Understanding Abundance, part 2: Silicon Valley's Special Sauce

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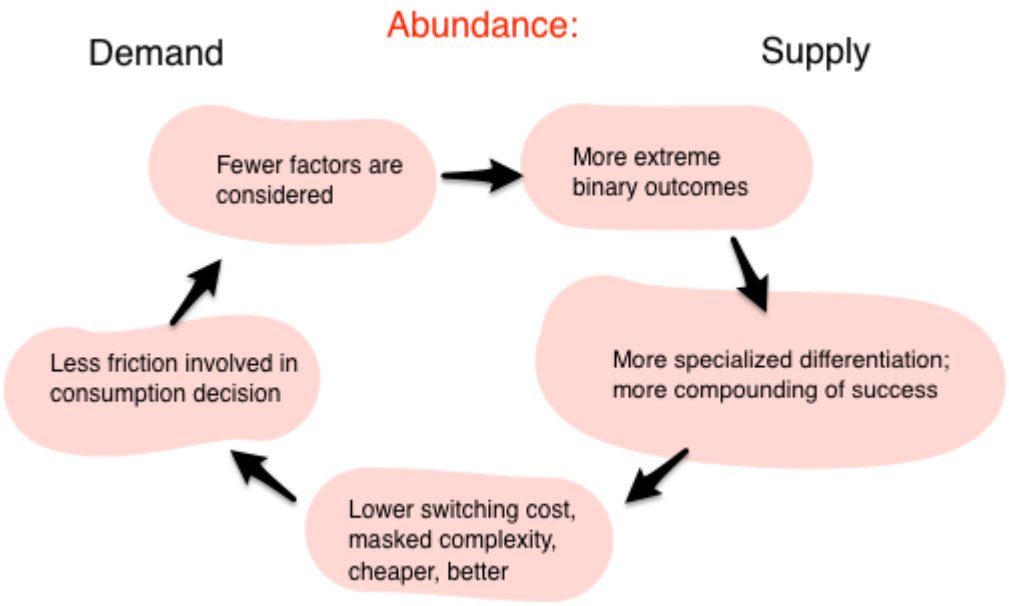
Welcome back to our series on understanding abundance. In part 1, we defined abundance in terms of the customer: the condition reached as the friction involved in

consumption approaches zero. We learned about how lower friction leads to single-variable decisions and binary outcomes, driving the left hand side of this cycle:



In part two, we're going to investigate the right hand side: how the modern tech industry evolved to accommodate and keep pace with consumers' thirst for abundant consumption.

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The most curious part of the thing was, that the trees and the other things round them never changed their places at all: however fast they went, they never seemed to pass anything. "I wonder if all the things move along with us?" thought the poor puzzled Alice. And the Queen seemed to guess her thoughts, for she cried, "Faster! Don't try to talk!" …

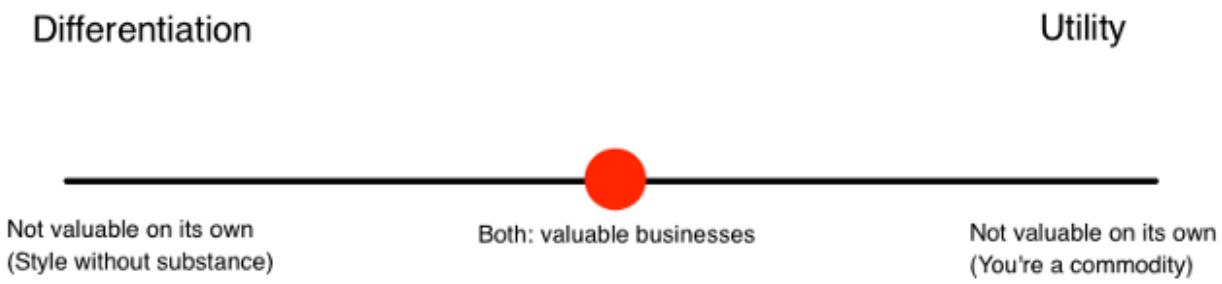
"Well, in our country," said Alice, still panting a little, "you'd generally get to somewhere else — if you run very fast for a long time, as we've been doing."

