

# Alexandra Elbakyan's Job to Be Done

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## Introduction

In 2011 Alexandra Elbakyan, who John Bohannon describes as, “a typical science graduate student: idealistic, hard-working, and relatively poor” returned to her native Kazakhstan after studying in Russia, Germany, and the United States.<sup>1</sup> She was 22. In Kazakhstan, Elbakyan found that she had only minimal access to the scientific literature she needed to continue her studies. Most of what she need was locked behind paywalls. She could use #IcanhazPDF, a means of broadcasted a request for an article over Twitter with the hope that a researcher somewhere with access to the article would provide it. #IcanhazPDF worked for Elbakyan, but not very well. As Bohannon, explains. “What was needed, she decided, was a system that allowed that paper to be shared – with absolutely everyone. She had the computer skills – and contacts with other pirate websites – to make that happen, and so Sci-Hub was born.”<sup>2</sup> Elbakyn had a job that needed doing to advance herself – she needed read scientific papers. The solution she had hired to do this job for her when she was studying abroad, using licensed journals provided by universities, as no longer available to her. The alternative ways to get the job done was to pay for individual articles, which she could not afford, or to use #IcanhazPDF which was cumbersome and hit-or-miss. She decided she needed to find something better to do to her job. She was struggling and in her circumstances; there were no good options. It turned out that Sci-Hub, the system she built to do her job, was hired by many others who had the same job and were in similar circumstances. In February 2016 Sci-Hub was serving 200,000 request per day.<sup>3</sup> By one estimate, the downloads from Sci-Hub in 2016 accounted for 3% of downloads from all science publishers.<sup>4</sup> Sci-Hub clearly infringes the copyrights of publishers, but for Sci-Hub users the using an illegal

service is the only way they can get done a job that is important for them to make progress in their lives. Given this, they are prepared to set aside any qualms they might have about Sci-Hubs methods. It is a price they are willing to pay.

Despite losing several lawsuits brought by publishers, and other impediments, Sci-Hub continues on because it does a job for hundreds of thousands of people for whom hiring Sci-Hub is the best solution for a job they need to have done, to obtain scientific articles.

In 2016 Elbakyan was one of *Nature's* 10 a list of the ten people who mattered in science. They titled her the "paper pirate".<sup>5</sup>

### Jobs to Be Done

In some of his best story telling Clayton Christensen about describes how the job a milkshake was being hired do was discovered.<sup>6</sup> He was asked to look at milkshake sales for a fast food company. The company had large amounts of data on the characteristics of the people who bought milkshakes. They had done focus groups with people who had these characteristics asking them how they could improve their milkshakes. When they implemented the focus group recommendations there was no impact on sales. Christensen and his colleagues identified people who bought milkshakes and then asked them to explain the job they had hired the milkshake to do and what they hired to do that job when they didn't hire milkshakes. It turned out the majority of milkshakes were sold in the early morning and they were hired to improve the experience of a boring commute to work. The other things they had hired to do the job where bananas, donuts, coffee, and bagels, but none them did the job as well as the milkshake. These insights suggest ways to enhancement the milkshake experience, like making easier and faster to make the purchase or introducing a coffee flavored milkshakes.

Clayton Christensen lays out his theory of Jobs to Be Done in his book *Competing Against Luck: The Story of Innovation and Customer Choice*.<sup>7</sup> It is worth reviewing Christensen's theory in some detail as, I believe, it explains, among other things, the survival and success of Sci-Hub.

