"Almost everybody can stay excited for 2 or 3 months. A few people can stay excited for 2 or 3 years, but a winner will stay excited for 30 years or however long it takes to win."

—Art Williams

Studies on highly successful people have proven again and again that success is not the result of strong willpower and the ability to overcome resistance, but rather the result of smart working environments that avoid resistance in the first place (cf. Neal et al. 2012; Painter et al. 2002; Hearn et al. 1998).

Potential Titles

- The Number Of Competencies You Have Is A Predictor Of Career Success, According To 10+ Studies
- The Number Of Interests You Have Is A Predictor Of Career Success, According To 10+ Studies
- How Competencies You Have Is The #1 Predictor Of Career Success, According To 10+ Studies
- The Competencies You Have Is The #1 Predictor Of Career Success, According To 10+ Studies

Thoughts

- I feel this has blockbuster potential.
- The original article I wrote that this references did extremely well.
- The polymath article is doing well.
- This article shows the linkages between them.

- It's a topic that society is really wrestling with.
- On the other hand, I'm not sure if my story of discovery is written well or is interesting. It's a little bit out of my normal style. I'm open to any feedback though.

Other Ways To Write This

• Hypothetical example. (wait but why style)

•

What's Most Interesting

	Michael	Robin
What's the essence of the article?		I think the thesis is contained here: Burt said
		that his hypothesis is that what's predictive of
		success is a certain knowledge and emotional
		skill set that allows you to build the diverse
		relationships in the first place. So, knowledge
		was the fundamental element here, not
		relationships. In other words, it's not the open
		network that creates success, it's the fact that

		you're the type of person who creates open networks that makes you successful.
If you were telling a friend about the article, what would you say?		Did you know that the best way to improve your life and career isn't to study your own field harder, or strengthen your existing network even more But to go outside your field and learn something new, and to go outside your own network and work with new people? (Though that last point is a little confusing because Burt told you that it wasn't the networks themselves creating the success, right? That's the most confusing part of the article for me.)
What do you find most interesting about the article?	This stuff is fundamental to individual success and impact. It's fundamental to how teams function and therefore how organizations run. It's fundamental to how we live in a global world, and we've gotten it all wrong as a society. If you ask	What I find most interesting is twofold: that going OUTSIDE our field and network is key, not going DEEPER into them the implications for social and political movements, for avoiding civil war, for getting along better. Go outside what you already know. Go outside your own network.

 $\underline{https://www.inc.com/jessica-stillman/this-is-number-1-sign-a-founder-will-succeed-according-to-a-former-y-combinator-partner.html} - Passion projects matter$

We all have this huge amount of time.



This fascinating study points to what may be the fundamental distinction we all need to know about becoming a polymath.

SUBHEAD

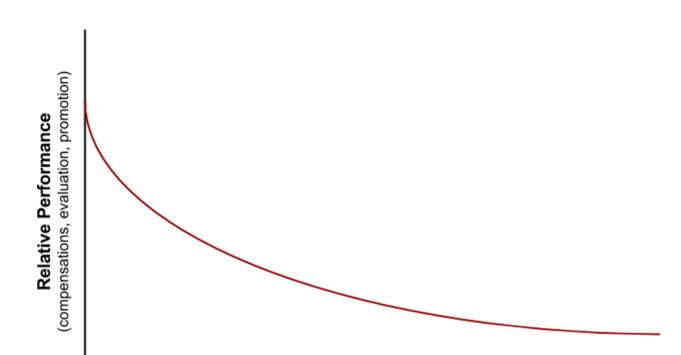
I had been looking forward to interviewing Root-Bernstein for a long time. First, I had read his book Sparks of Genius, and it had a profound impact on me. It's in the top 1% of all books that I have ever read. Second, I found his life fascinating.

 Everyone who goes through public education is exposed to many different disciplines. So theoretically, they have the building blocks to make connections.

