ESSAI

Volume 17 Article 15

Spring 2019

Breaking Down the Fixing Up Industry

Josiah Cohn
College of DuPage

Breaking Down the Fixing Up Industry

by Josiah Cohn

(English 1102)

I. Introduction and Job Description

Ever since the beginning of invention, there has been a dichotomy when it comes to the state of man-made items: fixed and broken. An exhaustively articulate attempt can be made to break down the transition from one state to another, complete with mentions of the Second Law of Thermodynamics and the idea of entropy, but it is painfully obvious to anyone living on this planet that things…break...down. Some things may break down faster than others (especially when given to children), but everything progresses from a state of repair to disrepair. The advent of computers and their subsequent integration into just about everything may have misled people into thinking that technology is above the physical realm's shortcomings of relentless entropy. It is not. Just like relationships and sanity, the intangible is also subject to degradation over time. And this is not just referring to the physical parts which make up this technology. When it comes to technology, the more it is used, the slower and less compliant it becomes.

The phone I currently have is three years old. The microphone on it works for everything except phone calls, for which I need to use a headset. It is easy to imagine the tragic humor of me scrambling around to find my headset whenever my phone starts buzzing, or not having my headset and having to let the call go to voicemail, worse yet answering it and hopelessly calling out to the person on the other end knowing they cannot hear me. My point is that technology is subject to a same sort of entropy as the physical world, although to us it might appear much faster. We have all experienced issues with our devices, maybe even mere days or weeks after being purchased. Programs might not work, viruses might be detected, screens might shatter, or cables might snap. Whatever it is, be sure that there is someone trained to fix it.

Computer support specialists is a very broad term for the people who fix computers. Of course, there is much more to it than simply that, but rest assured anytime you go to your local repair shop, the person fixing your device is a computer support specialist. According to Michael Farr, venerated author of countless career guidance books, this broad occupational term can reference anything from a help-desk technician to a technical support specialist. At all levels, these computer support specialists troubleshoot any and every problem had by a computer. They can work within a company that uses computer systems, directly for a vendor of computers or software, or even for a company that specializes in computer repair. All businesses/institutions of decent size will have at least one specialist on roll. A quick search on Indeed.com, which is a site used by businesses to post open job positions, yields job offers for specialists from companies like ALDI, Apple, Continental Motors, and even the U.S. Federal Government (Indeed.com). All these companies and institutions deal in completely different industries and environments, but all have a need for a computer support specialist. Specialists can work on a per-call basis, consistent maintenance of a company's system, or on a contract basis for clients. Those who work on a per-call basis are usually help-desk technicians either hired by the vendor or by a company specializing in tech support to answer any questions over the phone. Those who consistently maintain a computer system are usually hired full-time by a business to ensure their system stays running. Those who provide work on contract basis can be employees at a repair shop, from a repair company such as Geek Squad, or freelance workers.

A computer support specialist has a lot of workplace tasks. At every level, they must deal with computers. Tasks like updating the OS (operating system, usually Windows, Linux, or Mac OS)

and software, removing viruses, and helping the end-user with any tasks they might have trouble or inexperience doing on the computer. The help-desk technician is usually bound to the software level of help, as they mostly help clients from large distances away. The more physical aspect of the job includes troubleshooting peripherals like mice and keyboards, as well as finding and fixing hardware problems, such as replacing broken RAM sticks and transferring the OS from a hard drive to an SSD. This job also requires mastery of more than just a computer. Any device a company uses is maintained by the computer support specialist. This includes printers, copiers, servers, and mainframes. This type of maintenance and repair is usually done by full-time technicians hired by a business, but also can be given out contractually.

Some specialists will have to design and create an organization's computer system from the ground up. These specialists usually specialize themselves in networking and are known as network support specialists or network system administrators, while computer support specialists who maintain a system can also be known as computer system administrators. In both cases, "network and computer systems administrators design, install, and support an organization's computer system" (Farr 96). Repair Shop Technicians usually need to know how to perform basic and complex repairs on desktops, laptops, game systems, and phones such as replacing shattered glass, replacing chips on a motherboard, and cleaning and resoldering rusty, damaged connections. At all levels, a comprehensive knowledge of computers and other devices is needed, as well as some physical fitness.

