

CHAPTER THIRTY FIVE

INTELLIGENCE, CREATIVITY, WISDOM, AND LOVE. WHAT ELSE? THE VERY PROMINENCE OF ROBERT J. STERNBERG'S CONTRIBUTIONS TO THE FIELD

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“There aren't many people who have [Sternberg's] insight and his flair; he couples a high degree of creativity with all the core skills that unfortunately aren't always available to highly creative people: he has the right statistical abilities, good analytical abilities, great communication skills.”

The previous quote is by Stephen J. Ceci, PhD, Helen L. Carr Professor of Developmental Psychology, Cornell University, USA, & the recipient of the American Psychological Association's E. L. Thorndike Award for lifetime contribution to empirical and theoretical psychology. (New York Times, 3rd April, 2001, Section F, p.1)

ABSTRACT: Robert Jeffrey Sternberg is a research psychologist par excellence. His five-stage research on componential analyses of analytical abilities or componential theory, the triarchic theory of human intelligence, the theory of successful intelligence, the investment theory of creativity (with Todd Lubart) and the propulsion theory of creative contributions (later expanded in collaboration with James Kaufman and Jean Pretz), the balance theory of wisdom, and the triangular theory of love resulted in the development of his theories of intelligence, creativity, wisdom and love, all-encompassing and highly prominent contributions to the field. Of the four constructs of intelligence, creativity, wisdom and love, Sternberg's *triarchic theory of human intelligence* is widely acknowledged as a distinguished feature of his highly productive and illustrious career. This chapter celebrates Robert J. Sternberg, provides biographical notes on some of his main scholarly accomplishments, and introduces his contributions to the theories and conceptual understanding of intelligence, creativity, wisdom and love. The chapter ends with an interview with Sternberg.

Keywords: Robert J. Sternberg, intelligence, creativity, wisdom, love, contributions

I—Introduction

This chapter celebrates Robert J. Sternberg. The chapter is divided into four parts beginning with i) introduction – biography, index of recognitions, awards and scholarship – ii) contributions to the theories of intelligence, creativity, wisdom, and love, iii) selected publications leading to, and arising from the development of the theories of intelligence, creativity, wisdom, and love, and iv) Sternberg’s pride and joy triangle, interview with Robert Sternberg, and concluding remarks.

Robert Sternberg’s contributions to intelligence, creativity, wisdom, and love are best understood by his ‘ordered’ – stage-by-stage research, pause-and-reflect – approach to observing, exploring, grasping, conceptualising and theorising psychological constructs empirically. In developing his influential theories of intelligence, creativity, wisdom and love, he began his research on componential analyses of analytical abilities (Sternberg, 1977; 2003a). The componential theory is based on a premise that “underlying intelligence is a series of information-processing components” (Sternberg, 2003a, p. xi). He argued, for instance, that intelligence researchers should be interested not only at the psychometric factors that underlie intelligence tests, but also information-processing.

The development of the triarchic theory of human intelligence took place at the second stage of Sternberg’s research. The idea came from his observations of three graduate students all of whom had contrasting personalities. Contrasting in the sense that the first student was brilliant academically with good memory and analytical skills – the kind of students that “conventional psychometric tests of intelligence emphasize” (Sternberg, 2003a, p. xiii). The second student was creative but possessed weak analytical skills. The third student seemed good in both analytical and creative skills. Close and detailed observations of the three individuals covering periods of their studentship and employment resulted in Sternberg questioning aspects of the assumptions he held at the first stage of his research.

I now realize that ... I had been asking the wrong question. By asking what information-processing components underlie performance on conventional mental tests, I had been able to identify how people solve such conventional problems. But I had assumed that these tests measured the universe of skills relevant to intelligence, and my assumption was false. By asking the wrong question, I ended up with an incomplete answer.

These observations led to the development of the triarchic theory of human intelligence.

