to think that some special explanation is needed, that there is more than mere chance is involved. We are likely to cite a physical law in that explanation. 455

Suppose, finally, we find pebbles arranged as a smiley face (Pattern 3, Figure 3). Again, more than a chance is involved, and this time physical laws alone cannot be responsible for the arrangement. A purposeful action will be cited in the explanation—e.g., a child drawing her parent's face. 455

Figure 1: Random pebbles

Figure 2: Pebbles in order

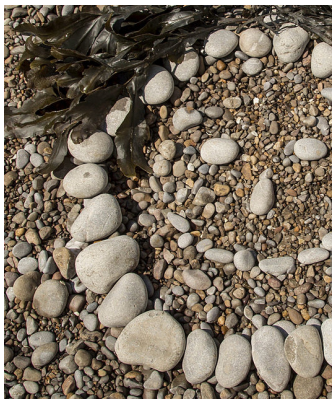

Figure 3: Pebbles as a smiley face

Chance and necessity. There are different ways in which 'chance' is used. Here White means *not* the sense of 'non-deterministic', or 'essentially probabilistic'. Rather, he uses the sense sometimes associated with 'contingency': 456

Definition 2. An event E is *chancy* if a small variation in the conditions preceding E would lead to E' significantly different from E.

Remark 3. Compare this notion of chance to the notion(s) of chance explored by Sober.

Suppose the speed of the car or its weight were different. Then the pebble arrangement in Pattern 1 would have been significant different from the actual one. By contrast, if the waves were a bit stronger, or the child finished her drawing a bit earlier, the arrangements in Patterns 2 and 3 would not have differed much from the actual ones. 455

Remark 4. We need to be careful with the meaning of 'different' here, since differences in the sense taken by White seem to be very sensitive to context.

The origins of life research. The resistance to the idea that life has come about by chance should be interpreted by using the above notion of chance. In the first place, the majority view in the origins of life research is that a small variation in the values of fundamental physical constants would have resulted an unstable universe unsuitable for development and sustainability of life. Secondly, the complexity of molecular systems convinces us that chance is a very poor explanation of the emergence of a self-replicating system. 456

When the Chance hypothesis is in trouble. White adopts a Bayesian approach (a rival to Sober's likelihood arguments). Our question: what kind of evidence would disconfirm the chance hypothesis C? Generally, this sort of evidence is less likely to occur on the assumption of C than on the assumption of $\sim C$. In symbols (where S stands for some observed state of affairs): 461

$$\mathrm{P}(C \mid S) < \mathrm{P}(C) \Rightarrow \mathrm{P}(S \mid C) < \mathrm{P}(S \mid \sim C)\,. \tag{T1}$$

Remark 5. Follows from Bayes' theorem. Hint: unpack $P(E)$ in the formulation we gave in Handout 3.

How to evaluate $\mathrm{P}(S \mid \sim C)$? To reject C is to maintain that the process was biased in some way. So we can envisage different ways for the process to be biased. Since we will eventually consider only two ways, we write: $\sim C = \{B_1, B_2\}$. Then:

$$\mathrm{P}(S \mid \sim C) = \mathrm{P}(S \mid B_1)\,\mathrm{P}(B_1) + \mathrm{P}(S \mid B_2)\,\mathrm{P}(B_2)\,. \tag{T2}$$

Question 6. How to derive the formula above?

White's proposal is to partition $\sim C$ into two kinds of biases, intentional and non-intentional. Letting $B_1 = B_I, B_2 = B_N$, we combine (T1) and (T2) to get: 462

$$\mathrm{P}(C \mid S) < \mathrm{P}(C) \Rightarrow [\mathrm{P}(S \mid B_I) > \mathrm{P}(S \mid C) \text{ or } \mathrm{P}(S \mid B_N) > \mathrm{P}(S \mid C)]. \tag{T3}$$

Remark 7. Ignore the derivation of this formula.