II. Necessary Skills for Success

To become a successful computer support specialist, a variety of vital skills are needed. First is communication. Essential to practically any job, no exception is taken for computer support specialists. According to author, speaker and consultant Matthew Moran, a specialist must be skilled in "the gamut of possible communications": written and verbal communication (67). Often, they will have to write emails, memos, reports, and letters to update superiors or customers about the progress on any short or long-term project. Often, email is a weak point for otherwise strong written communicators, as Moran recounts: "I have always found it surprising that individuals who normally write well-conceived and organized communications (letters or memos) throw that out when it comes to email. This disregard takes the form of sloppy punctuation, lack of organization, a general disregard for capitalization, and other problems" (70). There seems to be a mental disparity between written communication and communication by email, especially for the older generation. Despite this, communicating by email should be practically the same experience and result in the same level of professionality as communicating by business letter.

Verbal communication is still quite crucial. Specialists will frequently have to give presentations, attend meetings, and converse with superiors about their work. For repair and help-desk technicians verbal communication is especially important, as they will be in constant conversation with many different customers over the course of a day. In these cases, the technician must communicate effectively with each client to ensure they understand exactly what the problem is in order to try to fix it themselves or guide a customer in fixing it. According to a survey from the Consumer Reports National Research Center conducted in 2015, almost 9 out of 10 people have suffered through poor customer service in the last year, with 75% of all respondents complaining about a rude or condescending representative. Further yet, 57% of customers hung up on a service representative without having resolved their problem because they were angry (Marks). In any service industry, discussing an issue with a customer without sounding condescending or pushy is vital to the job. With specialists, it is just as, if not more important, since the only way to communicate to the customer is via voice. Tone of voice is everything: if a specialist answers a call with a friendly, inviting tone, the customer on the other end will be more likely to comply and slower to anger. The opposite occurs when the specialist uses an indifferent or arrogant tone.

Great problem-solving abilities are also needed. Each repair or problem needed to be fixed is

another challenge for a specialist to overcome. With every task a specialist is asked to perform, an extreme amount of problem-solving is required. Each problem has an often multi-step procedure to solve it. Even something as simple as replacing printer ink is a multi-step process. Many times, a problem will not have immediate solutions, or conversely will seem to have many solutions. When this occurs, good problem-solving skills are necessary to figure out exactly what to do. Diagnosing a problem requires problem-solving as well. Often, a seemingly simple problem will not have an obvious solution. Think about a computer that will not turn on. The problem could be software – perhaps a corrupted BIOS (basic input/output system). Since the BIOS is the most basic software used to help boot the system, if it was corrupted the system would not start up correctly, if at all. It could be hardware – maybe a blown capacitor on the motherboard or a faulty power supply. It could be something as simple as forgetting to plug it in. Whatever it is, often finding the exact problem is a painstaking and detailed process that requires superb problem-solving skills.

When fixing an issue, it is quite common for an attempt to fix a problem to fail. In this case, according to editor, writer, and experienced business book publisher Claire Wyckoff, it is also incredibly important for a specialist to be adaptable and flexible (79). Very rarely will a first attempt to fix a problem fix it, especially when it comes to software. In software, it is easy to try three or four different fixes and have them still not work. Flexibility and the ability to think outside the box is essential to keep working to figure out the issue so it can be solved. There must also be a flexibility when it comes to what devices need to be worked on. Specialists will work on all types of devices: printers, copiers, desktops, laptops, servers, and mainframes, to name a few. Repair technicians might also work on game consoles, phones, and other electronic devices. Notable places that do these sorts of repairs include uBreakiFix, Geek Squad, and many small businesses and pawn shops. Each device handled by these shops has its own OS, software, and hardware configuration. No two computers are exactly alike, so technicians must have the ability to switch easily between working on different devices with different configurations. To learn all these device configurations, a specialist must have an interest in and a willingness to learn and work with devices and systems.

Knowledge of computers does not come naturally. It takes a lot of time and experience to become familiar with a device. Any knowledge of software or hardware is made much more potent when combined with experience. And experience takes time. To be dedicated to becoming a specialist, one must have a concrete interest in the technology. It is important for a specialist to stay up-to-date with new technologies, and this requires a time investment. Wyckoff states that “one of the most important things to remember in this career is how quickly the industry changes” (80). A specialist needs to be dedicated to their job and have an interest in modern tech in order to keep up with hardware and software changes. This process of gleaning information about various updates and changes means that specialists must also be skilled at gathering data and information. Any job with no obvious immediate fix will practically always require an element of research before beginning to formulate a solution. Specifications will need to be researched, manuals will have to be referenced, and Google searches might have to be done in order to diagnose a problem or figure out how to fix said problem. For soldering repairs and chip replacement, looking at the board schematics is essential to begin a repair. Knowing a device is the first step to diagnosing a problem, so any unfamiliar device should be researched before attempting repair.