- Sternberg (2003a, p. xiv)

Sternberg’s theory of successful intelligence (Sternberg, 1997; 1999a), stage three of his research, extended the triarchic theory. The theory is predicated

on three dimensions of intelligence – analytical, creative, and practical intelligences – the same interactive facets of the triarchic theory. The theory is based on a premise that intelligence can be ‘successful’ to the extent that individuals’ analytical, creative and practical abilities ‘balance’ or function collectively allowing them to achieve success in life within particular social and cultural environments. According to Kaufman & Singer (2004), Sternberg’s theory of successful intelligence “was the most extensively researched approach that attempts to go beyond g [general intelligence]..., beyond prediction of school grades to account for success in all settings of a person’s life” (p.326).

Stage four of Sternberg’s research resulted in the development of the Investment Theory of Creativity. According to Sternberg:

After studying intelligence for a number of years, it became clear to me that there is more to creativity than creative intelligence. There are people who appear to have creative intelligence but are unable to use it effectively in their lives because they have various kinds of blocks.

- Sternberg (2003a, p. xvii)

This led to Sternberg teaming up with his former PhD student Todd Lubart to propose the Investment Theory of Creativity (Sternberg & Lubart, 1991; 1995). In this theory, creativity is conceptualised as a *decision* which they explained in terms of decision making – the kind of decision making or creative thought process involved in *buying* and *selling* that would have been expected of a stock market trader. If creative ideas were a commodity, the creative person must *decide* when to buy *low* and when to sell *high*; or to use a comparable parlance, it is like an English supermarket in time past that must decide when to *pile it high* and when to *sell it cheap* (translation: a decision about when to sell large amounts of a product at cheap prices). There are six elements of the investment theory – intellectual processes, knowledge, intellectual style, personality, motivation, and environmental context; the “creative performance results from a confluence of these elements” (Sternberg & Lubart, 1991, p.1).

Stage four of Sternberg’s research on the Investment Theory of Creativity is twined with the development of the Propulsion Theory of Creative Contributions originally proposed by Sternberg (1999b) and later extended in collaboration with former PhD students James Kaufman and Jean Pretz (see Sternberg, Kaufman, & Pretz, 2001, 2002). Being self-critical, Sternberg reflected on the investment theory of creativity and concluded that the theory might have somewhat oversimplified creative ideas and underplayed the multiplicity nature of creative contributions – hence the development of the Propulsion Theory of Creative Contributions. The theory identified eight types of creative contributions; four of these forms of contributions were situated within the existing paradigms of work while the other three represent achievements that were situated outside the paradigms. These creative contributions are: replication, redefinition, forward incrementation, advance forward incrementation, redirection, reconstruction/redirection, reinitiation, and

integration. (The eight creative contributions are discussed later in the chapter.)

Stage five of Sternberg's research departs tangentially to examine wisdom – hence the development of the Balance Theory of Wisdom. In the balance theory, Sternberg posited that although successful intelligence and creativity are needed for wisdom but, on their own, are insufficient conditions for wisdom. Tacit knowledge is equally important just as it is important to practical intelligence. Wisdom is needed not only to achieve an individual's self-interest or someone else's self-interest, but also to balance those interests – specifically intrapersonal (personal gains/benefits), interpersonal (relationship with other people), and extrapersonal (relationship with community/organisations).

Sternberg's research on love, and the development of his influential triangular theory of love are discussed later in this chapter.

Biography – Robert J. Sternberg

Robert Jeffrey Sternberg is a research psychologist and scholar per excellence, and by every standard a colossus when it comes to cognitive psychology. His main research interests include intelligence, creativity, thinking styles, wisdom, love and close relationships, teaching and learning, and intellectual development. Born on 8 December 1949 in Newark, New Jersey, USA, to a house wife mother and a petty trader father, he attended Tuscan Elementary School, a public primary school in his home town of Maplewood, New Jersey. It was at Tuscan that Sternberg developed interest in intelligence following a run of poor performance on required group IQ tests right up to the 4th grade, age nine, when he began to turn things around to “please” his teacher, and became an “A” student (Sternberg, 2003a, p. x). Hence Sternberg never looked back: his interest in intelligence was firming up.