Angle #1: Personal Story

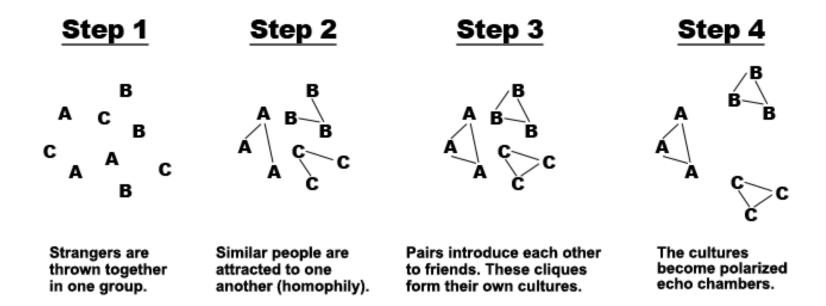
A few years ago, I wrote <u>The No. 1 Predictor Of Career Success</u> <u>According To Network Science</u> after interviewing the world's pre-eminent researchers on how networks create competitive advantage, Ron Burt. This article was read over 1 million times across the web on sites from Time to Forbes.

The centerpiece of the article is a study that Burt replicated 8 times showing that having an open network is an extremely



strong predictor of career success. An open network is one where you're a member of diverse, disconnected groups rather than just a member of group where everyone knows everyone else.

The following graphic summarizes how groups form and introduces why making connections between them is rare and useful:



In short:

- 1. **People tend to group with people like them.** This is known as homophily.
- 2. As groups form, they create their own culture, values, and language. For example, every industry and profession has its own language. In some ways, every group creates its own 'mini-reality.' While this improves communication inside the group, it makes it harder for knowledge to travel in

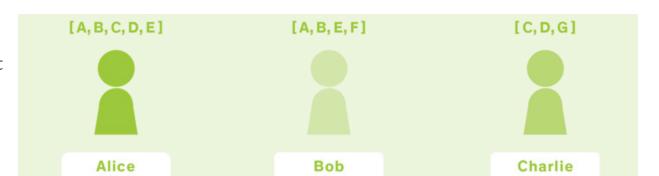
or out, because it must be linguistically and culturally translated first.

- 3. **This leads to groups becoming echo chambers,** where members keep hearing the same ideas again and again and get more and more confident that those ideas reflect reality.
- 4. **Furthermore, each group develops an identity based, in part, on how it's different or better than other groups.** These conceptual walls between groups lead to polarization and prejudice. Knowledge becomes emotionally charged.
- 5. This process also creates an opportunity to make connections between groups (hence the power of open networks). Each group develops its own valuable knowledge. When somebody is part of multiple groups, they have access to conflicting, valuable ideas. They can see things that individual members of the groups cannot see. In the best case scenario, someone with an open network is uniquely positioned to integrate those ideas, and in so doing, cancel out the biases, have a more accurate view on reality, create new and creative ideas, and make valuable introductions between the groups. On the negative side, to integrate conflicting ideas often requires a period of cognitive dissonance and maybe even chaos.

If you take the results of the article seriously, it forces you to rethink how you structure your network and the collaborative teams that you're part of (at least it did for me). Rather than trying to be the most connected person in your niche, it implies that you should instead aim to have the most diverse network.

One of the leading researchers in the world on the value of collaborative diversity, Scott Page, uses the following diagram to explain what he calls the diversity bonus in his <u>book by the same name</u>.

Here's an example from the book.... Let's say there are three people, each with a set of different tools. One person has 5 tools. One person has 4 tools. The final person has 3 tools. Naturally, you'd suspect that



the best performing diad would be the person with 5 tools and the person with 4 tools.

However, this isn't the case. Taken from a diversity perspective, two people with the same tools do not add a new perspective. Two people with different tools have a diversity bonus. In this, image, the people with 3 and 4 tools have the biggest diversity bonus because there isn't overlap.

Beyond the immediate applications, Burt's research left me with a nagging question, "How do I build an open network?"

The Multi-Year Scavenger Hunt

When I asked Burt this question, he told me about the results of a follow up study he did, which found that who you're connected to has zero impact on career success. Zero!

I remember being floored upon hearing this. It's the exact opposite of what I expected based on Burt's previous study. These results surprised even Burt. By looking at the chart above, you'd expect the simple take-away to be that you should just jump into starting an open network.

Naturally I asked Burt, "What do you think is happening here then?"

Burt replied that he didn't know the exact cause, but that what he did know is that having an open network is correlated with success, but not a cause of it.

"What is the cause then?" I asked.

Burt said that his hypothesis is that what's predictive of success is a certain knowledge and emotional skill set that allows you to build the diverse relationships in the first place. So, knowledge was the fundamental element here, not relationships.

Naturally, I asked Burt what he thought that skill set was. He did not know.

The No. 1 Predictor Of Career Success According To Network Science is the last article I wrote about relationship building. The interview with Burt marked my turning point. My new focus became exploring the connection between diverse knowledge and career success. I wanted to learn what the skill set was.

