



THE HIGHLANDS ABILITY BATTERY

Gold Standard Among Human Assessment Tools

Natural Abilities and Careers

Architects and Engineers

Dori Stiles, Ph.D., Director of Research and Development for the Highlands Company and owner of Turning Points, a consultancy focused on individual and organizational development. Her Ph.D. is in industrial/organizational psychology from the University of Georgia. Her 30+ years experience spans public and private sectors, academia and education, and her singular focus is on creating lasting change through developing individuals.

Author Contribution:

With thanks to Leslie Martin, President of the Highlands Consulting Group, for her contribution of real-life examples.

Table of Contents



NATURAL ABILITIES AND CAREERS 1 - 4

The Study

Measures

Participants

Ability Combinations

ARCHITECTS AND ENGINEERS 5 - 13

The Sample

The Results

Personal Style

Problem Solving

Spatial Reasoning

Summary and Discussion 14 - 15

ABOUT THE HIGHLANDS COMPANY 16

Natural Abilities and Careers

“Is there a correlation between your abilities and your career?”

The Study

Of all the questions I receive as Director of Research for the Highlands Company, that is the most frequent. As the publisher of the Highlands Ability Battery (HAB), a standardized assessment of [natural abilities](#), we've undertaken ongoing research to shed light on this age-old question—with fascinating results. We began our study by compiling the test results for people who had completed the HAB over a period of six years (2012 - 2018) while employed in various career fields. An analysis of the data revealed some common cognitive abilities and characteristics for participants within specific occupations.

Measures

The Highlands Ability Battery (HAB) is a human assessment tool that objectively measures natural abilities by performing specific, timed tasks called worksamples. With the exception of a single self-report section and a measure of vocabulary, the results are based on performance rather than perception. Examples of worksamples include recreating designs from memory, manipulating blocks in space, and arranging concepts in logical sequence. The HAB consists of 19 virtual worksamples that are taken online over an estimated three hours in total. Of the 19 measures, three are related to Personal Style, five are related to Driving Abilities, and nine are related to Specialized talents.

Participants

The sample of HAB test takers included in this study were both male and female between the ages of 22 and 65. Of the 29,907 people who took the HAB between the years 2012-2018, 9,245 identified themselves as currently working in an occupation. All HAB-takers complete a registration form prior to taking the worksamples and, among other things, identify their age, gender and whether or not employed. Employed participants select an Occupational Job Family from a list of careers coded in the

Natural Abilities and Careers

Standard Occupational Classification (2009), published by the US Department of Labor and Bureau of Statistics. Of the 22 Occupational Job Families listed, 6 were selected for this study with a total of 6,914 participants as shown in Table 1.

Table 1: Occupational Job Families Studied

Job Families	Number of Participants
Architecture and Engineering Occupations	N= 920-922
Business and Financial Operations Occupations	N= 1,271
Construction and Extraction Occupations	N= 1,903
Education, Training, and Library Occupations	N= 855
Legal Occupations	N= 1,603
Sales and Advertising Occupations	N= 902
Total Participants	N= 6,914

* Totals may vary between datasets due to unrecorded responses

Ability Combinations

For this study, we took a closer look at 6 abilities; generalist/specialist, extrovert/introvert, classification, concept organization, spatial relations theory and spatial relations visualization paired in combinations for Personal Style, Problem Solving and Spatial Reasoning. Here are the 3 pairs of ability combinations that were analyzed:

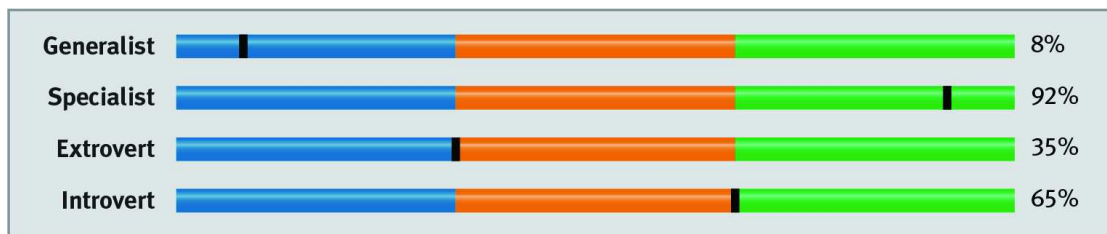
Personal Style Combinations:

Generalist/specialist indicates a person's characteristic orientation toward thinking about and performing tasks, whether with a shared vision and language or with a unique vision and language.

