

UNITED WISDOM

The Anthropic Principle: The Observer as a Condition of the Question

World and Consciousness

Andrey Zarinsh & Maria Evilkut

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@andrey.zarinsh @ilkutki

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Epigraph

> *Our ideas reach no farther than our experience*

David Hume, Dialogues concerning Natural Religion, II.4. A fragment of Philo's speech, in the original English of Hume Texts Online's edition based on the 1779 publication. The Russian rendering is this article author's translation.

What this article is about

We can ask questions about the world only from a situation in which observers capable of asking them have appeared. This simple constraint matters when an available observation is used to judge all possible conditions. The anthropic principle proposes accounting for that selectivity. It does not make humanity the cause of the world's existence or, by itself, specify the probability of life. We will examine Brandon Carter's formulations, distinguish a necessary condition, a sampling rule and a causal explanation, and test several inferences in small invented models. Hume's dialogue separately helps question the move from a familiar part to the origin of the whole. Comparison keeps the questions precise, including those that remain open. Selection through our presence cannot be ignored, while an unspecified probability model cannot be replaced by wonder at finding ourselves here.

I. A report comes from an accessible place

Imagine a building containing a hundred rooms. Ninety cannot accommodate a correspondent, while ten allow someone to stay and send a report. These are stipulated conditions, rather than information about populations, planets or the universe. Every report received will have been written in one of the ten accessible rooms. Accessible rooms therefore represent a hundred per cent of reports, although only ten per cent of all rooms. The difference comes from the reporting rule. It requires no letter to open a door or change the original room count. A correspondent's presence restricts where a report can originate, without making the other rooms accessible or automatically revealing their properties.

A recipient can make two different mistakes. First: “Since all letters come from accessible rooms, every room is accessible.” Second: “Since the correspondent is in an accessible room, the building was arranged especially for that person.” Neither follows from the stipulated numbers. The first overlooks rooms that cannot report. The second turns a condition for

@andrey.zarinsh @ilkutki

receiving a letter into a claim about the builder's intention. Intention might be examined on separate grounds, but those grounds are absent from the reporting location's accessibility alone. Our example thus preserves two questions: why this information was received, and by what process the arrangement it describes originally came into existence.

Anthropic reasoning becomes clearer when the observer is considered part of the conditions under which information is available. Carter's text discusses bias arising from the observer's own situation. A cosmological question must therefore account for conditions allowing the corresponding observation to appear. Our rooms remain a limited illustration. A real inquiry cannot simply stipulate a hundred worlds, ten inhabited places or equal chances of selection without establishing them in a model. The example exposes a sampling mistake. Its numerical proportions do not become estimates of life's frequency merely because a reader mentally replaces “room” with “planet” or “universe.” The analogy's role is to clarify an inference, rather than supply missing cosmological data.

II. No centre does not mean no conditions

At the beginning of his 1974 paper, Carter distinguishes rejecting a privileged central position from the stronger assumption that our situation cannot be special in any respect. The former does not require the latter. His report published in 2006 revisits the distinction through rules of probability description. An observer's situation need not be a geometric centre to depend on conditions necessary for the observer's existence. A “special position” here concerns the selection of possible observations. It should not become a statement about human worth, dignity or a right to dominate other beings. Those are different questions, for which a cosmological principle does not supply a ready-made answer.

An invented observer standing on a platform beside a wall can see only part of an exhibition room. The platform is not the room's centre, and the view is not a randomly selected view from any point. Lack of centrality differs from lack of selection. Without a room plan, the visible pictures provide information about the visible portion, rather than a complete catalogue of every wall. Extending the inference requires further observations or model conditions. This example only distinguishes two assertions. It does not describe cosmological homogeneity, replace astronomical data or establish what lies beyond the boundary of an observation that is actually available to us.

“Are we ordinary or exceptional?” is consequently too broad. We can be ordinary within a chosen class of observers while occupying conditions rare among all places under consideration. We may also lack knowledge of their rarity while knowing they are necessary for our presence. The comparison class must be named: all spatial points, accessible environments or observers of a specified kind. Each has its own selection rule. The anthropic principle draws attention to this distinction, without settling a degree of exceptionalism in one

word. This leaves the empirical prevalence of conditions open instead of concealing it inside a general assertion about humanity's place in the universe.