Little did I know that this question would lead to a multi-year scavenger hunt with a surprising ending.

The Challenge Of Diversity

The first step in my journey was learning more deeply about diversity.

As I delved into the literature on diversity, I realized that I was looking at it way too simplistically.

Before Burt's study, the only time I heard about diversity was in relation to gender and racial diversity within a conversation of inclusion. I never heard about cognitive diversity as something that made individuals and groups smarter.

In general, closed networks are the default. Open networks need some sort of intervention in our thinking. Specialists are the default. Being a polymath is unconventional. There is a reason for this. Diversity is REALLY hard for us humans to do.

As an example, take the difficulty of one job searcher named José....



After months of submitting his resumé to 50–100 places a day with not one callback, he decided to perform a simple experiment based on a hunch. He changed his first name on his resume from José to Joe. Thus, <u>José Zamora became Joe Zamora</u>.

Amazingly, He went from zero call-backs to having them roll in.

What can we learn from this little experiment?

Our brains have been <u>hardwired to be biased</u> against people who are different. This is the result of millions of years of evolution selecting for survival. Because of cognitive dissonance, we resist things that challenge our worldview and identity. Because of confirmation bias, we notice things that reinforce what we already believe. Because of ingroup/outgroup bias, we think of strangers as 'others' that we don't trust.

The research on diversity backs up the difficulty. According to an <u>academic review of the top 80 studies on diversity over 40 years</u> by a Columbia University and Stanford professor, when it comes to group performance, diverse groups perform at the top and bottom of success of all groups.

Their research shows that if you throw completely different people together, they'll be likely to have lower levels of satisfaction, commitment, and performance and higher levels of absenteeism and turnover. This phenomenon is known as the backfire effect. Often when you expose people to others and ideas that are different, rather than their beliefs becoming more moderate, they become more extreme.

The top groups, on the other hand, are able to mine the diversity for its benefits while avoiding the pitfalls.

With this skewed performance, we can see why diversity gets a bad name. But, in only seeing the bad side of diversity, we are throwing away the baby with the bath water.

With this context on cognitive diversity and open networks in mind, I had the intuition that learning across fields would be valuable for the same reasons that having an open network are.

Knowledge is polarized. People often just stay in their field, but rarely make atypical combinations. Artists, for example, are skeptical business people and consider them sell outs. Business people think that many academics have their heads up in the clouds and are not doing practical work. Because of prejudice, many fail to see that there is value in each domain. All of these prejudices are opportunities because combining skills is rare and useful.

From there, I started to explore the idea of what it meant to be a polymath. Since, I was young I've always heard that being a polymath was bad, that learning across fields may have been possible in the past, but was no longer an effective strategy. As I delved more deeply, I saw that there were https://example.com/huge benefits to being a polymath and that it was realistic for anyone to do, not just geniuses.

The Journey Into Polymathy

As I deliberately experimented with being a polymath myself, I immediately saw tremendous benefits. Suddenly, I was able to come up with more creative, original, and valuable ideas because I knew ideas that almost no one in my network knew.

The next surprise came when I found that many of the most successful entrepreneurs and scientists were polymaths. In particular, I became enamored by self-made billionaire Charlie Munger who has spent his whole career learning across disciplines, building up a latticework of mental models, and ultimately <u>teaching others about it</u>. His work helped me see the practical power of being a polymath in the business world.

The final surprise came when I uncovered a growing body of academic research (now totaling over 15 studies) that show a connection between having multiple interests / competencies and scientific impact and career success.

The following studies along with my previous research and experiences lead me to believe that perhaps what we've been taught about being a polymath has been all wrong!

The following is a review of those studies:

Study title

Summary

Conclusion

While learning about diversity, open networks, and being a polymath has changed my life, the far bigger opportunity and risk is in society.

In the worst case scenario, our society will become a tower of Babel with factions who are functionally unable to talk with others, who polarize and demonize others, and who attempt to destroy "the other" using whatever method they can.

In the best case scenario, our differences are our greatest strengths. By learning to appreciate diversity, we can unlock our collective wisdom at a level we can't even imagine now. We can collaborate to solve many of the world's biggest challenges, which are so complex that they need many, diverse perspectives.

If all this research is accurate, we fundamentally need to rethink our education system. While our current education system teaches diverse skills, it does not teach how to connect those in order to create value in the world.