Extroversion/introversion indicates where a person prefers to focus energy, inwardly on the inner world of ideas and experience, or outwardly on the world of people and events. It also indicates a person's preference for re-energizing when fatigued by

Natural Abilities and Careers

either spending time with others or alone. Different combinations indicate a person's natural preferences for the interpersonal environment in the workplace.

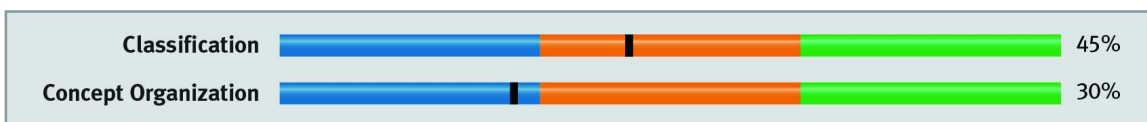


Low, mid and high scores on generalist/specialist with low, mid and high scores on extrovert/introvert resulting in 9 combinations.

Problem Solving Combinations:

Classification and concept organization are two forms of convergent reasoning. Classification is the ability to rapidly see relationships between seemingly unrelated events, situations or information; it is inductive thinking, a non-verbal problem solving ability used to move from the specific to the general.

Concept organization is the ability to mentally arrange ideas, information, or things in logical, linear order; it is the deductive, verbal problem solving ability, moving from the general to the specific.



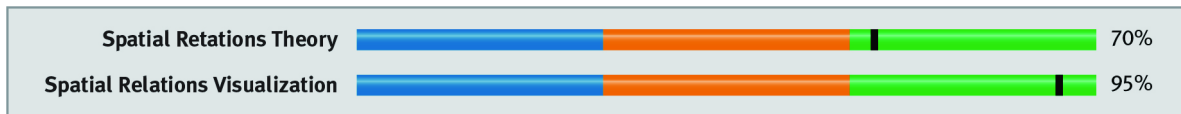
Low, mid and high scores on classification with low, mid and high scores on concept organization resulting in 9 combinations.

Spatial Reasoning Combinations:

Spatial relations theory and spatial relations visualization are two forms of spatial reasoning. Spatial relations theory enables a person to understand the theoretical relationships involved in imaginary and theoretical situations.

Natural Abilities and Careers

Spatial relations visualization is the ability to see in three dimensions when given only two; it is the ability to think or solve problems in three dimensions and to visualize and mentally manipulate three dimensional objects in space.



Low, mid and high scores on spatial relations theory with low, mid and high scores on spatial relations visualization resulting in 9 combinations.

Natural Abilities and Careers: Architects and Engineers

The Sample

The sample of participants included for this job family consisted of 920 male and female self-selected HAB-takers between the ages of 22-65, who registered as working in Architecture and Engineering occupations as shown in Table 2.

Table 2: Architect and Engineering Occupations from the HAB Registration Form

Architects, Surveyors, Mechanical and Chemical Engineers
Architects of all types
Cartographers
Drafters, all types; Architectural, Civil, Mechanical, etc.
Engineers, all types; Aerospace, Agriculture, Biomedical, Chemical, Civil, Computer Hardware, Electrical, Environmental, Industrial, Marine, Materials, Mechanical, Mining, Nuclear, etc.
Surveying/Mapping Technicians

The Results

Personal Style

At the individual ability level, the data showed a greater number of high specialists and high introverts in these fields, although not a majority. The Personal Style that describes this combination is the Detailed Researcher style. In fact, we found this style to be the most populated within the Architecture and Engineering occupations. Considering the nine possible Personal Style Combinations, 62% of the participants scored in four ability combinations as shown in Table 3.