III. A necessary condition does not guarantee an outcome

Suppose an accessible room is necessary for sending a letter in our example. A letter without an accessible room is then excluded by the rule. An accessible room without a letter is allowed: the correspondent may never enter or write. This small logical table has four combinations of two properties. Accessibility with a letter is possible; accessibility without a letter is possible; the absence of both is possible; a letter without necessary accessibility is impossible by stipulation. Excluding the last combination does not exclude the second. This distinguishes necessity from sufficiency. Calling the condition sufficient would require an additional basis that actually guarantees the letter when the condition is met.

The distinction is essential when discussing an observer. Identifying conditions without which our presence is impossible does not establish that observers inevitably appear whenever those conditions hold. It specifies neither the required time, the mechanism nor the frequency of the outcome in different places. Those questions need their own information. “The conditions suit observers” is thus weaker than “Observers must be here,” although casual discussion can fold both into “The world supports life.” Clarification identifies the step that remains unsupported. We retain the question of necessary compatibility without declaring it a sufficient physical or biological law for the appearance of every kind of life. The scope of the condition remains visible.

The reverse direction also matters. A letter establishes that the specified necessary condition held at its place of origin, without revealing every condition throughout the building. The existence of an observation can similarly constrain descriptions of our situation without providing a complete inventory of possible worlds. A known outcome can exclude incompatible alternatives. Choosing among those remaining requires further differences. That work is less dramatic than saying everything is explained by our presence, but it has content: we can identify excluded possibilities, those still allowed, and an additional question that could genuinely change the inference instead of repeating the observation already incorporated into its conditions. Explanation need not end at compatibility.

IV. Two designs and one report

Construct a different thought experiment. There are two possible building designs: A has ten accessible rooms out of a hundred; B has ninety. First a design is selected with equal probability, then one room is selected uniformly. If the selected room is accessible, a report is sent; otherwise no report is sent. The rule is fully specified, so we can calculate. The probability of a report under A is 0.1; under B, 0.9. The expected proportions of “A and a report” and “B and a report” across the whole experiment are 0.05 and 0.45. These are model proportions, rather than a statement that every finite series of repetitions must produce precisely the corresponding counts.

If we now know only that a report was received, we retain those two combinations and normalise their sum. For A, 0.05 divided by 0.5 gives 0.1; for B, 0.45 divided by 0.5 gives 0.9. The observation changes the comparative assessment of designs under this rule. It does not make B logically necessary, since A can also produce a report. Nor do we conclude that an accessible room caused design B to be created. The calculation updates probabilities on a known event. Its direction and magnitude are determined by the prior chances, room-selection rule and reporting condition, rather than the emotional surprise of receiving a letter.

This calculation goes beyond the tautology that letters originate where they can be sent. Two designs, initial weights and a data-generation rule supply additional content, allowing a comparison we can check arithmetically. Carrying the inference into cosmology, however, requires establishing each element again: the model set, probability weights and conditions of observation. The invented rooms' final 0.9 cannot be declared the chance of our world's arrangement. The anthropic condition contributes to reasoning without replacing its other parts. Precisely because the small model is fully stated, it makes visible what would need to be known additionally in a more complicated question. The calculation provides a structure for inquiry, rather than a borrowed answer.

V. Why initial weights matter

Change only the first step: design A is now chosen with probability 0.9, and B with probability 0.1. Keep the accessible-room proportions unchanged. “A and a report” receives weight 0.9 × 0.1 = 0.09. “B and a report” receives 0.1 × 0.9 = 0.09. After receiving a report, the two weights are equal; normalisation gives one half to each design. The observation is unchanged, but the prior probabilities alter the comparison. This is neither contradiction nor arbitrary arithmetic. We have specified a different experiment, and its result belongs to that experiment. Assessing the inference must therefore include its premises, rather than only the final division.

Initial weights should not simply be chosen to produce a desired answer. Their basis belongs to discussion of a research model. Different defensible choices may be available, information

may be insufficient, or the alternative class itself may be disputed. In our example, the weights are openly fictional stipulations, whose effect is demonstrated by changing them. This helps explain why “improbable” says little without a distribution. Improbable within which set, under which selection rule and conditional on what already available information? Without answers, a large number or tiny fraction can create an impression of precision without supplying precise reasoning. A number still needs the conditions under which it was obtained.

An alternative's possibility also differs from a known probability for it. In Hume's second dialogue part, Philo distinguishes imagined explanations from grounds for preferring one. This historical philosophical dispute is not our room formula, but prompts a neighbouring question: what supports the transition from “conceivable” to “better grounded”? A probability model may answer through weights and data. A philosophical argument examines analogy and the limits of experience. Comparison preserves those different instruments while requiring each account to identify its transition. A list of possible worlds without a measure supplies no numerical assessment; a list of attractive explanations without an argument does not select the most convincing one. Possibility alone leaves further work to do.

