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BBUS 320A: SWOT Analysis

Executive Summary:

Blue Origin is not the pet project of Jeff Bezos. It is a viable and prescient force in the space launch industry. It was founded in 2000, although its presence wasn't known until 2003 when Bezos bought bundles of land in Texas to build a launch complex. (Foust, 2013) This secrecy is standard for Blue Origin. They acted similarly recently when they announced that they had secured an important contract with United Launch Alliance (ULA) to provide the rocketry components of the successor of the Atlas IV rocket (the most launched large payload rocket in the US). Upon this announcement Blue Origin simultaneously announced that it had been in development of the rocket, the BE-4, for three years and that they expected first flight tests of the engine to be as early as 2019. (Achenbach, 2014)

This contract with ULA, the conglomeration between Boeing and Lockheed Martin that currently dominates the space launch sector, came before Blue Origin had proven itself as a contender in the commercial space industry. On November 23rd, 2015 Blue Origin successfully landed a sub-orbital rocket for the first time in history. Then on January 22nd, 2016 they re-flew and re-landed the same New Shepard vehicle (Palmer, 2016). Proving reuse and permanently redefining the methods and costs of getting into orbit and sub-orbit. Which is the goal of Blue Origins, to "enable private human access to space with the goal of dramatically lowering cost and increasing reliability." (Blue Origin, 2016) It does this through an approach encapsulated through its motto, "Gradatim Ferociter" which is Latin for "Gradually Ferocious" (Blue Origin, 2016). It also symbolically states its mission in its very name when it renames Earth as just a Blue Origin for a species in space.

Blue Origin has lofty goals, but they have not changed much since the public became aware of it. In "January 2005, the company's website announced that it hoped to establish an 'enduring human presence in space', but in 2007 Bezos changed it to, 'patiently step-by-step, to

lower the cost of spaceflight so that many people can afford to go and so that we humans can better continue exploring the solar system'" (David, 2007)

This has been a dream of Bezos' all his life. Upon being named valedictorian, an 18 year old Bezos was quoted in the Miami Herald as saying, "he wanted to build space hotels, amusement parks and colonies for 2 million or 3 million people who would be in orbit. 'The whole idea is to preserve the earth,' he told the newspaper, 'The goal was to be able to evacuate humans. The planet would become a park.'" (Whoriskey, 2013) Bezos has put his money where his mouth is, as of July 2014 he had invested over $500 million into Blue Origin (Foust, 2014). Although his money surely hasn't been returned as of yet, in 2015 Blue Origin had "Annual Sales (Estimated) of $62.8 Million" and it's "Prescreen Score" was rated as "Low Risk" (of insolvency) (Hoover's, 2016)

But Blue Origin is much more than Jeff Bezos, it is headed by another Seattleite and Seattle aerospace veteran, Rob Meyerson. Who worked at Kistler Aerospace during the 1990s before it went bust during the dot-com crash (Gates, 2015). Meyerson is the President of company spread across three locations and over 400 employees. "(M)ore than 350 and growing" at the 26 acre headquarters in Kent. The majority of the rest in West Texas, and a few at the new locations just opening in Florida (Gates, 2015). Where-as Bezos mainly talks about the immediate accomplishments of Blue Origins' rocket systems between waxing poetic about long-term changes to humanity. Meyerson talks about "space tourism is one nearer term goal" (Gates, 2015). Which is the designated mission of Blue Origin's historic re-landing rocket, the New Shepard. "Named in honor of the first American in space, Alan Shepard, the *New Shepard* vertical takeoff and vertical landing vehicle will carry six astronauts to altitudes beyond 100 kilometers, the internationally-recognized boundary of space. Blue Origin astronauts will experience the thrill of launch atop a rocket, the freedom of weightlessness, and views through the largest windows to ever fly in space." (Blue Origin, 2015) Incidentally Blue Origin started accepting registration for early access to tickets and listing prices for sub-orbital adventures in April 2015 as soon as the BE-3 engine, used in the New Shepard, passed acceptance testing. (Foust, April 2015)

The Blue Origin website states that in addition to carrying astronauts, it also intends to sell tickets to researchers and research projects. In July 2015 Blue Origins signed a contract with NanoRacks to partner and provide "standardized payload accommodations for experiments flying on… (the) New Shepard" (Foust, July 2015).

