



Explain this â?!

Description

In my [previous post](#) I explored how LLMs provide explanations of the â??reasoningâ?• by which they produce their outcomes (i.e. responses, answers, decisions). At least in their current iteration, platforms such as ChatGPT are tuned to generate an explanation independently of the process by which they came up with their response in the first place. To expand on the issue of *explanation* I thought I would review my earlier researches into the role and functioning of *explanations*, particularly explanations of design actions.

In this task I called on Googleâ??s NotebookLM platform to help review my previous publications, some of which seem to touch obliquely on the issue of *design explanations*. I had already uploaded to NotebookLM several PDFs of books, articles and blog posts that I authored or co-authored over several decades. See post [Share your expertise](#).

My proposition here is that explanations of design decisions are **contingent** on circumstances, including the receptivity of the people involved, the context and purpose of the explanation, and potential actions that might follow from an explanation. Consider the decision to position a large window in the wall of a house, as an example of a simple design decision.

NotebookLM identified 5 main models of how explanations operate, or might operate. It extracted these from the texts I supplied. So what follows is produced jointly by NotebookLM and me in conversation. The approaches are: formal logic, rule-based systems, precedents, metaphors and neural networks.

Formal Logic

This approach would attempt to explain any decision we make through logical deduction from a set of premises. Drawing on Descartesâ??s model of reason as geometrical proof, we could construct a simplified argument (NotebookLM helped formulate these examples):

- Premise 1: A purpose of a living room is to provide natural light and views of the external environment, enhancing the well-being of occupants. This premise draws on general architectural principles not always stated as a formal logical premise, but it aligns with a rationalist approach to

defining a fundamental purpose of a living room.

- Premise 2: Large windows are defined as architectural elements that maximise the transmission of natural light and afford expansive views of the external environment.
- Deduction: Therefore, to fulfil the purpose of a living room (as stated in Premise 1), large windows should be included in the design.

This explanation follows a **deductive structure**, similar to a geometrical proof, moving from general principles to a specific design outcome.

This approach affords little support for the idea that explanations are *contingent*. After all, formal logic aims for universally valid conclusions based on a fixed set of premises and rules of inference. The validity of a logical argument should ideally hold regardless of the audience or the specific context of the explanation.

Such an approach to the generation of an explanation is open to fairly obvious criticism. The initial **selection of the premises** (e.g., defining the fundamental purpose of a living room) is itself a human act that can be influenced by context and values. Furthermore, the **receptivity** of someone to a logical explanation depends on their understanding and acceptance of the underlying principles and the way the argument is constructed. If the audience does not share the initial premises or understand the logical steps, the explanation, though logically sound in isolation, may not be persuasive or meaningful in that specific circumstance.

Rule-based systems

This approach explains the design decision by appealing to established design rules or guidelines. This approach may call on design languages, heuristics, pragmatically derived rules of thumb and design methods that seek to capture design expertise in process diagrams. An example rule could be:

- Rule: In residential living spaces intended for daytime use, the glazed area of external walls should comprise a minimum of X% of the total wall area to ensure adequate natural illumination and visual connection with the outside.

The inclusion of large windows is thus explained as an **application of this explicit rule**, aimed at achieving well-lit and visually connected living spaces. This aligns with the supposedly rigorous prescriptions of how design should proceed, characteristic of early design methods

This approach presents a more **mixed relationship** with contingency. While the rule itself (e.g., minimum glazed area) might appear fixed and universally applicable within a certain domain (such as building regulations), its **interpretation and application** are often contingent on specific contexts. For example, exceptions to rules might be made based on unique site conditions or specific client needs.

The **purpose** of citing a rule as an explanation (e.g., to justify compliance, to guide design) also influences how it is presented and received. The **receptivity** to an explanation based on rules depends on the audience's acceptance of the authority and relevance of those rules. If the people involved question the validity or applicability of the rule in their particular situation, the explanation may be less

effective.

Precedents

This approach justifies the design decision by referencing successful or common examples of living room design from the past.

- Explanation: The inclusion of large windows in living rooms is a well-established precedent in modern residential architecture. Numerous successful examples, from modernist villas with floor-to-ceiling glazing to contemporary houses maximising natural light and views, demonstrate the efficacy and desirability of this feature. Following these **established precedents**, the design incorporates large windows to achieve similar benefits of illumination, visual connection, and aesthetic appeal.