VI. Room, person or message?

The unit of selection so far has been a room. Now imagine two islands: one person lives on A and nine on B. Selecting an island uniformly gives A probability one half. Selecting a person uniformly from the ten, then asking where that person lives, gives A probability one tenth. Both calculations fit their rules. The difference assigns no lesser value to anyone: we calculate a selected element's location rather than personal dignity. This invented case reveals the significance of the sampling unit. “Randomly finding oneself on an island” remains ambiguous until we know whether the rule selects an island, a person or another object. Naming the unit makes the numbers intelligible.

Carter's report considers anthropic weighting over comparable observers within a model. It also identifies questions about specifying that weighting more precisely. We do not take one selected class as a final universal solution. Comparable observers, included situations and weights must be defined. If island residents send different numbers of messages, choosing a message uniformly creates another sample. Ten letters from one person do not become ten independent people. Even familiar counts therefore require a unit so that we can distinguish genuinely added information from repetition of the same case. A distribution over locations, a distribution over people and a distribution over their reports answer different questions despite sharing the same setting.

Moving between classes matters particularly for “typical.” Someone may be typical among recipients of a specified report while being unrepresentative of all building residents or possible senders. Typicality relative to an observer class likewise does not establish equal

frequencies of every environment. Carter contrasts assumptions about our situation; we use that contrast to make a rule explicit, rather than assign a ready-made probability to any question. It is reasonable to acknowledge that the class remains uncertain. This leaves the observation intact while stating that the known fact has yet to be connected with the generalisation rule needed for a broader numerical or causal conclusion. Uncertainty can concern the rule as well as the data.

VII. Weak and strong formulations

In the 2006 report, Carter distinguishes a weak formulation within a given model from a more controversial strong formulation distributing probability over a model ensemble with varying parameter values. The expansion of the question matters here. First we ask where an observer could be within a chosen account of the world. Then we consider which accounts permit that observer's presence. The second question adds assumptions about a model set and weights. “Weak” and “strong” do not automatically measure how well established or valuable a principle is. Author and formulation must be specified, because familiar labels can cover different assertions and uses in different discussions. The additional premises deserve attention alongside the label.

Discussing a model ensemble is not observing multiple universes. Alternatives can be considered mathematically without declaring them all real. If a physical theory proposes such a multiplicity, its grounds require separate evaluation. This article establishes neither the existence of a multiverse nor a probability for it. Our two buildings are explicit fiction, rather than evidence of a cosmological ensemble. They clarify a conditional comparison's structure. Turning that structure into a report about reality would introduce a new inference unsupported by the example. A question remains between “These models can be considered” and “These worlds exist,” and changing terminology does not eliminate it. Possibility needs to retain its stated status.

Carter also preserves the possibility of a deeper physical theory determining parameters without that anthropic extension. Constraining what is observed need not end the search for an explanation. Selection can be accounted for while laws, mechanisms and new testable implications are pursued. The selected primary passage from 1974 likewise distinguishes prediction from a fuller explanation. We do not reproduce all that paper's conclusions or calculations; only genuinely available primary text is used. The useful lesson is to preserve several levels of inquiry: compatibility with observers, a distribution within a model, and a physical basis for parameters. Answering the first should not quietly replace answers to the second and third, which require additional work.

VIII. Thinking about the whole from a familiar part

In Hume's dialogue, Cleanthes argues from the world's arrangement to an intelligent cause by analogy with human manufacture. Philo questions the strength of that transfer. A house of known origin differs from the whole universe in its subject and available experience. The dialogue contains different positions, whose speeches should not be merged into one authorial declaration. Philo's question about moving from a natural part to the whole's origin is useful here. It separates observing human intelligence within the world from asserting that such intelligence must explain all its arrangement. Cosmological observer selection neither removes that philosophical step nor supplies the grounds for taking it. The causal inference still needs its own argument.

Carter explicitly distinguishes his intended anthropic principle from a world teleologically arranged for our kind of life. “The observer is included in the description” therefore needs careful reading. An observer can condition the availability of data without thought becoming the physical cause of the object's existence. Receiving a letter did not build the building; observation under suitable conditions does not automatically establish that consciousness created the cosmos. A causal mechanism or religious intention requires a separate argument. Discussion of meaning remains possible, while the anthropic condition avoids serving as ready-made proof of purpose, a special human mission or thought's power over physical constants. Its role is more specific than those claims.