Beyond our own cognitive biases, the heart of the problem may be our infatuation with reductionism over holism.

The studies

#	Source	Study	Meta
1	Multiple Giftedness In Adults: The Case Of Polymaths	Catherine Cox argued that among historical personages, the more creative an individual was, the more varied their intense interests (Cox, 1926, Table 41).	Cox, C. M. (1926). The early mental traits of three hundred geniuses. Stanford, CA: Stanford University Press.
2	Multiple Giftedness In Adults: The Case Of Polymaths	R. K. White found similarly that "the typical genius surpasses the typical college graduate in range of interests andhe surpasses him in range of ability" (White, 1931, p. 482).	White, R. K. (1931). The versatility of genius. Journal of Social Psychology, 2, 482.
3	Multiple Giftedness In Adults: The Case Of Polymaths	Lewis Terman summarized his findings concerning gifted individuals by saying that "Except in music and the arts, which draw heavily on specialized abilities, there are few persons who achieved great eminence in one field without displaying more than average ability in one or more other fields" (quoted from Seagoe, 1975, p. 221).	Seagoe, M. (1975). Terman and the gifted. Los Altos, CA: W. Kaufmann.
4	Multiple Giftedness In Adults: The Case Of Polymaths	Eliot Dole Hutchinson similarly concluded in his 1959 study of creative individuals that multiple talents were the norm: "It is not by accident that in the greatest minds professions disappear Such men are not scientists, artist, musicians, when they might have just as well have been something else. They are creators" (Hutchinson, 1959, pp. 150–152)	Wertheimer, M. (1959). Productive thinking. New York: Harper. A Contemporary Perspective on the Psychology of Productive Thinking - Co-founder of gestalt
5	Multiple Giftedness In Adults: The Case Of Polymaths	Finally, Roberta Milgram has found that career success in any discipline is better correlated with one or more intellectually stimulating and intensive avocational interests than IQ, grades, standardized test scores, or any combination of these (Milgram & Hong, 1993).	Milgram, R., & Hong, E. (1993). <u>Creative thinking and creative performance in adolescents as predictors of creative attainments in adults: A follow-up study after 18 years.</u> In R. Subotnik & K. Arnold (Eds.), Beyond Terman: Longitudinal studies in contemporary gifted education. Norwood, NJ: Ablex.

6	Multiple Giftedness In Adults: The Case Of Polymaths	Historian of science Paul Cranefield found that among the men who founded the discipline of biophysics during the mid-19th century (a group including Helmholtz, Mueller, and Du Bois-Reymond among its stellar cast), there was a direct correlation between the number and range of avocations each individual pursued, the number of major discoveries he made, and his subsequent status as a scientist (Cranefield, 1966).	Cranefield, P. (1966). <u>The philosophical</u> and cultural interests of the biophysics movement of 1847. Journal of the History of Medicine, 21, 1–7.
7	Multiple Giftedness In Adults: The Case Of Polymaths	The earliest study suggesting such a correlation was performed by J. H. van't Hoff (who became the first Nobel laureate in Chemistry in 1901) in 1878. He noted that virtually all of the scientists from Kepler and Galileo through Newton, Davy, and Priestley excelled at arts such as poetry, painting, and music and were often deeply engaged in non-conformist spiritual or religious activities as well (van't Hoff, 1878)	
8	Multiple Giftedness In Adults: The Case Of Polymaths	Early studies of other pools of eminent scientists and mathematicians by Ostwald (1907–1909, 1909), Moebius (1900), Fehr (1912), and Hadamard (1945) confirmed van't Hoff's observation, but all of these studies were based on small, uncontrolled, investigator–selected samples.	
9	Multiple Giftedness In Adults: The Case Of Polymaths	Root-Bernstein and his collaborators performed the first studies to compare the avocational interests of eminent scientists with those of average achievement. The initial investigation involved 40 young scientists recruited in 1955 by Bernice Eiduson for the first (and perhaps only) longitudinal psychological study of scientists over the course of their careers. Each scientist was interviewed and given a variety of psychological tests every 5 years through 1980. The 40 scientists diverged widely in their achievements. Four won Nobel Prizes by 1985 and they and seven additional colleagues had been elected to the US National Academy of sciences. These 11 scientists would clearly qualify for the label "gifted" under the criteria being employed here. At the other extreme, several scientists had failed to obtain tenure and had obtained non-academic positions, while another dozen or so had quite average academic careers. Various other measures of success such as	Root-Bernstein, R. S., Bernstein, M., & Garnier, H. (1993). Identification of scientists making long-term high-impact contributions, with notes on their methods of working. Creativity Research Journal, 6, 329–343.

number of publications, number of citations, and impact factors all correlated well with various assessments of success (RootBernstein, Bernstein, & Garnier, 1993). A survey of the scientists in 1988 determined the number and types of their adult avocations and these were then correlated with the scientists' publication, citation, and impact factor data and evaluated in light of their previous interviews.