Blue Origin has revenue streams in place and although it took them nearly a decade and a half to prove their technology. That was the plan from the start, it was the method that was laid down for their success by their founder. At this point Blue Origins has grown beyond being a pet project for Bezos. Like other space companies are. When asked if he "consider(s) himself or his company in competition with other wealthy founders of space companies, like Paul Allen, Richard Branson and Elon Musk." He gave his opinion as such, "For society, it's really helpful to have multiple people with slightly different approaches, slightly different strategies… I'm a fan of anybody who is investing in space… Space is pretty big… There are a

lot of opportunities, and there's plenty of room for multiple winners. The vision for Blue [Origin] is pretty simple… We want to see millions of people living and working in space. That's going to take a long time. I think it's a worthwhile goal" (Foust, Sept. 2015).

Strengths:

Blue Origins has made its presence felt across the space launch industry. Which is a strength in of itself, as the space industry is large and growing larger. According to the Space Report it was at $314.17 Billion world-wide in 2013 and was expected to grow by at least 5% per year for the foreseeable future. (Space Foundation, 2014) Of the four major segments that the Space Foundation segments Global Space Activity into Blue Origins has a strong presence in two, accounting for 52% of global activity: Commercial Space Products and Services, and U.S. Government Space Budgets. As they recently signed a deal to provide ULA (the largest U.S. Government space launch contractor) as well as having a long history of working with NASA working as a contractor in developing technologies. Such as they did when the company was awarded $3.7 million in funding in 2009 by NASA via a Space Act Agreement under the first Commercial Crew Development program for development of concepts and technologies to support future human spaceflight operations. (Byerly, 2010)

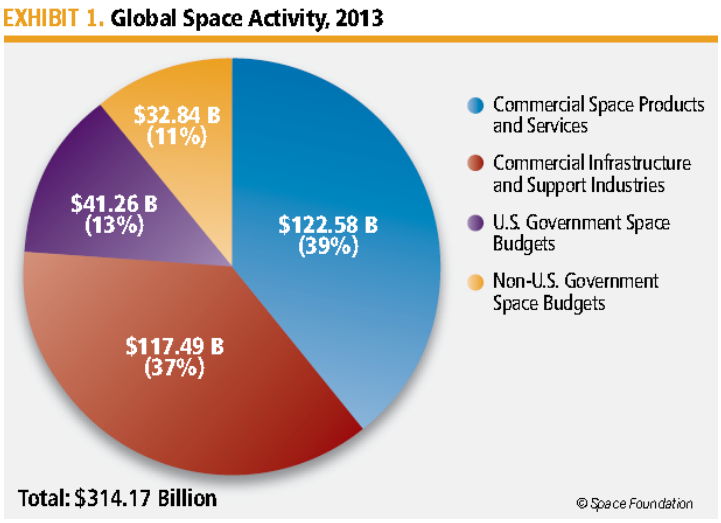

Figure 1(Space Foundation, 2014)

NASA is the principle agent of government space industry activity, so it is a definite strength to have a proven track record with them. Also last year NASA's budget increased by $1.3 Billion. (Dreier, 2015) While Blue Origins does not have any current contracts with NASA this increase in budget will have numerous trickle down effects. It will directly lead to cash flow into Blue Origins pockets as Blue Origins has a contract to provide the first stage rocket for ULA's new rocket, scheduled to replace the Atlas IV in 2019 (Achenbach, 2014). Even if this doesn't pan out because of the nature of government contracts Blue Origins is still guaranteed profit, "If a contract is terminated due to lack of continued funding, the contractor is entitled to the purchase price for delivered items, reimbursement from the costs of work in progress, and a profit allowance" (Soshkin, 2015). Guaranteeing assurance, so the market and contract conditions that Blue Origins operates under is another strength.