"A slow sort of country!" said the Queen. "Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to go somewhere else, you must run at least twice as fast as that!"

-Lewis Carroll, *Through the Looking Glass*

One of the most powerful concepts in evolutionary biology is Leigh Van Valen's Red Queen Effect, named after the chess piece in encountered by Alice in *Through the Looking Glass* who must continually run faster and faster in order to keep in place. Evolutionary progress, in the Red Queen's world, is not a ladder you climb towards enlightenment but rather an accelerating treadmill on which we struggle to maintain relative standing. No matter how rapidly you evolve, your competition evolves along with you: in order to continually make progress relative to your surrounding environment, you must run faster and faster. The Red Queen's consequences can be seen everywhere: in biological evolution, in the stock market, and in human happiness. Just like Alice, the faster you run, the more the world runs with you.

When racing the Red Queen, participants inevitably face two choices: compete, or cooperate. This is a recurring theme in human history: the balance between cooperation and conflict in evolving environments. One area where this balance plays out is in our modern free market economy. Firms compete with one another for consumers, but also buy and sell with one another as suppliers and distributors. The end goal is to maximize shareholder value through a combination of growth and return on invested capital, which in turn requires two ingredients: **differentiation** and **utility**.



Businesses cooperate and compete with one another based on their ability to provide their customers with access to a scarce resource. We call their ability to provide access to something scarce a *value proposition*. If your value proposition is useful but not differentiated, then you may get customers but you won't be very profitable. On the other hand, if your value proposition is differentiated but not useful, then you won't get many customers. You'll be all style and no substance.

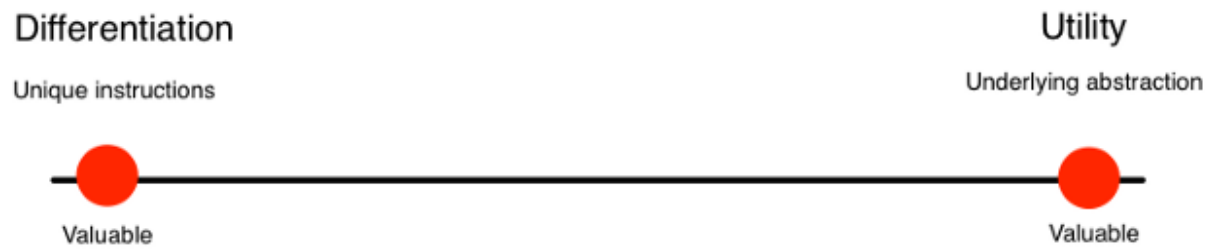
There's a reason for this: it's how scarcity makes our free market system work. The ability to capture value in a capitalist system means you've found a way to sit at a point

of friction, somewhere on the supply side, that is both defendable and unavoidable. Utility and differentiation are both required, in concert, for a product or business to defensibly occupy that point of friction and generate return on invested capital.

And then along came the modern tech industry, which figured out something special: a certain secret sauce that's quite different from what the rest of the world believes. It's the following understanding:

- I'll write a line of unique software, which can't do anything on its own, if I believe that machines made by other people will be able to compile and execute the differentiated instructions written in those lines of code.
- I'll create unique hypertext, which can't do anything on its own, if I believe that the Internet's infrastructure will be able to distribute and display this differentiated web page everywhere instantly.
- I'll create unique ride-hailing instructions, which have no utility of their own, if I believe that drivers, riders, their mobile devices and the 4G network are capable of carrying out the instructions they're given.

The mutually agreed upon special sauce is **explicitly separated differentiation and utility**, expressed formally in programming languages that abstract away the underlying machinery. Software, on its own, can't do anything. It has no utility; it's just a bunch of instructions. Hardware, on its own, doesn't know what to do. It's a dumb machine. And yet, a developer can write differentiated instructions in javascript and fully trust that those instructions can be executed faithfully — by computers, by the web, or even by smartphone-equipped humans, all abstracted away.



The first commercial expression of this explicit separation was the Intel 4004. Whereas computing was originally something done by an expensive, integrated machine the size of a room, the Intel team introduced a radical idea: *the entire computer is differentiated instructions running on a mass-produceable chip.* Differentiation plus utility. Then, soon after, Bill Gates and Paul Allen: *differentiated software is interesting in its own right. The software industry will be as big, if not bigger, than the hardware industry*. Differentiation plus utility. Tim Berners-Lee: *differentiated hypertext can run on the Internet's infrastructure.* Differentiation plus utility.