Significant correlations were found between the number of adult avocations each scientist participated in and their success, as well as between specific avocations and success. Scientists who painted and drew were very significantly more likely to be among the Nobelists and National Academy members than were those who did not. Those who wrote poetry, did photography, or participated in various technical crafts, and those who had the widest range of hobbies were also more likely than the average scientist to be recognized as influential by their peers (RootBernstein, Bernstein, & Garnier, 1995). Unexpectedly, musical avocations had no predictive value for success as a scientist in this group, perhaps because they were equally common among gifted and average scientists.

Notably, a very significant correlation also existed between the kinds of mental "tools" that the scientists used (such as visual thinking and kinesthetic thinking) and the type of avocations they pursued (painters tend to be visual thinkers, poets verbal thinkers, etc.). A further set of significant correlations were then found between the types of mental tools used by each scientist and their likelihood of success. Various forms of visual thinking (3D, 2D, graphic, etc.), kinesthetic feelings, and verbal/auditory patterns were each independently correlated with success, as was employing a greater-than-average range of modes of thinking. Thus, avocations may reflect or even build a range of mental skills that complement or enhance logico-mathematical thinking among scientists (Root-Bernstein et al., 1995).

Interviews with the scientists (all of which were done many years prior to and independently of the survey of avocations, and therefore could not have been influenced by the survey) revealed that many were, like Einstein, conscious of the role that their avocations played in promoting their scientific creativity. One unusually adept experimentalist and Nobel Prize winner said that "I have a big tendency to use my hands and I also have a tendency to use my intellect. Well, the sciences are a great way of combining these operations and there aren't too many professions that do that.... My concept of the ideal 'scientist,' is that you do one thing real well, and its a very specialized thing, and then you do a lot of other things, but not too many, maybe 5 or 6 or 10 different other things, which you do well enough to give yourself and possibly others pleasure. This should be distributed quite widely among sports and artistic things and carpentry, and things that involve using your hands and a little music, perhaps and things of that sort" (quoted from Root-Bernstein et al., 1995, p. 136). Another Nobel laureate said, "Every scientist realizes in his science only a small portion of his total ability. I suppose that's true in general – that you don't do everything you're capable of by a big factor. I don't" (quoted from Root-Bernstein et al., 1995, p. 136). Avocations were a way of employing some of his only partially used abilities. And a member of the National Academy rationalized his own interest in music by saying, "[Suppose] someone is getting interested in musical problems. He may then apply what he finds there back to his scientific research. That's something which may affect very much the result. I think it's good. I think for a scientist who is working very hard, anything is good which brings from time to time another angle about general ideas into the picture" (quoted from Root-Bernstein et al., 1995, p. 136). Yet other gifted scientists recounted how building things, electronics hobbies, photography, and other avocations developed skills and knowledge that they employed in their scientific work. Thus, like Einstein, the polymathic individuals in the Eiduson study wove their vocational and avocational interests into integrated networks of mutually reinforcing enterprise. On the other hand, the least successful scientists in the study not only had