There is a simple application of (T3) to the pebble scenarios. In the Pattern 1, the arrangement is improbable, but it is no more or less improbable than any other arrangement. In fact we might even say that, given the absence of any pattern, $P(S \mid B_N) < P(S \mid C)$ and $P(S \mid B_I) > P(S \mid C)$. Hence the disjunction fails, $P(C \mid S) \geq P(C)$, and C is at least not disconfirmed.

In the Pattern 2 the arrangement has it that $P(S \mid B_N) > P(S \mid C)$, and thus $P(C \mid S) < P(C)$. Hence C is disconfirmed.

In the Pattern 3 the arrangement has it that $P(S \mid B_I) > P(S \mid C)$, and thus $P(C \mid S) < P(C)$. Hence C is again disconfirmed.

Preference problem. Here is what I consider to be the most striking argument in this paper. In order to count *anything* as evidence for the existence of an intelligent designer we must make assumptions about what that designer wanted to accomplish—we need to assume our knowledge of his *preferences*. And that is why when we observe the smiley face, we judge it to be a result of a design: we assume that the agent was interested in creating smiley faces, sending a message to the potential observer about his presence, and so forth. Yet, in the case of a mighty intelligent designer (MID) responsible for the creation of life, or of the universe as a whole, these assumptions no longer hold. Thus the presence of life is no more probable on the assumption of the existence of such a designer than it is on the assumption of chance. 463

Remark 8. Preference Problem was at the heart of Sober's criticism of the Panda's Thumb argument.

Now one might retort that, while we are ignorant of his specific preferences, we can still say that MID favoured life and thus ensured that the relevant conditions should obtain. 464

The response to this (sly) retort is that the very same argument can be made whatever the initial conditions of the universe are. That is, however the universe turned out, we would always be able to disconfirm C!

White illustrates this claim with the analogy of a lottery win. While my win confirms, to a small degree, that the lottery was rigged for me, it does not confirm that the lottery was rigged. This is a somewhat surprising application of a well-known result that: 463

$$[P(S_1 \mid S_2) > P(S_1) \text{ and } S_1 \models S_3] \nRightarrow [P(S_3 \mid S_2) > P(S_3)], \tag{4-1}$$

where '$S_1 \models S_3$' means 'S_1 logically entails S_3'.

Question 9. Find an example to illustrate the claim (4-1).

But now, White objects to this reasoning as follows. If the Preference problem is taken seriously, then *no* evidence can possibly count in favour of C_I. Even if we observed a string of words 'Made by God' imprinted (somehow!) on each hydrogen molecule, or even if 'Hallelujah' were heard from the skies, we would still have to refuse to accept these observation as evidence for God's existence. For them to be taken *as* messages, we have to assume that they are *intended as* messages. And this assumption is denied to us, since it entails an assumption about the intentions of the designer. 466-7

White's objection to the Preference Problem seems to me devastating, since it relies on general and widely shared views on the possibility of communication and mental representation. The designer cannot communicate anything to us, since for him to be able to communicate, we must make assumptions about his intentions. And not only this: for his intentions to be recognised at all, i.e. for some material evidence to be taken as a sign of his intention, we must first impute *some* intention to him.

Preference problem and non-intentional bias. While the Preference problem can be rebutted in the case of C_I, it is devastating, White argues, in the case of C_N. The hypothesis of non-intentional bias is the idea that, because some values of physical constants are favourable to life, there are more fundamental laws of nature determining these constants. We can suppose that the most fundamental laws of nature constrain physical constants to *some* narrow range of values. But it does not follow that the laws constrain the constants to a *particular* range of values. The fact that certain values are favourable to life makes them no more likely to be 'selected' by impersonal laws. There is no reason to think that life-favouring laws are preferred by impersonal laws. Indeed, there is more reason to suspect that *intentional* bias would make the range of constants favourable to life more likely. 466

In the lottery analogy, given the outcome of the lottery, there is reason to suspect that the lottery favours *just one* winner. But this is no proof that the lottery favours one *particular* winner, i.e. a winner endowed with certain specific properties.

To sum up, it is unintelligible why impersonal laws of nature would favour the creation of life, the condition where we have beauty, complexity, and so forth.

Question 10. What does White claim to have accomplished? What does he claim he has not accomplished? 468ff