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# The Origins of Design Problems

Design problems emerge from many different sources. Take some time to consider the impact that the difference sources of design problems can have on how the design is executed.

Design problems can come from a number of different sources. Some are:

**External Clients:** Your company may provide services to other industries (e.g. you may design automobile parts for Ford Motors). In this case, you have to trust your client regarding the nature of the design because you do not have direct access to the product's users (car drivers).

**Internal Clients:** Your clients may be other groups who work for the same company. For example, at the Pickering Nuclear Power Station, there are groups who provide supporting design and other engineering work for the engineers who maintain the plant, and who work in the very same office as you do.

**End User Clients:** You may be asked by the actual user of a product, to design it for them. This is often the case in civil engineering, where the future occupants of a building will request the building be designed for them. In this case, there is no "middle-man". However, this puts the onus on the designers directly to ensure they really understand what the client wants

**Marketing Considerations:** It can be difficult for designers to contact the entire user community of a product (imagine [Chrysler](#) designers contacting every minivan owner every year, to discover what new features should go in next year's model). Instead, some design problems are identified by market research into particular areas. The danger in this case is that the market researchers will unwittingly bias their conclusions towards their own corporate philosophy. For example, market researchers who act on behalf of developers of energy systems like fuel cell technologies will naturally tend to find results that favour the development of fuel cells. These researchers are not lying; they have just introduced a natural bias arising from their own philosophy and corporate mentality.

**You:** Perhaps you have seen an opportunity to develop a new product preemptively; that is, without having a client come to you directly, but rather with the expectation that clients will want such a product if they knew it was possible. No one knew they wanted a [Palm Pilot](#) until it was "invented"; but many people suddenly realized they "needed" one as soon as they saw it.

**Circumstances:** Sometimes, the world gets thrown a curve ball and everyone scrambles to adapt. These are often times of nearly explosive innovation - even though most products fail on the market. An obvious example of this is the explosion of [COVID PPE](#) designs that appeared in 2020.

In the end, however, design problems all come from the same source: an [agent](#) that perceives that there is something wrong with their current [situation](#) and wants to change that situation for the "better." That is, the agent seeks to restore [balance](#) (as envisioned by the agent) to a situation (per Simon's definition of designing, per [\[Sim81\]](#)).

Because *anyone* may perceive and wish to address an imbalanced situation, but not everyone knows how to design, it is likely that most designers will spend most of their times treating the design problems of others.

## References

**Sim81. a** Herbert A. Simon (eds). 1981. **The Sciences of the Artificial**. The MIT Press, Cambridge, Massachusetts.

[background](#), [balance](#)

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