What Makes an Inventor, and How Can I Stimulate Innovation?

This Patent Stuff and My Semiconductor Business – Part 11

Welcome to this post about patents and chips. Not a lot has been written about this combination, but there is a lot to know, especially for the innovators and entrepreneurs themselves. In this three-weekly series, I talk about various aspects, from my dual points of view of a patent agent and a semiconductor entrepreneur. If you like the article and read it on LinkedIn, give it a thumbs up, and/or click on Follow. If you like to work with us for your next patent, "contact us" info is on www.icswpatent.com. You can also subscribe/unsubscribe for short email alerts when the next post is available.

Semiconductor companies depend on innovation – whether you design a device, an IP, a chip, a foundry process, a machine for a foundry, software, or anything else related to chips. Apart from a few service companies, if you don't innovate, your company may be in big trouble. How do you get inventors, other than by pulling out your wallet? And how do you get people to be productive inventors? (Hint: happy inventors are productive inventors.)

What makes an inventor depends roughly on three things:

- Character
- Belief
- Environment

Character

Of course, inventors are as diverse as mountain climbers, or sculptors, or violinists. But when it comes to character, they have a number of things in common. That includes having an analytical mind and a wish to understand how things work. It includes optimism, and no fear of failure. Curiosity, and the ability to see parallels between totally unrelated situation, systems, methods, etc. A wish to create rather than always just copy what somebody else already did (as one inventor expressed it: you don't need to rely on the "cookbook"). An inventor can be stubborn enough to find a solution even though others tried and failed or had unsatisfactory results.

While none of these factors are black and white, as character traits they tend to be rather stable throughout life. You can reasonably well determine if a person fits the above profile, and you'll know whether you have a potential inventor or not. You may wonder if being a genius is not a specific factor. It may be, but it is not very measurable unless the person presents you his or her masterpiece. When you see one, whether it is a CORDIC, a Viterbi block, a Girl with the Pearl Earring, Gödel's Incompleteness Theorem, a Moonlight Sonata, or CRISPR CAS9, you will know that you are talking with

a genius. And the genius is likely able to pull off a few more very valuable creations. But by that time, the genius might not easily decide to join you.

Finding a potential inventor is not the whole story, though.

Belief

The person also needs to have a strong confidence in his or her capabilities. And a belief that not everything has already been invented yet. (One inventor said—my brains work differently than those of other people.) Without the belief that it is possible to find a solution, or better solution, for a particular problem, creativity is locked in a cage, or taking a holiday. Inventors can have that belief by having had a great education—a good university can make a lot of difference—or at least exposure to many different techniques. An education that teaches people to create rules rather than follow rules made by others is a great help. A long career can provide a lot of experience, but inventors can have any age, from naïve enough to seasoned enough to believe they can come up with a solution.

How will you know if a person has any of these beliefs? Personally, I would just ask people if they believe they could invent something, and what makes them believe so. You should get a confident answer.

Environment

The environment is the least stable factor. Clearly, an environment must encourage new ideas rather than place value at proven solutions only. An environment that suffers from Not-Invented-Here (NIH) is toxic. Any environment that places people in boxes "you're not the inventor", or "you always have crazy ideas" is a big turn-off. The environment must be open to new ideas, daring or not, and accept that even though the last nine ideas didn't make it, the tenth can be jackpot. The environment must allow for brainstorming, and to use a crazy idea as a steppingstone to another crazy idea which may be a steppingstone to some not-so-crazy ideas. The environment must provide exposure to new ideas, perspectives, and points of view. Universities often do a lot of this, but there is no reason why a private company couldn't do it. Silicon Valley is full of companies that can do it, and companies in other places can do it too.

There are a few more things the environment needs to provide, though. There must be a reason to invent something, such as an unsolved problem, or knowledge of a (new or exciting) method or technology that is still being applied in only a limited field. The environment needs to allow potential inventors for the time to go through the process of analyzing a problem and its existing solutions, brainstorming about old and new solutions, thinking them through, documenting them, and/or trying them out. Some inventors work best alone, others are most productive in groups. Allow both.