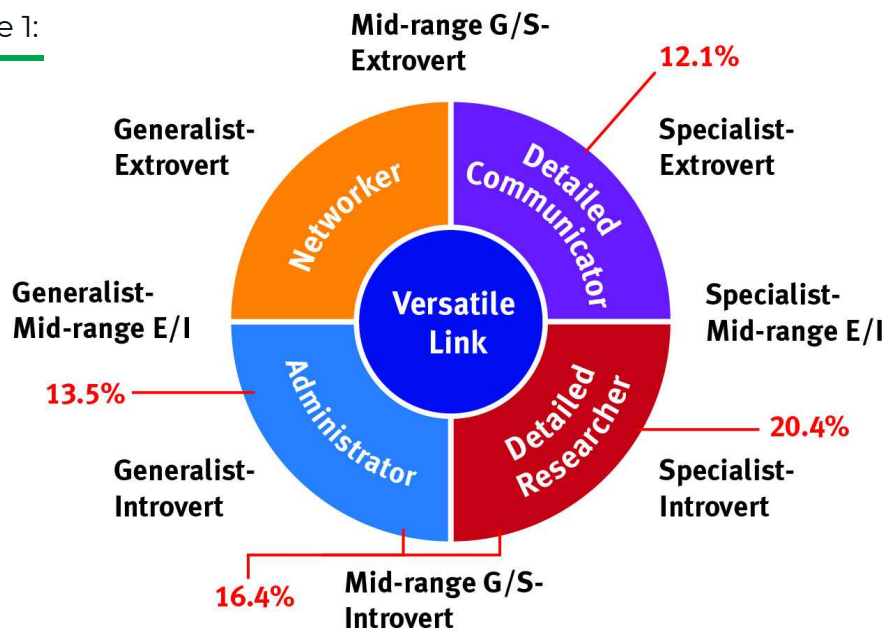
Table 3: Top 4 Personal Style Combinations

Architects and Engineering Occupations	Detailed Researcher	B/W Admin & Detailed Researcher	Administrator	Detailed Communicator	Other	Total
Count	188	151	124	111	346	920
% Within Occupation	20.43%	16.41%	13.48%	12.07%	37.61%	

Natural Abilities and Careers: Architects and Engineers

The Highlands Personal Style Disc shown in Figure 1 shows the top 4 Personal Style Combinations for this job family.

Figure 1:



The name of each Personal Style Combination represents a descriptor, not a job or career. Generally, the more closely aligned a person's job responsibilities are with his/her natural style, the less time and effort he or she expends. In this way, identifying a natural personal style becomes a self-management tool. When desired, a person can build skills to utilize any of the other styles, especially when those styles share at least one of the abilities.

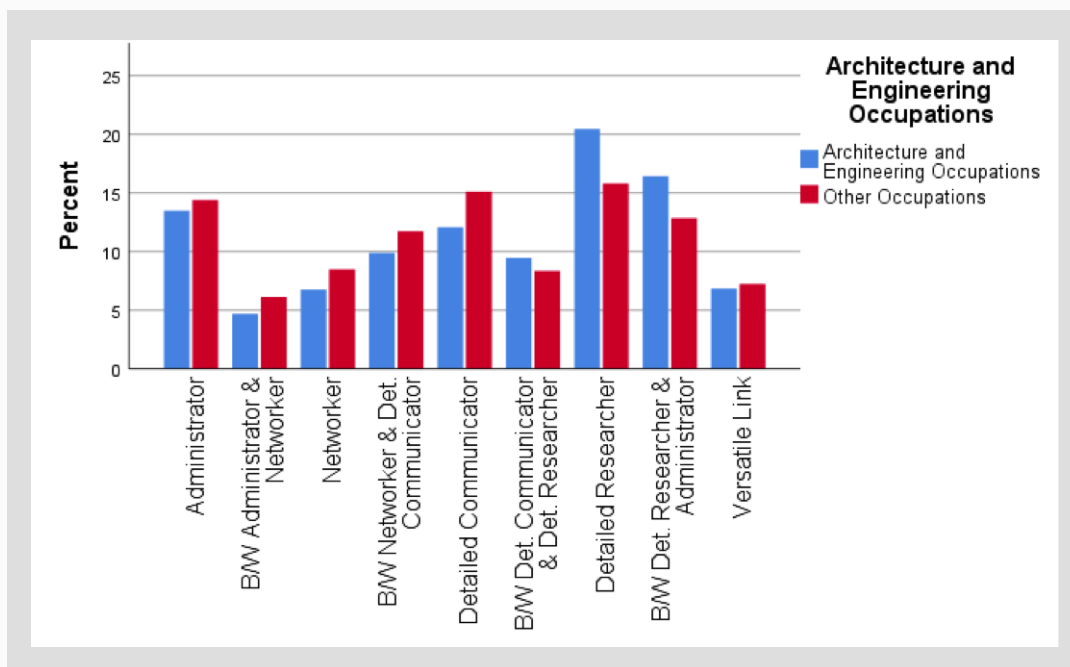
For example, a person with a natural Detailed Researcher style can fairly easily learn the skills to flex into the Detailed Communicator style because both share a specialist orientation. Likewise, learning to flex into the Administrator style can be easily learned because both styles share introversion. For a person with a natural Detailed Researcher style, the most challenging style to acquire and maintain is on the diagonal—in this case the Networker style. In other words, learning to flex into the Networker style would take the most time and effort and is probably the style an introverted specialist would prefer to spend the least amount of time utilizing.