Since the Intel 4004, the ascending tech stack has evolved through layers of abstraction that emerge on top of one another. The presence of these standardized, dependable lower levels of abstraction allows for rapid experimentation, permissionless innovation, and easy scaling for the ideas that work out. (This arrangement has also benefited from the remarkable phenomenon of open source software. Many of the great abstraction layers, from Linux and its many distributions to Apache, Mysql and Firefox, were created for community, and not for profit.) In time, some instances of successful differentiation that survive grow into giant utilities in their own right. Google, for instance, started out as a highly differentiated search engine and then evolved into a behemoth that has spread far and wide into the underlying infrastructure of the web.

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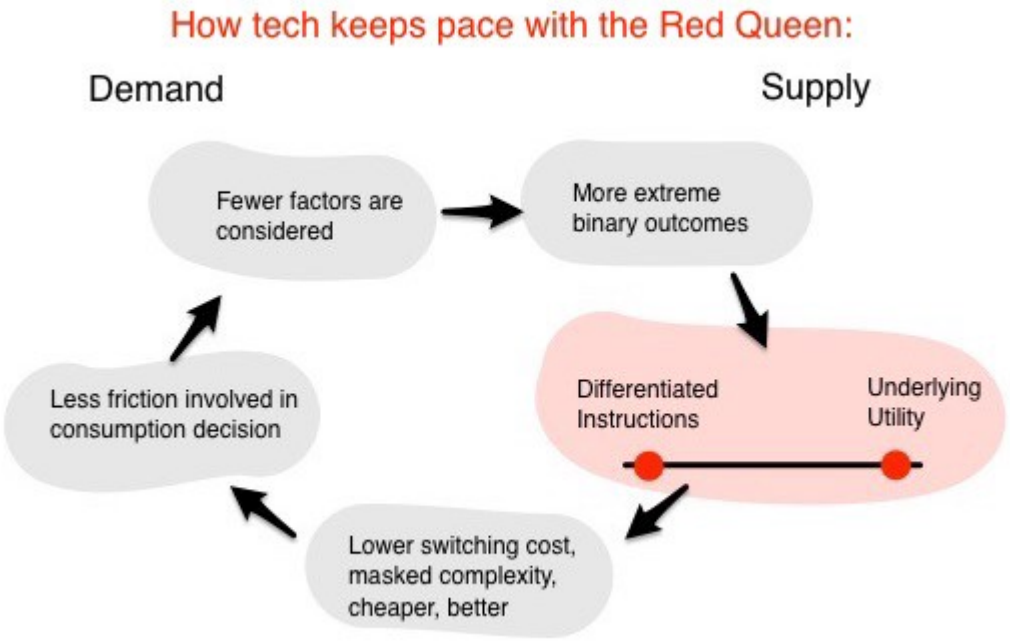
How Tech evolves to keep up with the Red Queen

Modularity isn't unique to tech, of course: pretty much all stuff is made out of other stuff. Your toaster is made of plastic, wires, heating elements, and other underlying components. But tech takes it to a codified extreme that other industries do not — layers that are differentiated instructions only; underlying hardware and lower-abstraction layers that provide all of the execution. Was this phenomenal architecture designed or orchestrated by some far-sighted genius? It was not. No one planned it. It was an ***evolutionary response to frictionless consumption.*** This is how modern tech keeps up with the Red Queen: the evolutionary arrangement of abstraction layers as the optimal solution for balancing cooperation and competition. As consumer decisions become frictionless and abundant, and winner-take-all outcomes dominate, this effect

accelerates. The Queen speeds into a higher gear, and the tech supply side responds by adopting two increasingly contrasting strategies:

1. Go all-in on serving a customer differentiated instructions expressing exactly what they want, knowing that if you get it right, you have very little marginal cost of replication and can fully trust the underlying abstracted utilities to scale up with you. Be Slack, and trust in AWS.

2. Sell pickaxes to the gold miners, at massive scale. Be the abstracted utility that grows continuously, swallowing up ever-more underlying demand, knowing that you never have to pick winners. You're the house. Be AWS, and trust in Slack.



