Meet You at the Peak: How I-Os Should Prepare for New Technologies

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Science and technology often work hand in hand to drive innovations in the practice of industrial–organizational (I-O) psychology. Historically, psychological science applied to workforce management allowed us to weather the storm of human resource trends and technological advances that attracted organizations to new tools and methods. But what happens when the lure of technology trumps the science? The rise of technological advances challenges our thinking and leads to psychological research and theory designed to keep pace with these advances. But in some instances, the adoption of new technology has outpaced scientific best practices. Organizations will adopt new technology in the absence of best practices if there are perceived benefits. Has the array of new talent identification tools described by Chamorro-Premuzic, Winsborough, Sherman, and Hogan (2016) presented a tipping point for I-O in terms of how we approach our science, research, tools, and methods?

The notion of technological advances spurring advances in I-O is not new. For example, unproctored Internet testing rose out of the need for tests to be available anytime, anywhere, and the need to reduce the cost of administering and proctoring tests on organizational premises. I-O psychologists responded to this need by making tests available for unproctored use and determining their effectiveness for predicting organizational criteria. As technological advances brought practical benefits to organizations, I-Os helped advise on the appropriateness of and validity of new methods. With few exceptions, the field of I-O has generally reacted to technological advances for talent identification rather than developed or partnered with technology providers on breakthrough science-based technologies. Now, as there are an increasingly large number of new methods that purport to have a variety of benefits outside of those related to psychometric qualities, can we adequately respond to the near endless array of new, bright, shiny objects? If the talent identification tools depicted are more revolutionary than evolutionary, we suggest that I-O needs to be proactive rather than reactive.

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At the risk of painting the I-O community with a broad brush, new technologies like those highlighted by the focal article have our field in two camps. The first camp is concerned that technological advancements will creep in and assume functions that had previously been the province of I-O psychology, possibly threatening its future. The second camp considers these advancements to be fads that will prove to be just that—fads that pass just as certainly as fads always do. But there is also likely a middle camp that sees durability in some of the trends and technologies and hopes that traditional I-O and information technology can learn how to be dance partners in this brave new world.

Recognition of the important role I-O plays can be seen in numerous ways. Organizations, economists, and market analysts recognize that "science for a smarter workplace" is highly valued. The Bureau of Labor Statistics (2013) ranked I-O psychologist as number 1 of the 20 fastest-growing occupations in the United States, with a growth rate of 53% between now and 2022. In their list of the 100 best jobs for 2016, *U.S. News and World Report* (2016a, 2016b) ranked industrial psychologist number 37 overall and number 1 in science jobs specifically, based on favorable salary, job market, future growth, stress level of job, and work–life balance. So, we have lots of support for being optimistic that our field can weather any storms that may arise on the horizon.

Despite the positive near term indicators of the sustained need for I-O as we know it, a fundamental shift in the nature of work may lie ahead of us. We can't ignore the impact technology can have on replacing jobs that are currently performed by humans, and even knowledge workers aren't immune. This trend has been written with great frequency more recently. In a thought-provoking article titled "A World Without Work," Thompson (2015, para. 9) wrote,

> The U.S. labor force has been shaped by millennia of technological progress. Agricultural technology birthed the farming industry, the industrial revolution moved people into factories, and then globalization and automation moved them back out, giving rise to a nation of services. But throughout these reshufflings, the total number of jobs has always increased. What may be looming is something different: an era of technological unemployment, in which computer scientists and software engineers essentially invent us out of work, and the total number of jobs declines steadily and permanently.

Thompson cited an Oxford University study (Frey & Osborne, 2013) that forecasted machines could likely perform half of all U.S. jobs in the next two decades.

We agree with the focal article that technology indeed is disrupting the talent identification industry, and its speed to market is outpacing our ability to conduct the research, leading to the perception that I-O psychologists are mere spectators. But let us not take that cloak on. Many of these new tools for talent identification are based on big data, which came to our
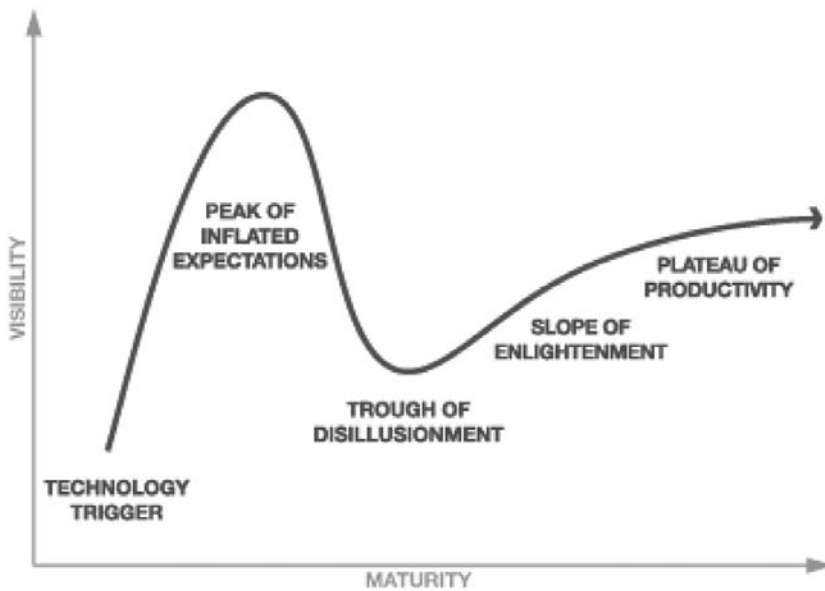
Figure 1. Gartner (2016) cycle for interpreting technology hype. Picture is available on the Gartner website, accessible through this link: http://www.gartner.com/technology/research/methodologies/hype-cycle.jsp

attention when we realized that organizations are sitting on multiple streams of data that, if coordinated properly, could lead to tremendous new ways of selecting, managing, and valuing human talent. We are making great strides in understanding how to apply these new technological tools in a scientific way, using I-O foundations to advance the practice (cf. Tonidandel, King, & Cortina, 2016).