The theory of Jobs to Be Done asks a fundamentals question that is to often not considered, what causes a customer to purchase and use a particular product or service? As Christensen puts it, "There is a simple but powerful, insight at the core of

our theory: customers don't buy products or services; they pull them into their lives to make progress... We define a 'job' as the *progress that a person is trying to make in a particular circumstance*."<sup>8</sup> A job he goes on to explain is movement toward a goal or aspiration. It is a process and rarely a discrete event. To understand the job, you must understand the circumstances in which it needs to be done. To quote Christensen, "A job can only be defined – and a successful solution created – relative to the *specific context* in which it arises... The circumstance is fundamental to defining the job (and finding a solution for it), because the nature of the progress desired will always be strongly influenced by the circumstance."<sup>9</sup> It is important to understand that a job is complex. It has not only functional dimensions – is it faster, easier, or cheaper than the alternative? It also has social and emotional dimensions. It is not simply what happens, but also how we feel about the experience that matters. Solutions to jobs need to take into account all of these dimensions. Successful innovations create solutions to jobs that, as Christensen puts it, "enable a customer's desired progress, resolve struggles, and fulfill unmet aspirations. They perform jobs that formerly had only inadequate or nonexistent solutions."<sup>10</sup>

Jobs Theory is focus on understand why someone needs something done and the particular circumstance that the individual is in when the need arises. Christensen suggests asking the following questions to create a clear understanding of the job so that you can create a solution for it.

1. What progress is the person trying to achieve, and what are the functional, social, and emotional dimensions of the desired progress?
2. What are the circumstances of the struggle? Who? When? Where? While doing what?
3. What obstacles are getting in the way of the person making that progress?
4. Are consumers making do with imperfect solutions through some kind of compensating behavior?
5. How would they define what "quality" means for a better solution, and what tradeoffs are they willing to make?<sup>11</sup>

Answering these question will provide a jumble of data that is best use to create narratives that document the struggles, frustrations, and unsatisfactory workarounds of individuals. Solutions that address these struggles, frustrations, and workarounds, by offering faster, cheaper, or easier ways of doing the job, are likely to be successful.

Many of the jobs have been around for along time. For example, how do I communicate someone far away? At one time the best solution was a messenger on horseback. More recently it was the telegraph, then the telephone. Now I can use Skype, or a text. They all provided solutions for the same job. Each improvement

opened up options for individuals who previously had not had the time, money, or expertise to use the older solution. Better solutions open more satisfying opportunities to more people. One way to look for jobs that could benefit from better solutions is to look for nonconsumption, that is places where people have a job to be done, but because of their circumstances none of the available solutions work for them. They have a job, but no way to get it done, so they do nothing.

New solutions are nearly always built around new technologies, but to be successful the new solution needs not only to be functional, it also needs to be part of an experience that fulfill social and emotional needs. As Christensen says, "Organizations that focus on making the product itself better and better are missing what may be the most powerful causal mechanism of all – *what are the experiences that customers seek in not only purchasing, but also using this product?* If you don't know the answer to that question, you're probably not going to be hired."<sup>12</sup>

When thinking about attracting individuals to a solution, it is important to recognize that individuals confront forces compelling a change to a new solution and forces opposing such a change. Forces for change are the frustrations that result from not being able to get the job done. Forces resisting change include apathy and resignation, fear of the unknown, or simply the force of habit. You also need to think about what has to get fixed before someone can hire your solution.

Christensen believes that the Jobs to Be Done theory can identify opportunities to create disruptive, or what he now tends to call market-growing, innovation. Disruptive innovation, by creating better solutions, allow more, often many more, people to hire a solution and thus make progress in their lives. Often these innovations sweep aside the less satisfactory solutions.

### Sci-Hub in Light of Jobs to Be Done

As we noted above Sci-Hub is a solution to the job of obtaining scientific articles.

Before Sci-Hub here were the other solutions for this job:

1. If you were a student or faculty member at a well-resourced college or university, the library would subscribe to the journals or could get them for you through interlibrary loan.
2. If you knew someone who was a student or faculty member at a well-resourced college or university, you could ask them to get the article for you.

3. You could buy articles for \$25 to \$40 each.
4. Some articles are open access and, in some disciplines, like physics with ArXiv and medicine with PubMed Central, there are repositories that contain free versions of articles. The Open Access Button and Unpaywall can help find them. But many articles are not available in this way.
5. You could try #IcanHazPDF.