This explanation leverages the **historical and pragmatic success** of similar design choices.

This approach **supports** the idea that explanations are contingent. Explaining a design decision by referring to precedents relies on the **similarity** between the current situation and past ones. The relevance and strength of a precedent as an explanation are contingent on how the audience perceives the similarities and differences between the contexts, the **success** of the precedent in its original circumstances (which is also context-dependent), and the **values** attributed to that precedent in the present context.

The **purpose** of using a precedent (e.g., to demonstrate feasibility, to align with accepted practices) will shape which precedents are chosen and how they are presented. The **receptivity** to this explanation depends on the audience's familiarity with and acceptance of the cited precedents.

Metaphor

This approach uses an analogy to explain a design decision by relating the large windows to something else.

- Explanation: The living room is conceived as a **“window onto the world”**, and the large windows serve as the primary interface for this connection. Just as eyes provide a broad and unobstructed view, these expansive openings allow the occupants to visually engage with the external environment, bringing in light, views, and a sense of openness. The metaphor of the living room as a **“window onto the world”** justifies the inclusion of large windows as the key element that embodies this **conceptual analogy**.

This explanation uses a **metaphorical framing** to make the design decision understandable and resonant.

This approach strongly **supports** the contingency of explanations. The power and effectiveness of a metaphor lie in its ability to create understanding and resonance within a specific context and for a particular audience. The meaning of a metaphor is not fixed but emerges through **interpretation**. A metaphor that is insightful and persuasive to one person or group in a certain situation might be confusing or irrelevant to another.

The **purpose** of using a metaphor (e.g., to foster a particular conceptual understanding, to evoke an emotional response) directly influences its selection and how it is elaborated. The **receptivity** of the audience is crucial; if they do not grasp the connection being made or if the metaphor clashes with their existing understanding, the explanation has less force.

Neural networks

This approach considers how an LLM might **explain** the inclusion of large windows, based on the statistical patterns in its training data. Drawing on my [previous post](#), the LLM's **explanation** would be based on probability and co-occurrence of terms.

- LLM Explanation (simulated): **The inclusion of large windows in a living room design is a common feature in architectural plans and descriptions. This design choice likely aims to maximise natural light penetration and provide views of the surroundings, which are frequently associated with comfortable and desirable living spaces in the vast corpus of text and images the model has been trained on. The statistical co-occurrence of living room, large windows, natural light, and views suggests a strong relationship and the probabilistic likelihood of this design element in such spaces.**

This **explanation** reflects the **statistical patterns** learned by the LLM rather than explicit logical reasoning or adherence to rules. This approach provides a particular perspective on contingency. LLM explanations are contingent in several ways. Firstly, they are **data-dependent**, reflecting the patterns and biases present in their training data. If the data disproportionately represents certain contexts or viewpoints, the LLM's **explanations** will be skewed accordingly. Secondly, the **meaning and interpretation** of an LLM's output are ultimately contingent on the human user and the specific context of the interaction.

The **purpose** of asking an LLM for an explanation (e.g., to generate ideas, to summarise common patterns) influences how its response is evaluated. The **receptivity** of the audience to an LLM's explanation is also contingent on their understanding of AI and their willingness to accept a statistically-derived response as a valid explanation. Furthermore, meaning for an LLM resides in the responses it invokes, highlighting the contingent and interactive nature of its **explanations**.

NotebookLM provided a helpful summary. While formal logic strives for universal validity and thus resists arguments about the contingency of explanations, the application and reception of even logical explanations are not entirely context-independent. Rules offer a framework that can be applied with varying degrees of contextual sensitivity. Precedents and metaphors rely on the specific circumstances of both the past examples and the current situation, making them highly contingent. Neural network-style (LLMs) explanations are contingent on their training data and the human interpretation within a given context. Ultimately, all forms of explanation in design are subject to the **interpretive frameworks, prejudices, and tacit understandings** of the individuals and communities involved, making the contingency of explanations a fundamental aspect of design discourse.

I notice now that this set of explanatory pathways did not address the issue of **evidence** a major component of plausible explanations. The conversation continues.

Note

Featured image is by Dall-e, captioned: Here is the generated image of a dilapidated apartment block facade with large windows, many of them open, revealing glimpses into different living rooms.

Category

1. Artificial Intelligence

Tags

1. architecture
2. design
3. explanation
4. logic
5. metaphor
6. window

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