Sternberg had his secondary education at the 210 years old Columbia High School, a four year comprehensive regional public high school also in Maplewood. He graduated in 1968 – and later inducted into the school's Hall of Fame.

Sternberg received his first competitive academic award, the National Merit Scholarship, in 1968 to study at Yale University, Connecticut, USA, from where he graduated with a bachelor degree – *summa cum laude*, honours with exceptional distinction – in psychology in 1972. The same year, Sternberg won his second competitive award, the prestigious National Science Foundation Graduate Research Fellowship grant for his doctoral studies at Stanford University, California, USA, from where he obtained a PhD degree in psychology in 1975. As an undergraduate and post graduate student, he cut his teeth in research as a research assistant at the 100-year-old James McKeen Cattell-founded Psychological Corporation, New York (1968-1969), the Educational Testing Services, New Jersey (summer 1970), and Yale University's Office of Institutional Research (1970-1971). Following his PhD in 1975, Sternberg returned to the Department of Psychology at Yale University, this time as assistant professor (1975-80). Sternberg was an assistant professor in 1976 through to 1978 when he won major grants from the National

Science Foundation for his work on the *Componential Analysis of Human Intelligence*, which formed the basis of his componential theory of intelligence. Sternberg was made associate professor (1980-1993) and full professor (1983-1986). He was also IBM professor of psychology and education (1986-2005) and director of the *Yale Center for the Psychology of Abilities, Competences and Expertise* (2000-2005).

Sternberg joined Tufts University as Dean of the School of Arts and Sciences in 2005 where he doubled as the director of the *Center for the Psychology of Abilities, Competences and Expertise* until 2010. Later in 2010, he joined Oklahoma State University, USA, as provost, senior vice president, and Regents professor of psychology and education until 2013. He also had a difficult 5-month stay at the University of Wyoming, USA, as president and professor of psychology and education. Sternberg is currently a professor of human development at Cornell University, New York, USA and honorary professor of psychology at Heidelberg University, Germany's oldest university and one of Europe's leading research-intensive institutions.

A cognitive psychologist to the core, Sternberg is very active professionally and has a distinguished record of service to the psychology community in particular and higher education in general. He is a past president of the American Psychological Association (2003); President, *Education Psychology*, Division 15 of the American Psychological Association (1994-1995); President, *the Society for the Psychology of Aesthetics, Creativity, and the Arts*, Division 10 of the American Psychological Association (1999-2000); President, *Education Psychology*, Division 15 of the American Psychological Association (1994-1995); President, *the Society for General Psychology*, Division 1 of the American Psychological Association (1993-1994); President, *Theoretical and Philosophical Psychology*, Division 24 of the American Psychological Association (2000-2001). Outside the American Psychological Association, Sternberg is also a past president of the Eastern Psychological Association (2007-2008); the International Association for Cognitive Education and Psychology (2009-2011); and the Federation of Associations in Behavioral and Brain Sciences (2012-2013). He is a former Treasurer of the Association of American Colleges and Universities (2011-2013).

Sternberg is recognised and honoured by the global psychology community. He holds 13 honorary doctorates in 12 countries in 4 continents – with fellowships and scholarships from a number of national and international institutions. Notably, in the last forty years, as Yale Junior Faculty Fellowship (1978-1979), Yale Senior Faculty Fellowship (1982-1983), John Simon Guggenheim Memorial Fellowship (1985-86), Honoured Visitor Fellowship at the Taiwan National Science Council (December 1998), Sir Edward Youde Memorial Visiting Professor, City University of Hong Kong December (1997), IREX Visiting Scholar Fellowship to Russia (2000); and Fulbright Senior Specialist Fellowship to Slovakia (2005).