Natural Abilities and Careers: Architects and Engineers

People with a natural Detailed Researcher style are typically at ease working autonomously and independently acquiring specialized, deep-level information, with less interaction with others—“behind the scenes” roles. The “opposite” Networking style typically finds ease working through and with others, with shared responsibilities, and enjoys roles that include a high degree of interaction. Although everyone can learn to work using any style, some styles just come naturally.

Shown in Table 4 is the comparison of all Personal Style Combinations for the Architecture and Engineering job family when compared to the other 5 job families included in this study:

Table 4: Comparison of All Personal Style Combinations



Natural Abilities and Careers: Architects and Engineers

Problem Solving

At the individual ability level, the data showed a greater number of those in Architecture and Engineering occupations scoring in the low range in classification and in the high range in concept organization, although not a majority. While this could lead to the conclusion that the greatest number of those in this job family have an Analytical problem solving style, there are actually more with a Consultative style (high classification and high concept organization). In other words looking at the combination of these abilities is most telling. Considering the nine possible Problem Solving Combinations, 62% of the participants scored in the following 4 Problem Solving Combinations:

Table 5: Top 4 Problem Solving Combinations

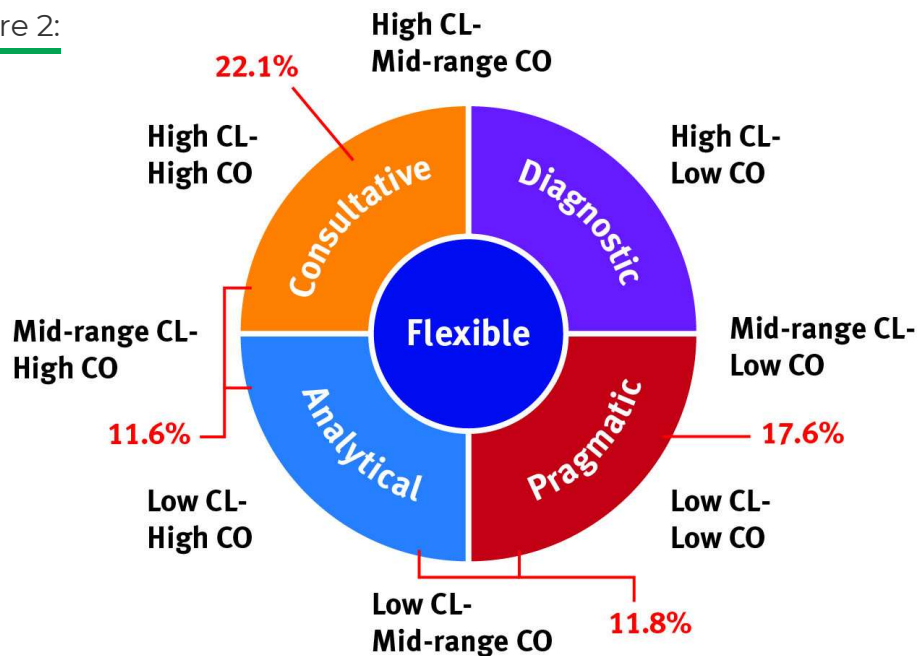
Architects and Engineering Occupations	Consultative	Pragmatic	B/W Pragmatic & Analytical	B/W Analytical & Consultative	Other	Total
Count	195	162	109	107	349	922
% Within Occupation	21.15%	17.57%	11.82%	11.61%	37.85%	