		fewer avocations than the successful ones, but almost universally considered these avocations as distractions that competed with their work.	
10	Multiple Giftedness In Adults: The Case Of Polymaths	The results of the Eiduson study have been validated by investigation of a larger pool of scientists. In 1936, Sigma Xi, the National Research Organization, a US-based society for scientists, surveyed its membership about their avocations. This survey provides baseline data for average-to-above-average scientists during the first half of the 20th century. These data were compared with avocations mentioned in biographical and autobiographical writings of Nobel Prize winners in Chemistry from 1901 through 2000. Data on avocations were found for approximately 70% of the laureates. The most conservative treatment of the data show that Nobel laureates are twice as likely to play a musical instrument as the Sigma Xi members; 5 times as likely to engage in crafts; 8 times more likely to engage in a visual art; 10 times more likely to write poetry or fiction; and more than 20 times more likely to engage in a performing art such as acting or dancing as an adult (Root-Bernstein & Root-Bernstein, 2004). All of these differences were very highly statistically significant.	Root-Bernstein, R. S., & Root-Bernstein, M. M. (2004). Artistic scientists and scientific artists: The link between polymathy and creativity. In R. J. Sternberg, E. L. Grigorenko E. L., & Singer, J. L. (Eds.), Creativity: From potential to realization (pp. 127–152). Washington, DC: American Psychological Association.
11	The Art of Innovation: Polymaths and Universality of the Creative Process	The English polymath, Francis Galton found that polymathy was unusually common 268 Robert Root-Bernstein Part III among members of the British Royal Society (Galton, 1874).	English Men Of Science: Their Nature And Nurture (1874)
12	The Art of Innovation: Polymaths and Universality of the Creative Process	Botanist P. J. Moebius, the grandson of the famous mathematician, and the Frenchman Henri Fehr both noted independently the unusually high incidence of artistic and musical proclivities among two large groups of mathematicians (Fehr, 1912; Moebius, 1900).	Fehr, H. (1912). Enquete de l'enseignmement mathematique sur la methode de travail des mathematiciens. Paris: Gauthier-Villars; Geneva; George et Cie.

			Moebius, P. J. (1900). Ueber die anlage zur mathetmatik. Leipzig: Barth.
13	The Art of Innovation: Polymaths and Universality of the Creative Process	Jacques Hadamard confirmed these findings several decades later in his classic, The Psychology of Invention in the Mathematical Field (Hadamard, 1945).	Hadamard, J. (1945). The psychology of invention in the mathematical field. Princeton, NJ: Princeton University Press
14	The Art of Innovation: Polymaths and Universality of the Creative Process	Subsequent cognitive studies have tended to validate the notion that the versatility of genius provides useful mental skills. For example, studies by Rauscher et al. and Gardiner et al. have suggested that direct relationships may exist between art and musical skills and improved spatial and mathematical reasoning in children (Graziana, Petterson & Shaw, 1999; Gardiner et al., 1996, p. 284; Rauscher, Shaw & Ky, 1997).	Graziana, Petterson & Shaw, 1999 Gardiner, M. F., Fox, A., Knowles, F. & Jeffrey, D. (1996). Learning improved by arts training. Nature, 381, 284. Rauscher, F. H., Shaw, G. L. & Ky, K. N. (1997). Music training causes long-term enhancement of preschool children's spatial-temporal reasoning. Neurological Research, 19, 2–8.
15	Creative Geniuses, Polymaths, Child Prodigies, and Autistic Savants: The Ambivalent Function	To be sure, not every creative genius is a polymath, and many will be far narrower in the scope of their creative achievements, whatever the breadth of their interests might be. To get a better idea of the phenomenon, we can turn to an empirical study of 2102 creative geniuses (Cassandro, 1998). All creators were assessed on their versatility, which was defined by achieving eminence in more than one domain or subdomain (see also Simonton, 1976; White, 1931). Although 61% did not demonstrate versatility according to	Cassandro, V. J. (1998). Explaining premature mortality across fields of creative endeavor. Journal of Personality, 66, 805–833.

	of Interests and Obsessions	this definition, 15% attained eminence in more than one subdomain within a domain (e.g., poetry and drama within literature; such as William Shakespeare), and fully 24% achieved eminence in more than one domain (e.g., literature and science; such as Johann Wolfgang Goethe). Thus, more than one-third exhibited creative versatility to some degree.	
16	Creative Geniuses, Polymaths, Child Prodigies, and Autistic Savants: The Ambivalent Function of Interests and Obsessions	Furthermore, creative versatility appears to be positively correlated with achieved eminence (Simonton, 1976; Sulloway, 1996). The double- or triple-threat creator tends to become more eminent than the specialist creator. Accordingly, we cannot dismiss the connection by saying that these versatile creators have their expertise diluted to the level of mere dilettantes.	Simonton, D. K. (1976). Biographical determinants of achieved eminence: A multivariate approach to the Cox data. Journal of Personality and Social Psychology, 33, 218–226 Sulloway, F. J. (1996). Born to rebel: Birth order, family dynamics, and creative lives. New York: Pantheon.
17	Openness to Experience and Intellect Differentially Predict Creative Achievement in the Arts and Sciences	The Big Five personality dimension Openness/Intellect is the trait most closely associated with creativity and creative achievement. Little is known, however, regarding the discriminant validity of its two aspects—Openness to Experience (reflecting cognitive engagement with perception, fantasy, aesthetics, and emotions) and Intellect (reflecting cognitive engagement with abstract and semantic information, primarily through reasoning)—in relation to creativity. In four demographically diverse samples totaling 1,035 participants, we investigated the independent predictive validity of Openness and Intellect by assessing the relations among cognitive ability, divergent thinking, personality, and creative achievement across the arts and sciences. We confirmed the hypothesis that whereas Openness predicts creative achievement in the arts, Intellect predicts creative achievement in the sciences. Inclusion of performance measures of general cognitive	Openness to Experience and Intellect Differentially Predict Creative Achievement in the Arts and Sciences