The only people who had a reasonable solution for the “I need to obtain a scientific article” job were students and faculty at well-resourced colleges and universities, and even for them the solution was not always a satisfactory experience. Despite the best efforts of libraries, finding the article you needed and negotiating the required authentication systems is often cumbersome. If you were anyone else the “I need to read a scientific article” job was a real struggle. If you needed to do this job a lot, it was next to impossible.

And then there was Sci-Hub.

Sci-Hub is comprehensive. As of March 2017 Sci-Hub’s database contained 68.9% of the 81.6 million scholarly articles registered with Crossref and 85.1% of articles published in paywalled journals. Including 96.9% of all articles published by Elsevier article, 89.7% by Springer Nature, 94.7% by Wiley-Blackwell, and 92.6% by Taylor & Francis.<sup>13</sup> Sci-Hub is easy to use. The interface could not be simpler. It quickly finds know articles, with only a URL, DOI, PubMed ID, or the article title and returns the full-text article. There are no access controls and Sci-Hub is free.

All of a sudden a job the people in many circumstances could do only with great difficulty, if they could do it at all, had a solution that was fast, cheap, and easy. And it turns out that Sci-Hub does the job so well that many of its users appear to be students and faculty at well-resourced colleges and universities.<sup>14</sup> For these users, fast and easy is enough to get them to fire the library and hire Sci-Hub.

Unfortunately, Sci-Hub is not just a great solution to a job many people have, it is also clearly illegal. Sci-Hub’s violates a copyright several hundred times a minute. John Bohannon nicely puts it, Sci-Hub is, “an awe-inspiring act of altruism or a massive criminal enterprise, depending on whom you ask.”<sup>15</sup> This is where the social and emotional dimensions of the Sci-Hub solution come into play. Sci-Hub wears the mantle of Robinhood proudly. As its website puts it, “We fight inequality in knowledge access across the world. The scientific knowledge should be available for every person regardless of their income, social status, geographical location and etc.

Our mission is to remove any barrier which impeding the widest possible distribution of knowledge in human society!" Then they invite contributions, "Imagine the world with free access to knowledge for everyone – a world without any paywalls. Donate for this vision to become true. Make your contribution to battle against copyright laws and information inequity."<sup>16</sup> The case Sci-Hub wants to make is that their theft of copyrighted material only hurts large exploitive corporations and helps the many who need it. This is a message that resonates with many. By assertively making this case Sci-Hub eases any guilt users might have. By doing so, Sci-Hub builds the social and emotional dimension of the solution it offers.

### Conclusion

Peter Suber has said about attempts to shut down Sci-Hub, "The legal means have not worked, the technical means have not worked, and I don't see any other obvious way to do it. So, my reading is Sci-Hub is here to stay."<sup>17</sup> Christensen's theory of Jobs to Be Done explains why this is so. What Elbakyan did when she created Sci-Hub was to offer an elegant solution for a job hundreds of thousands of people needed done to advance their lives. For these people there was no solution available before Sci-Hub. Having found a solution to a job that will allow the do a job that is important to them, they will not give this up. In fact, they duplicate it. There are Sci-Hub clones in Iran and China and probably elsewhere.

Sci-Hub is like a black market. Black markets arise when solutions to jobs that many people need doing are made available only to the privileged. Eventually, the less privileged will find a way. For this reason, a world where knowledge is locked behind paywalls and subscriptions prices rise unreasonably will have pirate sites. The world of Elsevier will by necessity be a world with Sci-Hub. When the means are available people, despite their circumstances, will, as Elbakyan did, find solutions to the jobs they need to make progress in their lives.