In a more local sense, IBISWorld predicts that "Revenue (in current dollars) for US guided missile and space vehicle production is forecast to grow at an annual compounded rate of 2%

Figure 2 (Soshkin, 2015)

between 2015 and 2019, based on changes in physical volume and unit prices." (Soshkin, 2015) So the market both globally and nationally is growing and Blue Origin is poised to take advantage of these trends.

However, one of the greatest strengths that Blue Origin possesses is that it is not tied to governmental largesse. Its primary expected revenue stream with be from the private rather than the public sector. It will be focusing on space tourism and commercial launches. Both to sub-orbital space with its proven rocket, New Shepard, and it is currently developing an orbital system as well. Moreover it still has a contract with ULA to provide engines to for it's rockets. This accounts for a strong diversification across the range of space propulsion systems which account for 13.2% of space industry revenue. (Soshkin, 2015)

Another strength is the brand awareness that the public, even those that are not passionate about space is acquiring for Blue Origin because of its historic milestones. Being the first entity to successfully reland and reuse a rocket stage is a large accomplishment, and even though it was a sub-orbital mission, it still got there first.

IBISWorld isolates five "Key Success Factors" for operating in Space Vehicle & Missile Manufacturing. Three of these are vital components to Blue Origins' processes. "Well-developed internal processes" are displayed in their motto and the incremental steps that they've methodically laid out over the last decade and a half. "Ability to take advantage of government subsidies and other grants" can be seen its collaboration with NASA and ULA. "Access to the latest available and most efficient technology and techniques," (Soshkin, 2015) is aptly demonstrated in their technologies and facilities.

Blue Origin has many strengths, all stemming from the incremental processes and goals that are built into its core mission and motto. They ferociously pursue their goals, step by step.

Weaknesses:

Blue Origins is not without weaknesses as well, just as many of their strengths flow from the market that they exist in, so does their weaknesses. To start with there is a high bureaucratic cost to operating in the space sector. "Manufacturers of guided missiles and space vehicles are highly regulated. The industry can face regulation by a number of federal agencies, including the departments of Commerce, Defense, State, and Transportation, as well as the EPA, the FAA, and OSHA" (Hoover's, 2016). Blue Origin has had its difficulties with the government before and lost.

Blue Origin and SpaceX were vying for use of the historic Launch Complex 39A and the GAO denied Blue Origin's claim, even against NASA's recommendation that both companies be allowed to use the facility. Blue filed a claim against the decision but was over-ruled and lost face in the process. In the ruling the GAO mainly credited Blue Origins intended use of the launch pad for multiple types of rockets and endeavors vs. SpaceX's planned use for their Falcon series rockets. (Messier, 2013)

Figure 3 Launch Complex 39A (NASA)

This is not the only time that Blue Origin and SpaceX have fought. There was even an epic twitter battle between the two founder's Elon Musk and Jeff Bezos over who could hold the crown as to which company first successfully relanded a rocket. Although Blue Origin was the first to do so, it was with a sub-orbital rocket. So the pubic consensus is that SpaceX got the prize, which does not sit easily on Bezos' head.

There are other races that Blue Origins is falling behind on, which like its strengths can be tied back to its methodical, and sometimes plodding pace. "While Virgin Galactic and XCOR Aerospace talk about potentially offering commercial suborbital flights by next year, depending on their pace of their own test programs, Meyerson suggested Blue Origin was not racing to get New Shepard into commercial service. 'We're probably a few years away from selling tickets, at least from flying our first astronaut," he said, adding that the company was not disclosing price information. "But, we're getting close, and we're excited about where we are.'" (Foust, April 2015) That was early last year, and despite major progress prices have still not been posted, and tickets still have not been sold. Blue Origin is lagging behind.