Similar questions do not make Hume the precursor of Carter's entire theory. Hume examines philosophical analogy and its experiential basis; Carter considers how a model accounts for the observer's situation. We can compare caution in inference while preserving those subjects. Religious and nonreligious views can then be discussed without attributing to either source a final resolution absent from the selected passages. Criticism of a particular analogy does not refute every possible idea of God, and anthropic selection does not confirm them. Precision names the argument being examined instead of declaring the result of a dispute about all worldviews at once. The comparison remains an invitation to examine reasons, rather than a verdict on a reader's beliefs.

IX. A tautology and an assessable continuation

“Observers are where they can be” supplies no new observation by itself. Carter distinguishes that simplification from a fuller formulation with probability premises capable of producing different conclusions. Our buildings show where additional content comes from: alternatives, weights and a registration rule. Additional content also brings additional responsibility. Implications should remain attached to their assumptions and be compared with what is actually observed. If premises are changed after every result to preserve a preferred explanation, it becomes difficult to identify what could count against it. The substantive question is which distinction between models is proposed for assessment, and which data could make it apparent. A stated principle does not remove the need to examine its use.

Near the end of Hume's second part, Cleanthes challenges excessive restrictions on analogy by appealing to astronomy. Philo replies with further similarities and observations supporting astronomical inference. The sequence matters: the dispute is not a declaration that transferring experience is always impossible, but an examination of its basis. It helps avoid the opposite extreme here: “Since we observe only one world, science can know nothing about it.” That prohibition does not follow from the dialogue read. A more specific request does: which relations, observations and distinguishing implications support this inference, beyond making its chosen story attractive? The challenge concerns the grounds of an argument, rather than an automatic veto on inquiry into the universe.

Carter's later applications discuss controversial predictions about observers' development and civilisations' future. We read those passages but do not use them as an established deadline, personal forecast or guide. They remind us that naming a principle correctly does not make every application uncontroversial. Comparison classes, weights and the connection between premises and data still need examination. This article has a narrower task: distinguishing a condition of obtaining an observation from a full causal explanation. It requires no date for civilisation's end or chance of an individual's success. Rooms, islands and a philosophical speech cannot generate such conclusions without their own grounds. Those questions remain outside the numerical examples' scope.

X. A more precise question about our presence

“Why does the world permit our existence?” can contain several kinds of why. First: why are available observations compatible with our presence? Second: what physical process produced those conditions? Third: how should possible models be compared after accounting for an observer? Fourth: what meaning does someone give their existence? These questions connect in conversation but do not share one answer. The anthropic condition directly concerns observational selection; a probability model adds comparison rules. Mechanism and personal meaning require different work. Separating them supports substantive discussion of each question without making a simple sampling constraint a universal explanation of everything a person finds significant. An answer's scope matters as much as its appeal.

For any numerical inference, ask what is selected randomly, which alternatives are specified, what their initial weights are and what is already known. Changing the unit in the island example changes one half to one tenth. Changing priors in the design example changes the final 0.1 and 0.9 to equal halves. The results are compatible because they follow different declared rules. They show what information should accompany an attractive number. If the rule is unknown, an honest answer may remain qualitative. Naming a limit is better than presenting an invented probability of the universe as a measured fact or a justification for a preferred worldview. The numbers retain their conditions instead of borrowing authority from precision alone.

Our presence thus changes the question's formulation without predetermining its final answer. We cannot observe our absence through our own report, but can construct models, obtain information and compare arguments. Sampling constraints preserve inquiry's meaning while demanding care with data. Wonder and philosophical discussion of the whole retain a place. They become clearer when they are not presented as numerical proof without a distribution or causal inference without a mechanism. The observer receives a definite role in reasoning: participating in the conditions under which a question is available. Further answers must then rest on what has actually been established, with assumptions stated and open questions still identifiable as questions.

What this means in practice

Take one inference based on something that could be seen or reported, perhaps our room example. List all places under consideration separately from those able to supply data. Name the selection unit: room, person or letter. If you want to calculate, repeat the two-design example first with equal prior probabilities, then with weights 0.9 and 0.1. Retain the conditions that a room is chosen uniformly and every selected accessible room sends a report. Check why the results differ. Finally, formulate a causal question the calculation has not answered, such as how the building design arose. You can stop at a verbal distinction without numbers. This optional exercise concerns sampling and inference, without diagnosing beliefs or promising psychological effects. It does not calculate the probability of your life, predict the future or require a change of worldview. Its purpose is to make the basis of a particular assertion visible.

