

Roofshot Manifesto

We choose to go to the roof not because it is glamorous, but because it is right there!

I want flying drones that can bring me fresh produce. I am excited about contact lenses that measure blood sugar. I absolutely need human driving of cars to be outlawed.

Nevertheless I see us (Google) over-glamorizing the moonshot model of innovation, and I struggle to connect the 10X leaps approach to many of our successes. Rather, I contend that the bulk of our success is the result of the methodical, relentless, sustained pursuit of 1.3-2X opportunities -- what I have come to call "roofshots".

When I was a search software engineer I witnessed how our product continuously got faster and more amazing. It came from things like scoring changes, new click data, faster networking software, clever use of cheaper DRAM (later Flash), and so on. Each of them a roofshot. The combined result was awe-inspiring.

Our datacenter innovations followed a similar storyline. We started with a pile of machines in 3rd party facilities and decided we could do better. We kept improving electrical efficiencies, changing how airflow was provisioned, learned how to pre-fab pieces of the facility for faster construction and higher cost-efficiency, and eventually figured out how to nearly eliminate scheduled downtimes. Roofshot after roofshot and suddenly we have some of the most efficient and reliable datacenters in the world.

Seen from afar, these kinds of achievements could be mistaken as moonshots. They were, in fact, a sequence of roofshots. A sequence of roofshots is a compelling innovation model that can produce both quick returns and sustained transformative results(*).

Although moonshot leaps are rarer, particularly in systems areas, we must identify and seize them. So how do we find those rare opportunities? I subscribe to the artist Chuck Close's position that "inspiration is for amateurs; the rest of us just show up and get to work". Moonshots tend to reveal themselves to people that chase roofshots with passion.

So my summary advice in this manifesto is to go out there and have huge dreams, then show up to work the next morning and relentlessly incrementally achieve them.

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*Math P.S.: A 1.3X roofshot per quarter is a clever way to achieve the equivalent of a moonshot in less than 3 years, with the added benefit of giving you a 30% improvement in the first 12 weeks! The area under the curve matters.

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