While listing Blue Origin's strengths earlier reference was made to IBISWorld's Key Success Factors, Blue has three but falls seriously behind on two, "Economies of scale", and "Ability to expand and curtail operations rapidly in line with market demand." (Soshkin, 2015) What Blue Origin lacks, it lacks in spades. They are a relatively tiny company compared to their competitors and in many ways they incapable of expanding or curtailing their operations based on market forces. Moreover as Hoover's points out their "industry is capital-intensive: average annual revenue per employee is about $420,000. The US industry's working capital turnover ratio averages about 35%. Inventories average about 30% of sales and tend to be highly concentrated in works-in-progress. Raw materials costs represent about 20% of sales. Accounts receivable may be high – about 80 days' sales is typical." (Hoover's, 2016) These factors are alarming and become terrifying when you realize that Blue Origins has not made a single sale in a decade and a half. They are racking up costs and so far they have little benefit, and according to Hoover's the number one risk in this industry is, "failure to accurately estimate costs." (Hoover's, 2016)

They have proven their technology and their process but their concept can't be considered viable until they make their first sale and have positive, proven revenue. All they have now is contracts and hope.

Opportunity:

The space sector is growing quickly, and there is a public upwell of support and excitement for the possibilities of utilizing and travelling to Near Earth Orbit (NEO) and sub-orbital space. Moreover the technological environment is becoming ever more dependent on satellites and satellite services. "Demand for space vehicles is driven by the need to deliver commercial and noncommercial payloads into Earth orbit or beyond... Small companies can compete by providing niche products to prime contractors, and by forming joint ventures with larger contractors." (Hoover's, 2016) Blue Origin has worked to fit into as many niches as possible while not spreading themselves too thin. They are a major contender in the space tourism market, they are aligning themselves to provide access to space for research as well, and to provide parts and services to the arena's that they cannot compete directly in.

Though they will provide rocket engines to ULA they mainly abide aspect of the market that provides complete space systems. "Complete space systems account for an estimated 32.9% of revenue. This includes launch systems such as space rockets and launch pads as well as space vehicles. This segment tends to be relatively volatile as it depends on the number of launches that take place per year. In general, manufacturers have long-term contracts with a customer, which helps create a backlog that stabilizes revenue streams." (Soshkin, 2015) Blue Origin is building their own launch pad, they invented a new kind of rocket, topped with its own space vehicle. They compete across this market and are looking to strengthen and diversify their holdings.

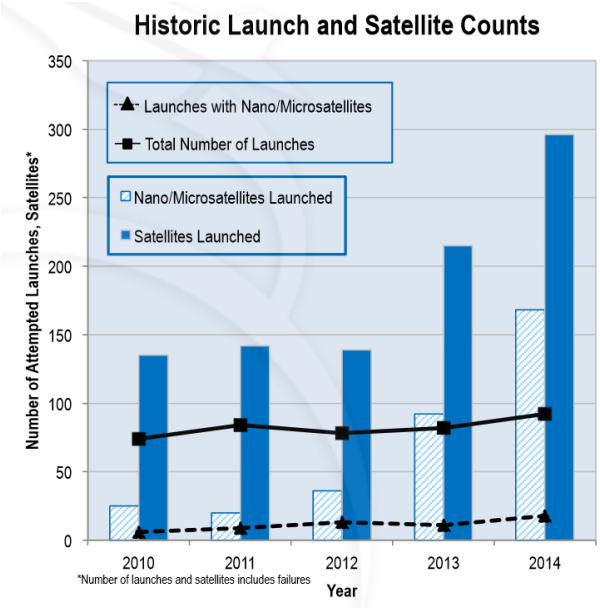

Figure 4 (The Space Foundation, 2014)

As Figure 4 shows the amount of launches is growing drastically every year, and a key offering that Blue Origin will put to market is the ability to launch large payloads of small satellites into orbit and sub-orbital space. Not only are launches increasing but profit is as well, "Industry profit, defined as earnings before interest and taxes, is expected to increase over the five years to 2015, rising from 8.2% of revenue in 2010 to an estimated 10.3% in 2015" (Soshkin, 2015).