Critically, both sides of this arrangement are better off than if they'd tried to wade in the middle. Every dollar Slack spends on building underlying utility infrastructure, effectively competing with AWS, is a dollar not spent on what makes Slack special. AWS faces the same thing, in reverse: they know to dedicate every dollar not to guessing the next Slack, but rather into building the primitive building blocks it'll be made of.

Yet this evolutionary adaptation also closes the loop and increases the speed of the treadmill: it becomes that much easier for new entrants to show up, armed with their own set of differentiated instructions, ready to play ball. The days where it took two million dollars and six months to buy servers, staff up and get started are over. Now,

anyone can compete on day one to be better differentiated, more user-friendly, cheaper — in other words, as we talked about in part 1, consumerized. *You have to run faster and faster just to stay in place: the landscape moves along with you.* The Red Queen effect only gets stronger.

With this proliferation of increasingly consumerized options, who have to run faster and faster just to keep up, the consumer is in the driver's seat more than ever before. Switching costs come down; complexity gets masked; everything gets better and better, as companies compete for frictionless consumption. Decisions are made with fewer variables: is this exactly what I want? *No; unless yes.* The cycle perpetuates, the Red Queen gets faster again.

Is that to say that all successful tech companies are either pure differentiation or pure utility, exclusively? No. Not today, anyway. So long as you're in an environment with supply-side scarcity, when consumption decisions require many considered factors and much deliberation, we're not there. But the farther we head down the path of consumerization, masked complexity, and if/else "no unless yes" decision-making, the closer we come. And in part 3, we'll take a look at that road ahead.

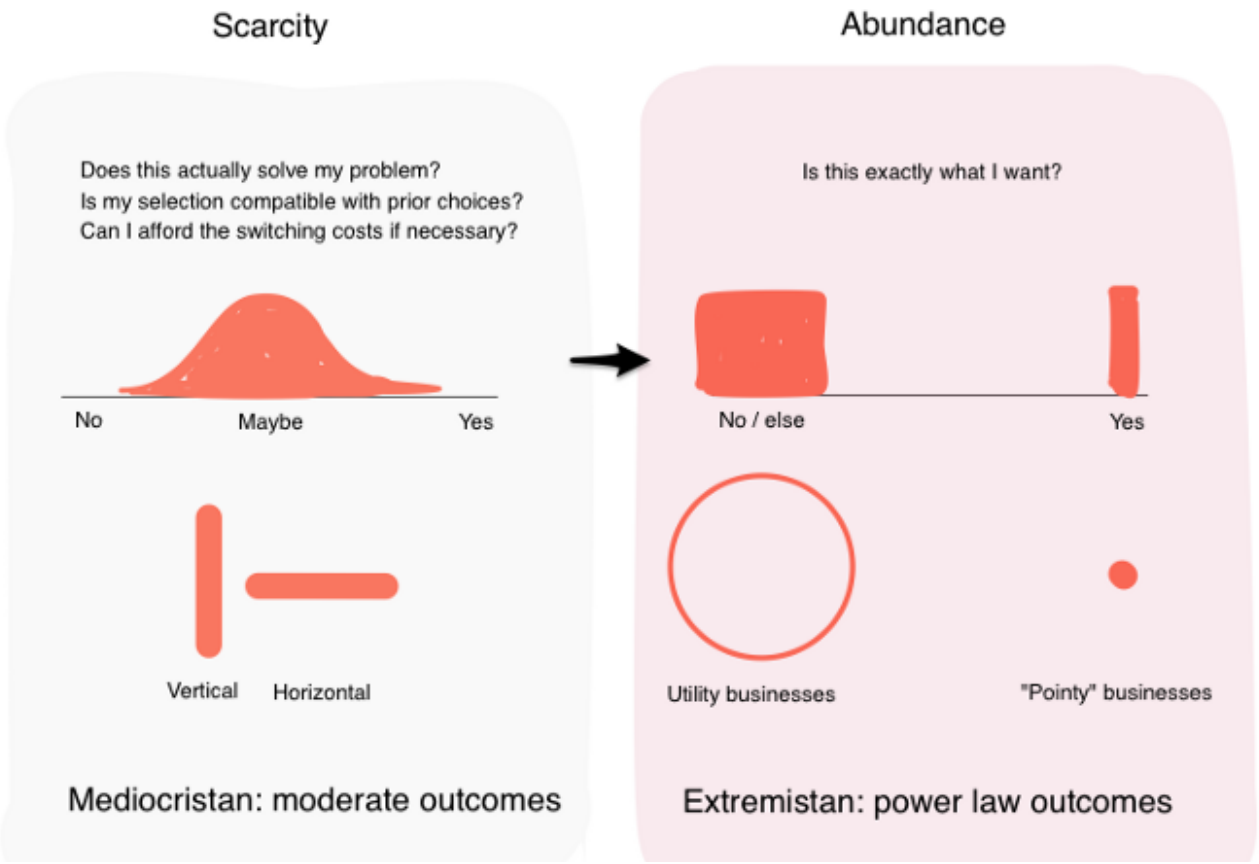
From Horizontal and Vertical to Points and Utilities