Key quotation

> *whether the sample should be considered to be biassed, and if so how.*

Brandon Carter, Anthropic Principle in Cosmology, section on the principle's meaning, page 2, 2006 version. Exact lower-case fragment within a longer sentence; the source's spelling “biassed” is retained. The Russian rendering is this article author's translation of the original English.

Connections between traditions

1. Observation and its availability. Carter's section on meaning examines sampling bias; Philo in Hume's II.7–8 examines the strength of transfer between similar cases. Comparison asks how the initial observation became available and why it can be extended. Probability selection remains distinct from the whole historical philosophy of experience and does not replace its argument.

2. A part's situation is not a measure of the whole. Carter distinguishes weighting over comparable observers from uniform weighting over locations; Philo in II.18–19 questions moving from part to whole. The shared operation makes the comparison class explicit before extending a local result. Neither passage establishes actual numbers of worlds or frequencies of every possible environment.

3. Possibility and grounds for preference. Carter's strong formulation requires a model ensemble and further probability assumptions; Hume's II.12–14 distinguish imagined alternatives from reasons to prefer an explanation. This pairing shows that conceivability

assigns no probability. Bayesian comparison, philosophical argument and religious interpretation retain different subjects and standards of support.

4. Weighting unit and limits of knowledge. Carter identifies questions about specifying anthropic weights; Philo in II.22–24 retains the limits of experience concerning worlds' origins. Comparison asks for a unit and domain before assigning a number. Our rooms and islands provide checkable arithmetic in an invented model, rather than a universe census or an assessment of observers' dignity.

5. Content beyond repeating a condition. Carter distinguishes tautological simplification from model-based prediction; in II.25–28, Cleanthes and Philo debate the basis of astronomical analogy. The connection requests a distinguishing implication or additional ground. It imposes no blanket prohibition on learning about one world: the particular argument and observations capable of supporting it are examined.

6. The observer and an attributed purpose. Carter separates his principle from teleological arrangement for humanity; Philo in II.19 questions privileging human thought as a model for the whole. Comparison separates observational availability from a claim about cause or intention. It neither proves nor refutes every religious view, establishes consciousness creating matter, or assigns a human mission.

Primary sources

1. Brandon Carter. Anthropic Principle in Cosmology, arXiv gr-qc/0606117, version 1, 27 June 2006; contribution to a June 2004 colloquium. The entire six-page report, including references, was read. Sections on meaning, weak and strong formulations, and prediction versus tautology are used. Later controversial applications are not adopted as established forecasts; cited underlying studies were not separately read. The key fragment is the sampling-bias question on page 2; Russian translation is the article author's.

2. David Hume. Dialogues concerning Natural Religion, Part II, original English, first posthumous 1779 copytext in Hume Texts Online. The edition's basis was checked in site notes; editors are Amyas Merivale and Peter Millican. The entire Part II and its footnote were read; other parts and the manuscript were not compared. Cleanthes's and Philo's voices are distinguished without identifying every speech with Hume's final view. The epigraph is an exact fragment of II.4, KS 142–143; Russian translation is the article author's.

3. Brandon Carter. Large Number Coincidences and the Anthropic Principle in Cosmology, in M. S. Longair's edited volume, 1974, pages 291–298. Only available indexed primary passages were actually read: the introduction on page 291 and the end of section 4 with the opening of section 5 on page 296. The full scan and formula derivations were not read. The source supplies narrow historical context, without a claim of complete reading.

Tags

anthropic principle, observer, cosmology, Brandon Carter, David Hume, experience, sample, selection bias, condition, necessary condition, sufficient condition, probability, prior weights, conditional probability, model, model ensemble, weak principle, strong principle, explanation, cause, teleology, typicality, reference class, counting unit, analogy, part and whole, open question, scientific inference, philosophy, primary sources

About the authors

Andrey Zarinsh is the author and founder of United Wisdom. He explores inner transformation, the unity of traditions, intercultural dialogue, and contemporary spiritual discipline. Instagram: @andrey.zarinsh.

Maria Evilkut is a co-author of United Wisdom. Alongside her research, she seeks to test these ideas in practice and observe how principles of unity and mutual understanding work in real life between people and cultures. Instagram: @ilkutki.