As with Personal Style the name of each Problem Solving Combination represents a descriptor, not a job or career. Generally, the more closely aligned a person's job responsibilities are with his/her natural style, the less time and effort he or she expends. In this way, Identifying a natural Problem Solving style becomes a self-management tool. When desired, a person can build skills to utilize any of the other styles. especially when those styles share at least one of the abilities.

Natural Abilities and Careers: Architects and Engineers

The Highlands Problem Solving Disc shown in Figure 2 shows the top 4 Problem Solving Combinations for this job family.

Figure 2:



For example, those with a natural Consultative approach to Problem Solving use their high classification ability to diagnose problems, quickly come to conclusions, and explain their rationale or steps in a process to resolve the problem. They can easily learn to flex into the Diagnostic style (which places a premium on identifying solutions with less emphasis on providing explanations or processes) because both utilize high classification ability.

Similarly, it should be relatively easy to learn to flex into the Analytical style (which places a premium on process, logic tracks, and explanations and less emphasis on rapid diagnosis) since both styles share high concept organization.

For those with a natural Consultative problem solving style, the most challenging style to use with regularity is Pragmatic.

Natural Abilities and Careers: Architects and Engineers

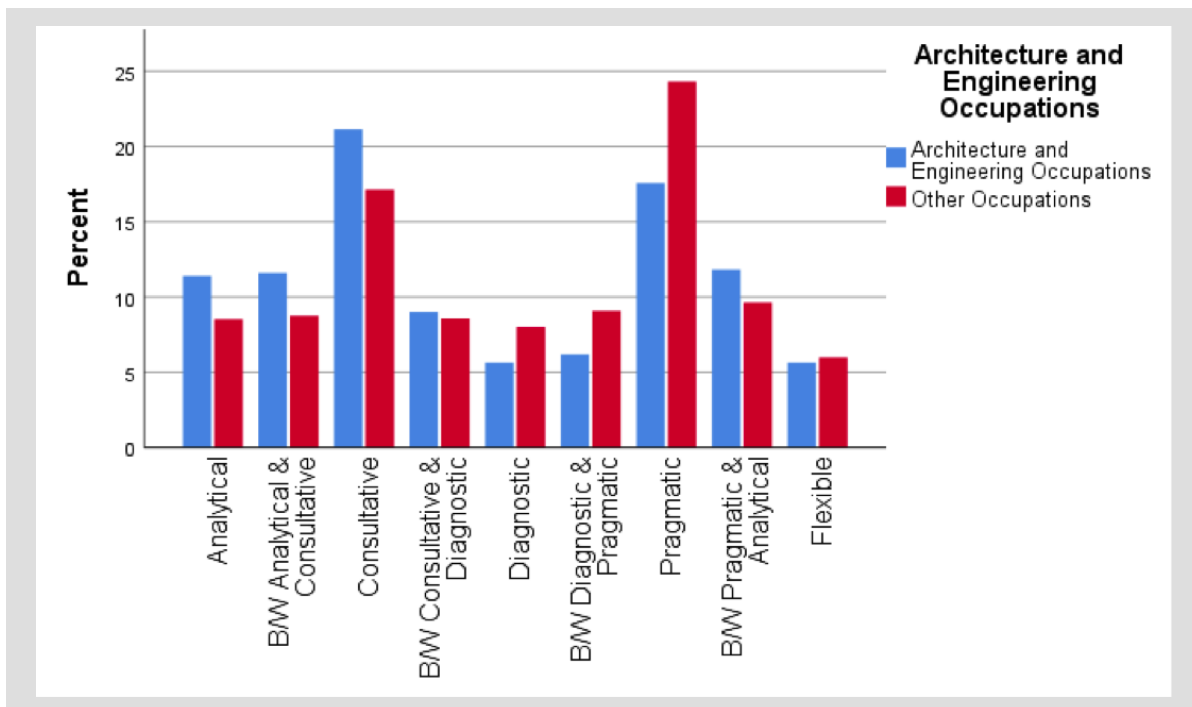


Real-Life Example

An example of someone with a natural Consultative approach to problem solving is N.B. A young electrical engineer for a large electrical contracting company, N.B. is on the fast track to senior-level leadership. He is in charge of multiple projects that require him to move swiftly from solving one complex technical problem to the next—an environment that plays naturally to his Consultative problem solving abilities.