One of the more interesting consequences of our push from scarcity towards abundance is its implications for the business heuristics we've all accepted to be true. In the world of supply side scarcity we're familiar with, MBA school teaches us two tried-and-true ways to harness scarcity, occupy a point of friction, and become durably profitable. One way is to build a horizontal business. Aim to serve as many customers as possible, with your utility coming from whatever you deliver en masse, and your differentiation coming typically from either supply or demand side scale. You harness scarcity by going wide. Alternately, you can build a vertical business: integrate together multiple components of a value chain to create a true cost and performance advantage. Your utility will come from the multiple links of a value chain you deliver simultaneously, and your differentiation comes typically from the superior product, cost savings or both that are achieved through vertical integration. You harness scarcity by going deep.

In a world of abundance, this unravels. Horizontal and vertical arrangements of businesses are both predicated on the notion that there's a scarcity of supply that can

drive ROIC. But that's decreasingly the bottleneck. We're entering this world where supply side scarcity is increasingly information, which is scarce only so long as it's proprietary. (And information has a way of freeing itself with time.) Most of the interesting scarce resources are accumulating on the demand side: consumer preference, consumer intent, consumer loyalty, consumer impulse, consumer aggregation.

This shift is going to have a major consequence that most of us haven't thought about. Over the next few decades, horizontal and vertical supply side businesses will start to be eclipsed by a different dichotomy: **Pointy businesses** that are pure differentiation and are "no stack", and **Utility businesses** that do all of the underlying work and are truly "full stack". Ben and James on Exponent describe an Internet Rainforest, and it's a good analogy: in a rainforest, with its abundantly available water, sunlight and nutrients, two types of plants thrive: the tiny, highly differentiated plants on the forest floor, and the giant trees that form the canopy. It's hard to be in the middle. It's possible you'll find customers, but nothing will impart you pricing power over the giants nor the agility to outrun a thousand different little plants. Your ROIC won't exceed your cost of capital, a predicament from which growth cannot save you.



In the cafes and yoga rooms of the Caltrain Corridor, the whispering of the entrepreneurial community suggests that this is increasingly becoming *de facto* accepted as the way of the future. One way to tell, borrowing from Zero to One, is to look for the *Lies People Tell*.

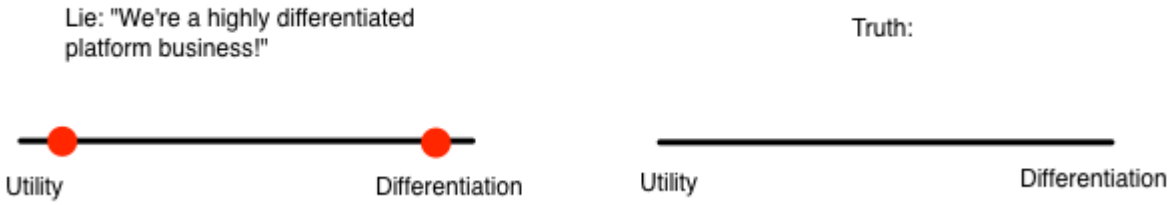
What does seemingly every startup raising money call themselves these days? A "platform". *We're building an analytics platform. We're building a mobility platform. We're building a dog-walking platform.* Wow, it sure sounds like everyone is building a platform! The only people who don't call themselves platform businesses are those who are unapologetically building pointy businesses (which we don't read about on TechCrunch, since they hardly need to raise venture capital anymore), and the real utilities who, although they truly could, don't bother.