Sternberg is a recipient of numerous awards – some three dozen to date – including *James McKeen Cattell Award* by the Association for Psychological Science (1999), *E. Paul Torrance Award* by the National Association for Gifted Children (2006), *Presidential Award for Distinguished Lifetime Contributions to the Public Understanding of Psychology*, American

Psychological Association Division 46, Media Psychology, (2008), *Sir Francis Galton Award*, International Association of Empirical Aesthetics (2008), Grawemeyer Award in Psychology (2018), *William James Fellow Award*, Association for Psychological Science (2017), and *Ernest R. Hilgard Award for Lifetime Contributions to General Psychology*, the American Psychological Association, *The Society for General Psychology*, Division 1 (2017). Sternberg is listed in the Top 100 Psychologists of the 20th Century by an *APA Monitor on Psychology* report (2002), among many recognitions (see table 1). He is a member of the US National Academy of Education, the American Academy of Arts and Sciences, and a Fellow of the American Association for the Advancement of Science.

Sternberg has authored or co-authored over 1800 publications including textbooks in cognitive psychology, communication in psychology, and introductory psychology, which he's listed among the top 25 psychologists most-frequently cited in Introductory Psychology textbooks (Griggs & Christopher, 2016; Haggbloom et al., 2002). In terms of impact, Google Scholar analytics showed that Sternberg has been cited over 214,528 times at the time of writing; he has an h index of 223 and an i10 index of 1178 – both indices are measures of academic research impact (see for example, Hirsch, 2005).

Index of Recognitions, Awards, Publications, Fellowship, Academic Leadership, and Professional Services

[Sternberg] has put intelligence into investigations of intellectual abilities...combining experimental methods and theories of cognitive psychology with traditional mental-testing ideas in analyzing intelligent performance and individual differences...[and has] cross-fertilized and infused vitality into studies of individual differences and the experimental analysis of intellectual performances.

- Citation Extracts: *Distinguished Scientist Award for An Early Career Contribution of Psychology*, the American Psychological Association, 1981

Sternberg's Index of Recognitions, Awards, Publications, Academic Leadership and Fellowship, Doctoral Supervisions, and Professional Services is presented from the next page.

Table 1: Index of Recognitions, Awards, Publications, Academic Leadership and Fellowship, Doctoral Supervisions, and Professional Services

Recognitions – selected	Top 100 Eminent psychologists of the 20th century (#60), the American Psychological Association (APA Monitor, 2002)
	Top 200 psychologists of the modern (post WWII) era , <i>Archives of Scientific Psychology</i> (ranked #61), (Diener, Oishi & Park, 2014).
	Top 25 psychologists most-frequently cited in Introductory Psychology textbooks (Griggs & Christopher, 2016; Haggbloom et al., 2002).
	America’s Top 100 Young Scientists <i>Science Digest Magazine</i> , 1984
	Top 100,000 most cited scientists in PLoS Biology , (#713) & Top 0.01% of scientists in terms of impact (Ioannidis, Baas, Klavans, & Boyack, 2019) Average Self-Citation Rate (SCR): 13.78% (vs survey median SCR 15.5%)
	Top 50 Most Influential Living Psychologists <i>The Best Schools</i> ¹ , 2018
Presidency	President the American Psychological Association, 2003
	President <i>the Society for the Psychology of Aesthetics, Creativity, and the Arts</i> , Division 10 of the American Psychological Association, 1999-2000
	President <i>Education Psychology</i> , Division 15 of the American Psychological Association, 1994-1995
	President <i>the Society for General Psychology</i> , Division 1 of the American Psychological Association, 1993-1994.
	President <i>Theoretical and Philosophical Psychology</i> , Division 24 of the American Psychological Association, 2000-2001
	President