Moreover, competition for these profits are low, "(s)ince of the significant capital investment and technological knowhow required to enter the industry, major players only have to deal with a limited number of competitors." (Soshkin, 2015) This creates opportunity for growth without having to worry too much about competitors undercutting you.

There are also many opportunities for collaboration. Blue Origin has worked with NASA in the past when, "NASA co-funded risk-mitigation activities related to ground testing of (1) an innovative 'pusher' escape system, that lowers cost by being reusable and enhances safety by avoiding the jettison event of a traditional 'tractor' Launch Escape System, and (2) an innovative composite pressure vessel cabin that both reduces weight and increases safety of astronauts" (NASA, 2009). Blue Origin did not continue with the next phase of the contract but has said that it is open to working with NASA in the future (Foust, July 2015).

Blue Origin also will not work with just NASA, ULA, or NanoRacks, they are a proven collaborator and will continue to do so in the future. They are behooved to and they are suited well to it. These opportunities for strengthening themselves through collaboration are their greatest opportunities and may be their greatest asset.

Threat:

Barriers to Entry checklist

Competition	Medium
Concentration	High
Life Cycle Stage	Mature
Capital Intensity	Low
Technology Change	High
Regulation & Policy	Heavy
Industry Assistance	High

SOURCE: WWW.IBISWORLD.COM

A major threat to Blue Origin is that although having been in existence for a decade and a half and incrementally working towards their goals – they are far from achieving them. Moreover, they haven't really even entered the field yet. They are not a viable company as they have no sales, and they don't seem to be in a rush to make a profit. They haven't proven themselves viable, or even as an option for what they are offering.

The average R&D expenses for space vehicle manufacturers average in excess of 20% of revenue (Soshkin, 2015) in Blue Origin's case that number much be pushing an asymptote. The nature of the sector itself, both launch and manufacturing is very volatile in the last few years there has been great growth, but this is shifting funding patterns and stirring up forces that have long been steady. "(D)eclining government spending on defense caused industry revenue to fall from strong growth in 2010. As a result of these rapid shifts in revenue and demand, industry volatility increased. In general, the industry can be very volatile, especially the space sector. Since launches of satellites and spacecraft occur infrequently, when they do so, they have the potential to reverse growth. Over the next five years volatility is forecasted to decline as government spending continues at a level off, while increased sales to the commercial and exports markets mitigate a large portion of any potential declines" (Soshkin, 2015).

It is said that with great risk, comes great reward, but in the space industry the increase in chance of failure is more than just that it is a greatening of the likelihood of catastrophe. The threats in the space sector are direr than those in most industries. Blue Origin could be said to have benefitted from Virgin Galactic's crash in 2014, but hopefully they learned that even in space tourism failure can be fatal.

Blue Origin is banking on a lot of eggs in a basket they've strapped to a rocket paid for by the whimsy of a billionaire. Their status is nothing short of perilous. The industry they are in is booming and the opportunities are rife, but their methodical approach may leave them in the dust.

Conclusion:

"Gradatim Ferociter:" encapsulates Blue Origin's greatest strength, and the motto belies Blue's greatest weakness. The call to be gradually ferocious leads Blue Origin's on the path to seizing the opportunity for greatness, and it is a siren song singing it close to its greatest threats.

I firmly believe that Blue Origin is not just the fickly whim of a billionaire who wants to retire in space. I agree with its methods and observing its history I see the wisdom in its actions, but there is cause for worry. I wonder at how many decades they can go without differentiating target markets, and though they have a definite USP they haven't proven it, yet. Only time will tell, I think that their strengths match better with their opportunities than their weaknesses will lead them into threats. But that may just be optimism, but the space-farer is ever the optimism just hardened by realism and Gradatim Ferociter is definitely optimistic realism to its core.

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