		ability and divergent thinking indicated that the relation of Intellect to scientific creativity may be due at least in part to these abilities. Lastly, we found that Extraversion additionally predicted creative achievement in the arts, independently of Openness. Results are discussed in the context of dual-process theory. []	
18	Openness to Experience and Intellect Differentially Predict Creative Achievement in the Arts and Sciences	Consistent with prior research, Openness/Intellect emerged as the most robust and consistent Big Five predictor of creative achievement across the arts and sciences (e.g., Batey & Furnham, 2006; Carson et al., 2005; Feist, 1998; Silvia, Kaufman, & Pretz, 2009).	Batey, M., & Furnham, A. (2006). Creativity, intelligence, and personality: A critical review of the scattered literature. Genetic, Social, and General Psychology Monographs, 132, 355–429 Carson, S. H., Peterson, J. B., & Higgins, D. M. (2005). Reliability, validity, and factor structure of the Creative Achievement Questionnaire. Creativity Research Journal, 17, 37–50. Feist, G. J., & Barron, F. X. (2003). Predicting creativity from early to late adulthood: Intellect, potential, and personality. Journal of Research in Personality, 37, 62–88. Silvia, P. J., Kaufman, J. C., & Pretz, J. E. (2009). Is creativity domain-specific?

1	
	Latent class models of creative
	accomplishments and creative
	self-descriptions. Psychology of
	Aesthetics, Creativity, and the Arts, 3,
	139–148.

The results surprised me and changed my life in two ways...

How The Power Of Open Networks Changed My Life

reduced the number of people I was building relationships with and focused on people who were members of different networks; polymaths, in other words. This approach allowed me to build fewer, more meaningful relationships. Meaningful from both a connection perspective and meaningful from a learning perspective. Or put differently; every relationship takes time to maintain, and the time we have to nurture relationships is limited.

- Greg Feist Fluid
- James Kaufman / John Baer Exact opposite of what Why is it hard to be creative? Can you imagine him giving

Katerina Comments:

- I think you might want to discuss if a Polymath is an expert (genius) in many fields in such a way that he could do the task by himself, or does s/he understand enough of a field to work with experts in those fields. The first requires deep domain understanding, the second requires 1) being able to see analogies between fields, 2) being able to quickly learn new concepts, 3) being able to think differently (e.g., an engineer has a more logical/mathematical way of thinking than a humanist. Mathematicians often want to prove things, using formulas, for a social scientist a prove isn't necessary. You could say that social scientist often talk about being 95 % confident that something is a specific way, whereas mathematicians aim for 100 % certainty.

Article	Argument/Synopsis	Michael's Questions
B. F. Jones (2009). The burden of knowledge and the "death of the renaissance man": Is innovation getting harder	Knowledge burden: With increasing innovation, knowledge increases. For every field there is more and more to learn, the rate at which researchers publish articles (aka new knowledge) is high, making it very difficult to stay on top of one's field. Findings: The more 'knowledge depth' is needed for an innovation, the greater the chances that a team has been working on the innovation, and that team members are highly specialized. Note: knowledge depth are the number of patents needed for an innovation. Data source: Patent data	
Melero (2015). The generalist is not dead! The role of generalist in teams of innovators	When there is diversity of knowledge in a team, a generalist holds the key role of in offering/supporting an ideal recombining of the team's expertise. Definition of generalist: High diversity of	