Table 6 provides the distribution of all Problem Solving Style Combinations within the Architecture and Engineering occupations relative and compares their results to all participants in the other 5 job families considered in this study.

Table 6: Comparison of All Problem Solving Combinations



Natural Abilities and Careers: Architects and Engineers

Spatial Reasoning

Of special interest to the Architects and Engineers job family is spatial reasoning. This combination of aptitudes considers different levels of theoretical and three-dimensional reasoning. The four clearly defined combinations are described as Creating/Engineering, Building, Theorizing, and Executing, and inform an inclination toward the practical vs. theoretical and/or the intangible vs. tangible world.

Of the Architects and Engineering participants, 51% scored in the high range in spatial relations theory and 49% scored in the high range in spatial relations visualization. Not surprisingly, the combination describing both scores in the high range is the category with the greatest number of participants. Considering the nine possible Spatial Reasoning Combinations, 66% of participants scored in the following four Spatial Reasoning Combinations:

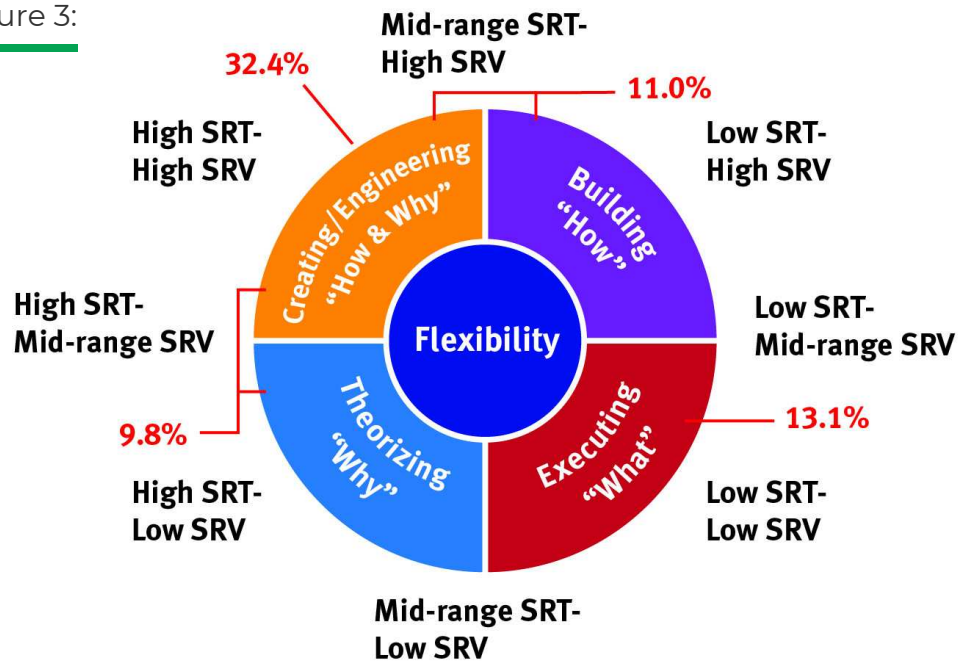
Table 5: Top 4 Spatial Reasoning Combinations

Architects and Engineering Occupations	Creating/Engineering	Executing	B/W Creating/Engineering & Building	B/W Theorizing & Creating/Engineering	Other	Total
Count	299	121	101	90	311	922
% Within Occupation	32.4%	13.1%	11.0%	9.8%	33.7%	

Natural Abilities and Careers: Architects and Engineers

The Highlands Spatial Reasoning Disc shown in Figure 3 shows the top 4 Problem Spatial Reasoning Combinations for this job family.