The physical aspect of a specialist is also quite important. Of all careers in tech, being a computer support specialist might very well be the most physically taxing (Wyckoff 79). Specialists might often have to lift heavy objects, such as desktop computers and heavy machinery. While setting up systems, specialists might need to climb ladders to set up wiring in the ceiling or go through tight crawl spaces to set up wiring. For these activities they need to be physically fit. Also important is good eyesight and steady hands. Many repairs will require soldering, which requires a steady hand and pinpoint accuracy so as not to cause damage to other parts on a system board. Also, specialists will be in constant contact with valuable, delicate parts and equipment, so steady hands

will make sure that this equipment is not dropped or mishandled.

The motherboard is one of the most sensitive parts of a computer. I once had a motherboard with a few bent CPU socket pins. The CPU of a desktop computer fits in a very specific way with a socket on the motherboard, in such a way that each of the hundreds of pins/pads must be in contact with its according hole/pin in the socket on the motherboard. If even one of the CPU pads (this was an Intel chipset, which uses pads on the CPU and pins for the socket) is not making correct/any contact with the pins in the socket, the entire system might very well not turn on. I therefore had to quite meticulously bend the socket pin back into place while ensuring that it did not break off. Fortunately, I was successful, but if it had broken off than the motherboard would have likely been completely ruined. Good eyesight is necessary as many parts of a device are extremely small. There are computer repair machines that magnify parts for repair, but even then, good eyesight is still necessary to identify problems on a motherboard, such as rusty contacts and blown capacitors. The socket pins that I had to bend back into place were no more than 2-3mm in length, and they were near hundreds of other pins that I could not risk bumping and moving. In this case both great eyesight and steady hands were necessary for me to complete the repair without destroying expensive equipment.

III. The Work Environment and Education

The work environment is very similar for most specialists. Specialists work in cooled, well-lit offices, shops, or computer laboratories (Farr 96). According to the Bureau of Labor Statistics (BLS), most computer support specialists work full-time but might not necessarily work nine-to-five. Because of the importance and unpredictability of computer systems, support needs to be available all day, every day. As such, they might be constantly on-call in case of emergencies and might have to work odd hours or on weekends. Specialists who do contract hours are very often away from their homes and offices and at the business they are contracted by to do their work. These specialists go from place to place constantly to fulfill each job they take. Workplace injuries might include eyestrain, back problems, and wrist issues such as carpal tunnel, similar to any office work (Farr 96).

Some education is important to breaking into the job market for specialists, however, a postsecondary degree is not necessary (BLS). Anyone with education ranging from some classes or certification to a bachelor's degree can be considered for a position, though those with less education might be required to have more work experience. Even those without any college education can become specialists, although "certification and practical experience are essential" (Farr 97). Usually, associate degrees and sometimes bachelor's degrees "prepare students to take exams that will certify them as repairers/installers" (Wyckoff 81). ComputerScience.org, a trusted site for education in technology, lists certification from companies such as Microsoft, Cisco, CompTIA (Computer Technology Industry Association), and the IEEE (Institute of Electrical and Electronics Engineers) ("Certifications in CS"). In the case of CompTIA, they have been providing certification since 1993 as the world's leading IT association ("IT Certifications"). Their certification tests cover general certification, network certification, and security certification; all of which will raise the chances of a specialist being hired. Along with repair classes more pertinent to the profession, future specialists will need to take programming, database, security, business, and OS and application classes, all of which will apply in certain ways to the duties of a specialist and bolster overall familiarity with computers and technology.

Currently, I am three years into schooling to get a bachelor's in computer science. Although this is a general computer science degree it does provide a good basis for easy certification. I have had to take classes such as networking, IT fundamentals, and system analysis and design, which span many of the necessary skills for becoming a specialist and provide a path where only one or two more classes need to be taken to get certification.