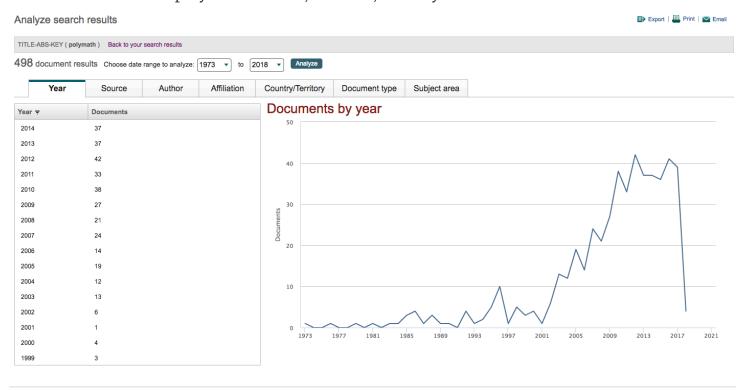
	expertise. Expertise measured by investigating the technological areas that is attributed to an innovator. Generalist are those with a high level of diversification. Diversification measured using a specific index (Herfindhal Index). The scale of the index was inverted so that high numbers indicate high level of diversification. Uncertainty: Domain uncertainty is not being able to predict the outcome of an innovation, so not being able to say that an innovation will be useful and relevant for others (remember that creativity is just about novelty, but innovations need to be novel and useful. Professor Amabil talks about it.) Finding: If uncertainty is low (uncertainty in XXX), the having a generalist on the team reduces the relevance of an innovation. But if uncertainty is high, the presence of a generalist increases the relevance of an innovation. Data source: Patent data	
Cohen and Levinthal (1990). Absorptive Capacity: A new perspective on learning and innovation	The article is framed at the organizational level, and talks about organization learning and organizational absorptive capacity. But the below copied paragraph talks about research done on individuals. In short, researchers argue that humans learn through associations. New knowledge is put into categories, which are linked. The number of these categories and the richness of relations between and understanding of categories help to learn new knowledge. They continue arguing that intensity and effort is	

	"Some psychologists suggest that prior knowledge enhances learning because memory—or the storage of knowledge—is developed by associative learning in which events are recorded into memory by establishing linkages with pre-existing concepts. Thus, Bower and Hiigard (1981) suggested that the breadth of categories into which prior knowledge is organized, the differentiation of those categories, and the linkages across them permit individuals to make sense of and, in tum, acquire new knowledge." (p. 129). To develop an effective absorptive capacity, whether it be for general knowledge or problem–solving or learning skills, it is insufficient merely to expose an individual briefly to the relevant prior knowledge. Intensity of effort is critical. (p. 131)	
Natasha Milijasevic (2014). The Genius of the Generalist.	An essay on why generalist are needed by Natasha, a Toronto based management consultant. File is in Article folder	
Ramachandra Guha (2016). <u>The last polymath:</u> <u>Benedict Anderson as scholar and human being</u>	Account of the life of Benedict Anderson. File is in Article folder	
Naranayan, Balasubramanian & Swaminathan (2006). A Matter of Balance: Specialization, Task Variety, and Individual Learning in a Software Maintenance Environment	 Specialization enhances productivity exposure to variety has a nonlinear influence on productivity; i.e., "too much variety" can impede learning. We also find that achieving a proper balance between specialization and exposure to a variety 	

leads to the highest productivity

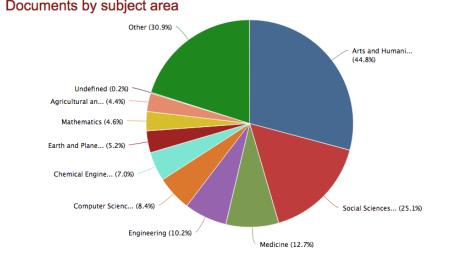
 Exposure to variety = working on different task.

Research on Polymath has increased since 2001, and is dominated by research in the humanities and social sciences. A quick look at the articles show that most provide accounts of historical figures considered polymath. The data behind this graph are from the database scopus and summarize the results of a search for 'polymath' in title, abstract, and keywords.



Year	Source	Author	Affiliation	Country/Territory	Document type	Subject area	
				Decumente	by subject o	200	

Subject Area	Documents ₹
Arts and Humanities	223
Social Sciences	125
Medicine	63
Engineering	51
Computer Science	42
Chemical Engineering	35
Earth and Planetary Sciences	26
Mathematics	23
Agricultural and Biological Sciences	22
Chemistry	22
Environmental Science	22
Biochemistry, Genetics and Molecu	20
Multidisciplinary	17
Physics and Astronomy	15
Business, Management and Accou	10
Materials Science	10



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