Figure 3:



As with Personal Style and Problem Solving, the name of each Spatial Reasoning Combination represents a descriptor, not a job or career. The more closely aligned a person's job responsibilities are with his/her natural abilities, the less time and effort he or she expends.

Identifying a natural Spatial Reasoning Combination can inform a person's choice of primary work responsibilities as well as identifying skills to build.

Natural Abilities and Careers: Architects and Engineers

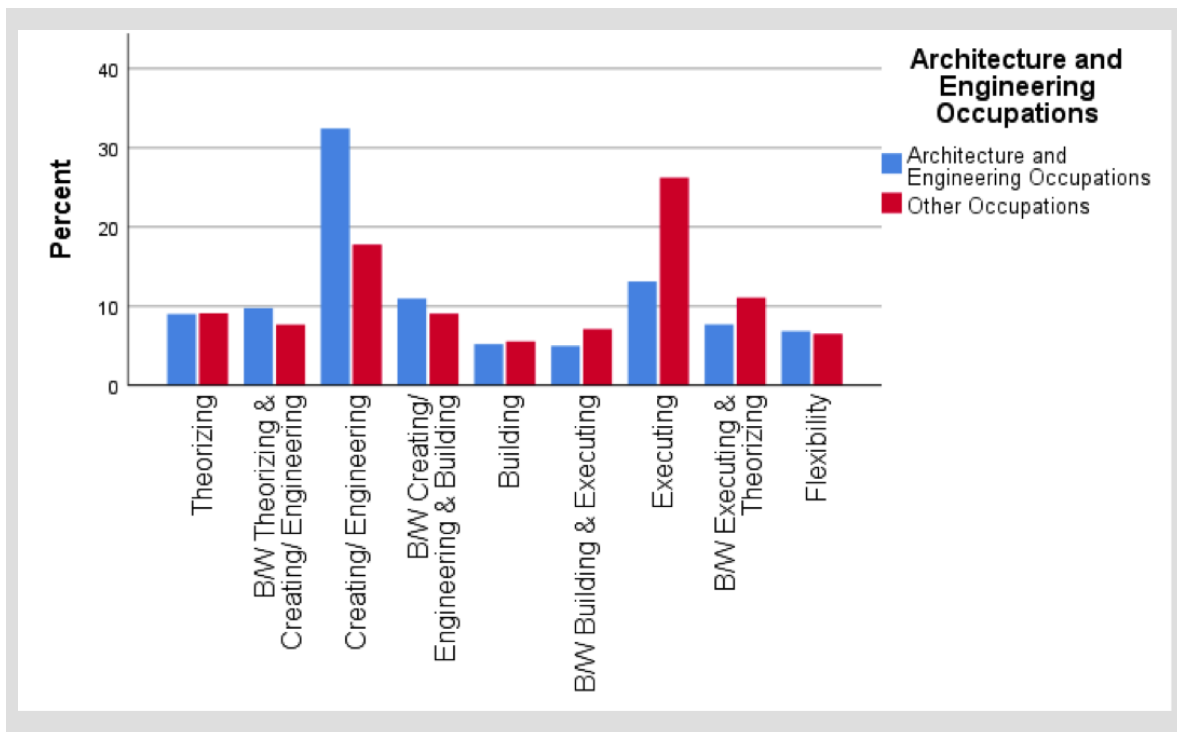


Real-Life Example

M.B. is an experienced journey installer for a fire protection company. The job requires him to install, fix, or repair complex sprinkler systems in commercial buildings. His high scores in the spatial reasoning abilities enable him to manipulate objects in his head and quickly “see” where the problem is.

Table 8 provides the distribution of all Spatial Reasoning Combinations within the Architecture and Engineering occupations relative and compares their results to all participants in the other 5 job families considered in this study.