A specialist might seem like a somewhat niche job, but the reasons one might choose it as a career are quite clear. According to a study by Liqiang Chen in the *Journal of Information Systems*

Education about IT entrepreneurial intention, 68% of people studied intent on becoming IT entrepreneurs had over 5 years of computer experience. Something as simple as exposure can spark up an interest in IT, as it had done for me. After watching countless YouTube videos about computer hardware and building my first computer in high school, my interest in the field was quite strong. Social influence is also quite a key factor: "Students who receive support (e.g., mentoring support, financial support) and encouragement from their professors, family members, or close friends are more likely to have IT entrepreneurial intentions." Positive influences are quite key in stirring up interests in fields such as IT, but a certain inherent savviness is also very influential. The "do it yourself" attitude is a tendency of many people attracted to IT, and this behavior causes many people to gain a lot of technological experience before even considering a job in the tech field. As a person gains a sense of "computer self-efficacy," which is "a capability in using IT," they will gain interest in technology not only as a useful tool, but also as a viable career.

IV. The Job Outlook

Interestingly, the pay for a computer support specialist is quite low when compared to other computer jobs. According to the BLS, "The median annual wage for computer user support specialists was $50,980 in May 2018." Web developers, who require a similar amount of education, make almost $20,000 more on average per year. Specialists who specialize in networking, however, make $62,770 per year, quite a bit more than regular support specialists.

In the next ten years, "Employment of computer support specialists is projected to grow 11 percent." While this is less than the average of all computer occupations (13%), it is well above the average for all occupations. This means that there will be many future job opportunities for those wanting to become a specialist, especially in smaller businesses "contracting services from IT consulting firms and increas[ing] the demand for computer support specialists in those firms." In the IT field, there is very high potential in beginning your own business. There are not many chain stores that specialize in computer repair, so many repair shops out there are one or two-man operations. This large market of small businesses allows more specialists with entrepreneurial tendencies to create their own company and compete with other small companies. The market for fixing technology is immeasurably large; there is undoubtedly not one person living in the first world who has never had an issue with technology before. It is easily comparable to the car repair industry. Both are very opportune for small-time entrepreneurs to enter and both provide a service that is needed ubiquitously.

V. Conclusion

Everything has an expiration date. Nothing works forever. The very laws of the universe are working against us. Stars explode, galaxies die, and our phones break when we drop them. Unlike our human bodies, which will wither away eventually no matter how well we take care of them, technology can be constantly fixed and maintained to stay as good as new. Where doctors fail in bringing us back from death, specialists succeed in saving the data from our hard drives and fixing our broken screens. As each second we experience brings us one second closer to our deathbeds while we try to fend off the existential dread creeping at our backs, we can revel in the comfort that our toys can continue to function long after we have breathed our final breath.

Works Cited

Bureau of Labor Statistics (BLS), "Computer Support Specialists," *Occupational Outlook Handbook*, *U.S. Department of Labor*, www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm. Accessed April 24, 2019.

"Certifications in CS," *ComputerScience.org*, https://www.computerscience.org/degrees/certifications/. Accessed April 24, 2019.

Chen, Liqiang. "IT entrepreneurial intention among college students: an empirical study." *Journal of Information Systems Education*, vol. 24, no. 3, 2013, p. 233+. *Academic OneFile*, link.galegroup.com/apps/doc/A367075634/AONE?u=cod_lrc&sid=AONE&xid=134a2ad8. Accessed April 24, 2019.

Farr, Michael. *Top 100 Computer and Technical Careers*. 4th edition, JIST Publishing, 2009.

Indeed.com, "IT Specialist Jobs, Employment", https://www.indeed.com/jobs?q=it+specialist&l=. Accessed Apr. 24, 2019.

"IT Certifications," *CompTIA*, https://www.comptia.org/about-us/our-story/certification. Accessed April 24, 2019.

Marks, Tod. "Driving Them Crazy: Americans' Top Customer Service Complaints." *Consumer Reports*, Nov. 2, 2015, https://www.consumerreports.org/cro/news/2015/11/top-customer-service-complaints/index.htm. Accessed April 24, 2019.

Moran, Matthew. *Building Your I.T. Career*. 2nd Edition, Pearson, 2013.

Wyckoff, Claire. *Top Careers in Two Years: Computers and Information Technology*. Ferguson, 2008.