Last but not least, the environment should provide a reward when an idea evolves into an innovation, but should also be respectful of the many ideas that may not evolve into an innovation.

Practically, What Can I Do to Stimulate Innovation?

In most cases, only a small part of an organization needs to work on innovation. This could be an "Office of the CTO", or an R&D team, or generally, any design department. This is not to say that I should exclude others (and other departments) from being innovative, but I'd like to have a number of creative people together, and nurture a culture of openness and creativity. Openness and encouragement should come from the top. If there is anybody trying to build a little kingdom and displaying NIH or any other toxic behavior, I would remove that person from at least that part of the organization. That can sometimes be really difficult, for example if that person is a prolific inventor himself, or makes up part of the management team.

Getting the right people in that team or department is one step. Since it depends on characters, which I can hardly expect to change, so I will have to rely on selection.

To spread the culture throughout my organization, I could do something unconventional like allowing anybody from outside my innovative department to spend up to 10% of their time contribution to an ongoing project of their choice that is being conducted in that department. This will also allow me to spot new creative talent at an early stage, and it can generally make employees feel happier about the overall organization.

Encouragement is important, and it helps a lot to communicate my overall philosophy, so that employees understand that they can and should come up with crazy ideas, and take crazy ideas of others seriously. I need them to understand the process of brainstorming, and to be willing to actively use it. Most organizations have way more meetings than healthy, but brainstorming is often forgotten, or only half done, and that is not how it should be. Employees need to know that coming up with somewhat crazy ideas can be productive, and why. Of course the brainstorm process has a stage of collecting ideas, no matter how weird they sound, and another stage of examining them. At the examining stage, team members can give their feedback and thoughts about a proposed idea, and the proposer needs to have an opportunity to explain what's behind the idea, and why it should have merit that others may not immediately see. It is often at this stage that others may start to see the value, or come up with another idea triggered by the one that is being discussed. This second-generation idea may have all the elements that I need for progress.

Then there is the reward. An idea that results in innovation (whether it is a patent, a trade secret, or even a business model) should be rewarded. Many companies pay a bonus, maybe $1,000, upon filing a patent application. While that is a good stimulus, I often see that this bonus is not sufficient to get engineers engaged in the patenting process. Some engineers of course just loathe the legal wrangling and the weird patent language. Others know that their (big) organization is interested in the number of patents only, and not in the quality—so why would *they* care? But if my goal is to have real innovation, then I should care about the quality, and I need to get the engineers engaged in the process. It is *their* baby, and I need to show them that it is important to me that their baby gets fed and gets healthy. In that case, I should make sure that my bonus system doesn't just give an incentive for quantity. If I have in-house patent lawyers and agents, they should not be rewarded on quantity either. I should put in place a system that selects innovation proposals based on their value for the company, including the likelihood that the innovation ends up in a product, and including the competitive advantage that the invention might bring to the company. But, I should also care that ideas that don't make it, or that get forgotten after the brainstorm process, still get some reward. Even if it is a donut, or a healthy snack, there should be some recognition that all parts of the process are valuable.

Upcoming:

12 My Invention is Vital for My Business Plan. But I Don't Have Much Money Yet. How Can I Save?

13 I Want to Protect It Now—But Am Still Working Out Architecture Details. Can I Add Those Later?

14 I Want to Use an FPGA Before an ASIC. Can It Be One Patent?

Published so far (find the articles on www.icswpatent.com or #ThisPatentStuff):

1 So You Got This Great Idea That Will Wipe Out Competition. Now What?

2 Developing an IP Protection Strategy for Your Semiconductor Company – PART I

3 Developing an IP Protection Strategy for Your Semiconductor Company – PART II

4 In What Countries Should I Patent, Anyway?

5 Choosing the Right Patent Person for Your Inventions

6 How is a Chip or Firmware Patent Different than Other Patents? What About a Software Patent?

7 Woohoo! I Invented a Huge Improvement over My Competitor's Invention!

8 I'll Be A Billionaire Soon Enough. But Now I'll Just Buy This Book on Patent Writing on thriftbooks.com.

9 My CTO Can't Explain His Invention to Me. But He Is the Smartest Guy in the World.

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