Here's the thing with calling yourself a platform. If you want to *actually* build a utility business that supports the ideas and differentiation of others, this is who you're up against:

Amazon: "When you asked Alexa to order a new breadknife, we also flew it in our own plane, ran an auction on Marketplace to find you the best seller, and computed it all on AWS, which was powered by our dedicated wind farm." Apple: "When you listen to Taylor Swift on your iPhone, we also put together her Apple Music deal, designed the chipset and firmware that syncs your Airpods, and negotiated a state manufacturing subsidy between Foxconn and the Zhengzhou regional government to build them." Facebook: "When you Liked your friend's video, we also designed and built the switches and routers that decreased that Like's response latency by 1 ms, laid undersea cables to our new zero-rated airplane internet station, and kind of got Donald Trump elected." These aren't horizontal or vertical businesses anymore. They're giant utilities that sprawl out in all possible directions.

The majority of challengers, by their own admission, have no desire to compete with Internet giants on volume of work done. What they're really saying, but won't admit, is "In a world of digital abundance, we'd rather leave the underlying work to other people, and we'd rather leave the differentiation to other people too, but uhhh we're going to be

valuable anyway, somehow." In other words, they're the proverbial British food restaurant in Palo Alto: they're telling a lie. It's particularly obvious when you hear things like "We are a *differentiated* platform."



It's worth noting that being a utility business does not mean you are foremost a platform for developers, per se. You can get into all kinds of semantic arguments on whether or not Google and Facebook are 'platforms'. It might be more accurate, again borrowing from Stratechery, to call them 'operating systems'. But that's misleading too, because it understates the depth of the underlying machinery powering all this stuff. What's actually important is the scale of work that Google and Facebook do to power everything except the differentiation that a pointy client (an indexed web site; an Instagram profile) will provide. In the long run, there will be two ways to be profitable in low-friction environments: be a utility and earn profits through massive scale across the entire stack, or be so differentiated, lightweight and zero-stack that you can be unit-economics positive immediately and compound your way to success— before the deluge of competition, that is.

Three heuristics to guide what's next

So far, we've described events and phenomena that have happened in the past and present. They are useful to us not because the future is going to repeat the past (if it did, investing would be a lot easier!) but because the past nonetheless suggests to us what *general* forces influence industry structure and competitive behaviour in their efforts to outrun the Red Queen and adapt to abundance. This is important not because we're in a world of abundance now. For all the world has changed because of software and the Internet so far, it's nothing compared to what's coming. In parts 3 and 4, we're going to talk about what that will be, to the best we can.

We can summarize the past two chapters with three heuristics that each take the form "A causes B because X".

Reduced friction causes if/else winner-take-all outcomes, because consumption decisions move from multifactorial (Gaussian) to single-variable (bifurcated "no, unless yes") Zipf's Law is at work.

"No, unless yes" winner-take-all outcomes cause modularized differentiation & utility, because of evolutionary adaptation to keep pace with the Red Queen. Incremental effort is best spent either on pure differentiation (being picked as "yes") or on pure utility (not having to pick winners). The companies who adopt this approach end up being those who keep pace and thrive — at least, for the time being.

Modularized differentiation and utility cause reduced friction of consumption, because as the participants improve, *the landscape improves along with it*. In the race to compete for customers, friction gets sucked out of everything: purchasing processes become modularized and consumerized, switching costs come down, complexity is masked. The treadmill accelerates into higher gear of frictionless consumption and the cycle repeats.

The future is not going to unfold the way the past did. It may rhyme, but it will undoubtedly be different in ways we can't imagine. But if we have confidence in these three heuristics as rules-of-thumb, we can make a bit more sense out of what may change in the future (Chapter 3) what *won't* change in the future (Chapter 4), and why our journey towards abundance is only just beginning.

Part 3 of Understanding Abundance, The Next Big Thing, can be read here.

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Thanks to Ashley Mayer.

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