## Notes

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<sup>1</sup> John Bohannon, "The Frustrated Science Student Behind Sc-Hub," *Science* 352(8285): 511 April 29, 2016, DOI: <https://doi.org/10.1126/science.352.6285.511>, <https://www.sciencemag.org/news/2016/04/frustrated-science-student-behind-sci-hub>

<sup>2</sup> John Bohannon, "The Frustrated Science Student Behind Sc-Hub," *Science* 352(8285): 511 April 29, 2016, DOI: <https://doi.org/10.1126/science.352.6285.511>, <https://www.sciencemag.org/news/2016/04/frustrated-science-student-behind-sci-hub>

<sup>3</sup> John Bohannon, "Who's downloading pirated papers? Everyone," *Science* 352(6285): 508-512 April 29, 2016, DOI: [10.1126/science.aaf5664](https://doi.org/10.1126/science.aaf5664),

<sup>4</sup> Richard Van Noorden, "Alexandra Elbakyan: Paper Pirate," in "Nature's 10: Ten People Who Mattered This Year," *Nature* December 19, 2016, <https://www.nature.com/news/nature-s-10-1.21157>

<sup>5</sup> Richard Van Noorden, "Alexandra Elbakyan: Paper pirate," in "Nature's 10: Ten People Who Mattered This Year," *Nature* December 19, 2016, <https://www.nature.com/news/nature-s-10-1.21157>

<sup>6</sup> Carmen Nobel, "Clay Christensen's Milkshake Marketing," *Harvard Business School Working Knowledge*, February 11, 2011, <https://hbswk.hbs.edu/item/clay-christensens-milkshake-marketing> See the embedded video. Also included in Clayton Christensen, "Where Does Growth Come From? And What Happens to It," Talks at Google, June 23, 2016, [https://www.youtube.com/watch?v=rHdS\\_4GsKmg](https://www.youtube.com/watch?v=rHdS_4GsKmg)

<sup>7</sup> Clayton M. Christensen, Taddy Hall, Karen Dillon, and David S. Duncan, *Competing Against Luck: The Story of Innovation and Customer Choice*, New York, NY: Harper Business, 2016. A shorter version can be found in Clayton M. Christensen, Taddy Hall, Karen Dillon, and David S. Duncan, "Know Your Customer's 'Jobs to Be Done'," *Harvard Business Review*, 94(9): 54-60 September 2016.

<sup>8</sup> Christensen, *Competing Against Luck*. Page 27.

<sup>9</sup> Christensen, *Competing Against Luck*. Page 28.

<sup>10</sup> Christensen, *Competing Against Luck*. Page 29.

<sup>11</sup> Christensen, *Competing Against Luck*. Page 32-33.

<sup>12</sup> Christensen, *Competing Against Luck*. Page 139.

<sup>13</sup> Daniel S. Himmelstein, Ariel Rodriguez Romero, Jacob G. Levernier, et al., "Sci-Hub Provides Access to Nearly All Scholarly Literature," *Elife* 7:e32822 March 1, 2018, DOI: <https://doi.org/10.7554/eLife.32822>

<sup>14</sup> John Bohannon, "Who's downloading pirated papers? Everyone," *Science* 352(6285): 508-512 April 29, 2016, DOI: [10.1126/science.aaf5664](https://doi.org/10.1126/science.aaf5664),

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<sup>15</sup> John Bohannon, "The Frustrated Science Student Behind Sc-Hub," *Science* 352(8285): 511 April 29, 2016, DOI: <https://doi.org/10.1126/science.352.6285.511>, <https://www.sciencemag.org/news/2016/04/frustrated-science-student-behind-sci-hub>

<sup>16</sup> "Sci-Hub Ideas," <https://sci-hub.se> (accessed June 29,2019).

<sup>17</sup> Quoted in Diana Kwon, "Publishers' Legal Action Advances Against Sci-Hub," *The Scientist*, September 19, 2017, <https://www.the-scientist.com/news-analysis/publishers-legal-action-advances-against-sci-hub-30904>