The Gartner Hype Cycle is an interesting lens for understanding a new technology's path from introduction to implementation. Right now it seems we are in the peak of inflated expectations when it comes to these new talent signals. A lot of positive bluster exists, but the true value remains to be proved. At the peak, things can seem dire for those looking in from the outside, but eventually, there is a settling back in where reality and pragmatism take over while the technology's true value is better understood.

Here's a quick walkthrough of the curve shown in Figure 1. In the first phase, a technological breakthrough occurs. There are early proof-of-concept stories that get the public's attention due to increased interest by the media. At this early stage, there are usually no usable products, and there is unproven commercial viability, but the public's imagination has been captured by the idea of what is possible. In the second phase, early adopters embrace the new technology, publicity provides a handful of success stories, and there are some early failures as well. In the third phase, interest wanes as

the early promise fails to deliver, the gaggle of providers begins to thin, but a few winners emerge. Investment continues if vendors improve products based on early adopter feedback.

After a time of muddling at bottom, the technology then moves upward again in the fourth phase. User stories about the technology's impact begin to coalesce, and the value becomes more widely understood. Second and third generations of products are created as more enterprises fund pilots while conservative companies remain cautious. In the fifth and final phase mainstream adoption begins to take off as companies better understand how to evaluate provider viability. The technology's broad market applicability and relevance are finally paying off.

Gartner has a hype cycle specifically for Human Capital Management (HCM) Software. In their latest (Freyermuth, Hanscome, Cameron, & Poitevin, 2015) HCM hype cycle, "talent science" is on the rise. Talent science has been on the rise since at least 2012, and they qualify this trend as taking more than 10 years to traverse the curve to reach a plateau. This means we have about 6 years before the key early players in the field settle. We should be preparing in earnest now for this shift, if this curve is to be believed.

What is talent science? Gartner (Morello & Otter, 2012) defines it as using data analysis to inform organizational decisions regarding human talent. These data are often linked to business outcomes to help determine which data sources provide the greatest value to the business. Talent identification is just one aspect of talent science, which is itself a piece of a broader discipline known as "predictive analytics." Predictive analytics are applied to many research areas, including meteorology, security, genetics, economics and marketing, and now, human talent.

Predictive analytics pulls together different sources of data to create predictive models. I-O researchers who are already accustomed to working with data should think of burnishing their "data science" skills (or developing close partnerships with those who have them), as that will allow us to have a seat at the table for discussions on big data–driven talent management. Skills such as programming, database design, and visualization of data would be wonderful companions to skills already possessed by I-O researchers in SPSS, Excel, research, and test development methodologies. Many already are, and a few are reaching into the realm of machine learning, which is the practice of helping applications "learn" from new actions and data to make relevant and accurate predictions over time.

There are other opportunities for I-Os who fit into more traditional roles as we tend to think of them. For example, academics can evaluate the validity of these methods, engage in theory building, and produce peer-reviewed research, in addition to advising product developers and providers on extending psychometric principles to new technologies. Assessment developers can

get familiar with the new technologies, partner with folks in technology and learn to speak their language, drive innovation, and work with academics on setting standards for measurement quality.

Consultants and internal I-Os can help organizations understand the potential legal implications of these new technologies, as well as provide an important voice of the customer perspective to product developers to inform new product features. Consultants can also help to figure out implementation, including the logistical challenges of weaving in new technology with existing tools and measures, and find ways to bring the best of the old and the new together into a seamless experience.

Finally, there is an important role for well-connected, public-facing I-Os who are excited about the possibilities and can articulate a vision to others as well as teach those who are not well-versed in new technologies. They can also help dispel certain myths or oversights that are damaging to our field as well as vocally debunk some of the more questionable methods.

We already wear multiple hats as I-Os, and within our field, there are different roles we can take in the talent science revolution that has us riding the wave through the "trough" and into "plateau." The talent management space is changing rapidly, and we need to be positioned to expand our role of adviser to companies on talent practices based on research and evidence. We should conceptualize our roles beyond science versus practice and consider the ways in which we can add value given the perpetual set of talent management methods flooding this space. Also, we should provide training to new I-Os to gain skills beyond I-O, so they can create tools/methods that will place them squarely on the team, if not changing the game.

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Reducing the Noise From Scraping Social Media Content: Some Evidence-Based Recommendations

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Chamorro-Premuzic, Winsborough, Sherman, and Hogan (2016) describe a variety of new selection approaches (e.g., "scraping" of social media information, gamified assessments) in the staffing domain that might provide new sources of information about people. The authors also mention advantages and downsides of these potentially "new talent signals."

We suggest that the next step is to identify conditions under which these new approaches might be best used to increase their probability of providing accurate job-related information on candidates' knowledge, skills, abilities, and other characteristics (KSAOs). Although there has been little scientific research on these new assessment methods, we posit that some guidance may be found in the over 100 years of research on personnel selection. This makes sense because, as noted in the focal article, these new tools are mainly technologically enhanced versions of traditional assessment methods. Therefore, we draw on existing personnel selection knowledge to delineate a set of general recommendations to make these new talent signals less weak and "noisy" (i.e., more reliable and valid). We focus primarily on scraping social media information, although we show how some of these recommendations may be relevant for gamified assessment as well.

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