Table 8: Comparison of All Spatial Reasoning Combinations



Natural Abilities and Careers: Architects and Engineers

Summary and Discussion

The Highlands Company, publisher of the Highlands Ability Battery (HAB), focuses on providing people with objective aptitude data to develop both personally and professionally. Since 1992, takers of the HAB have used their results in concert with their personal consultant and our [Whole Person Model](#) to make career decisions. While understanding each aptitude is important, understanding how aptitudes combine with one another is oftentimes even more informative.

Generally, the more closely aligned a person's job responsibilities are with his/her natural style, the less time and effort he or she expends. When desired, a person can build skills to utilize any of the other styles, especially when those styles share at least one of the abilities. We do not recommend making choices about careers or specific jobs based on abilities information alone. That said, there are some interesting trends to report.

To begin to understand some of the ability combinations within this job family, this study looked at over 900 participants (approximately 13.2% of employed HAB takers within a five-year period) who identified themselves as working in Architecture and Engineering occupations as delineated in the Standard Occupational Classification published by the US Department of Labor Bureau of Statistics. We compared those in this job family with participants in 5 other job families on pairs of abilities describing Personal Style, Problem Solving, and Spatial Reasoning.

Approximately 20% in the Architecture and Engineering job family have the strong specialists + strong introvert combination, a Personal Style Combination we describe as Detailed Researcher. Those with this style naturally gravitate toward activities requiring in-depth knowledge/technical specialization that are pursued independently, with less interaction with others.

Natural Abilities and Careers: Architects and Engineers

Considering Problem Solving abilities, approximately 22% have the combination we describe as Consultative – strong classification + strong concept organization. The hallmark of this style is the ability to quickly diagnose and create a logic track to plan and/or explain solutions.

Perhaps not surprisingly, approximately 32% of those in the Architect and Engineering job family have a Spatial Reasoning Combination described as Creating/Engineering. The combination of these aptitudes enables a person to naturally relate well to both the world of spatial concepts and to the physical or structural world that results from the implementation of those concepts.

Equally interesting is that while the greatest proportion of Architects and Engineers fall within the above combinations, 68-80% do not. If there were an even distribution among all combination pairs, there would be approximately 11.1% in each of the nine combinations. In each of the three combinations we considered, the second most populated combination is still well above the evenly distributed 11.1%. For Personal Style, there were about 16% in the second most populated style; for Problem Solving there were 17.6% in the second most populated style. Where we find the largest gap is in Spatial Reasoning, where the second most populated style is only 13.1%.

Our research continues to provide us with solid evidence of correlations between individual aptitudes and combinations of aptitudes with careers. Our research also confirms that the evidence is far from deterministic. There are so many specific jobs and even specific job environments within job families that Highlands does not recommend using aptitudes alone to predict job success or enjoyment. Knowing your abilities as measured by the HAB, especially when blended with the Whole Person Model, does provide you with a solid foundation for career self-management.

About the Highlands Company

The Highlands Company is the sole publisher of the Highlands Ability Battery™ (HAB). Administered online, the HAB is an aptitude assessment that objectively measures one's natural talents through performance based-timed worksamples. Since 1992, tens of thousands of individuals have taken the HAB for career guidance.

Within the context of the Highlands Whole Person Method, nearly 300 Certified Consultants administer the HAB worldwide; USA, Australia, Canada, China, France, Germany, Hong Kong, India, Jordan, Germany, Kazakhstan, Nigeria, Singapore, Switzerland, Thailand, United Kingdom.

The purpose of the Highlands Method is to facilitate awareness of natural talents, the most powerful piece of self-knowledge available for creating one's personal vision to success and satisfaction in work and life. Highlands Consultants consist of Career Practitioners, Counselors, Educators, Psychologists, High School and College Counselors/Administrators, Life Coaches, Pastors, Missionaries.

As publisher of the Highlands Ability Battery, the gold standard among human assessments, our first priority is to equip Highlands Consultants with the tools needed to service their clients with practical information in the application of the knowledge gained through self-awareness. Highlands provides continuing education to our Consultants in the administration of the HAB and the Highlands Whole Person Method. We encourage Highlands Consultants to network within, to share experiences, and to learn from each other, as they grow and prosper.