	the Federation of Associations in Behavioral and Brain Sciences, 2012-2013
	President the Eastern Psychological Association, 2007-2008.
	President the International Association for Cognitive Education and Psychology, 2009-2011.
Treasurer	The Association of American Colleges and Universities, 2011-2013
Awards – selected	<i>Florence L. Denmark Award for Significant Contributions to Psychology</i> Psychology Department, Pace University, 2019
	<i>Grawemeyer Award in Psychology</i> University of Louisville Grawemeyer Awards, 2018
	<i>Ernest R. Hilgard Award for Lifetime Contributions to General Psychology</i> General Psychology, Division 1 of the American Psychological Association, 2017
	<i>Distinguished Service Award</i> International Association for Cognitive Education and Psychology, 2011
	<i>Presidential Award for Distinguished Lifetime Contributions to the Public Understanding of Psychology, Media Psychology, Division 46 of the American Psychological Association, 2008</i>
	<i>Sir Francis Galton Award</i> International Association of Empirical Aesthetics, 2008
	<i>William James Award</i> The Association for Psychological Science, 2007
	<i>E. Paul Torrance Award</i> National Association for Gifted Children, 2006
	<i>Arnheim Award</i> Psychology and the Arts, Division 10 of the American Psychological Association, 2005

CELEBRATING GIANTS AND TRAILBLAZERS IN CREATIVITY RESEARCH AND RELATED FIELDS

	<i>Interamerican Psychologist Award</i> Interamerican Society of Psychology, 2005
	<i>Anton Jurovsky Award</i> Slovak Psychological Society, 2004
	<i>Farnsworth Award</i> Psychology and the Arts, Division 10 of the American Psychological Association, 2003
	<i>E. L. Thorndike Career Achievement Award</i> Educational Psychology, Division 15 of the American Psychological Association, 2003
	<i>Arthur W. Staats Award</i> American Psychological Foundation and the Society for General Psychology, Division 1 of the American Psychological Association, 2003
	<i>Distinguished Scientist and Scholar Award</i> Positive Psychology Network, 2002
	<i>Outstanding Academic Title, CHOICE for International handbook of giftedness and talent, co-editor</i> American Library Association, 2001
	<i>Distinguished Lifetime Contribution to Psychology Award</i> Connecticut Psychological Association, 1999
	<i>The James McKeen Cattell Award</i> The Association for Psychological Science, 1999
	<i>Palmer O. Johnson Award</i> American Educational Research Association, 1999
	<i>Sylvia Scribner Award</i> American Educational Research Association (Division C), 1996
	<i>Distinción of Honor SEK</i> Institución Educativa SEK, Madrid, Spain, 1997
	<i>International Award</i> Association of Portuguese Psychologists, 1991
	<i>Award for Excellence</i>

	Mensa Education and Research Foundation, 1989
	<i>Outstanding Book Award</i> American Educational Research Association for <i>Beyond IQ: A triarchic theory of human intelligence</i> , 1987
	<i>Citation Classic Designation</i> Institute for Scientific Information for Intelligence, information processing, and analogical reasoning for <i>The componential analysis of human abilities</i> , 1987
	<i>Research Review Award</i> American Educational Research Association (co-recipient), 1986
	<i>Distinguished Scholar Award</i> National Association for Gifted Children, 1985
	Among <i>Outstanding Young Men and Women</i> <i>Esquire</i> Register 1985
	<i>Cattell Award</i> Society of Multivariate Experimental Psychological, 1982
	<i>Boyd R. McCandless Young Scientist Award</i> the American Psychological Association, Developmental Psychology, Division 7 of the American Psychological Association, 1982
	<i>Distinguished Scientist Award for An Early Career Contribution of Psychology</i> the American Psychological Association, 1981
	<i>Insight in the Gifted Award</i> Spencer Foundation, 1982
	<i>Sidney Siegel Memorial Award</i> Stanford University, 1975
	<i>Wohlenberg Prize</i> Berkeley College, Yale University, 1972
Honorary Doctorates Honorary doctorates awards	13 universities, 12 countries, 4 continents
Fellow	American Academy of Arts and Sciences
Fellow	The US National Academy of Education
Fellow	The American Association for the Advancement of Science

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Publications – Metrics, Productivity & Impact Indices	
Articles, Book Chapters, and Books	1,800
h index – number h of works cited at least h times [a significant measure of the impact of Sternberg's published work]	223
i10 index – number of works cited at least 10 times	1178
Google Scholar Analytics – Sternberg's work citation count	214,528 times
Grants Funding & Contracts Over 50 grants; over \$20 million US dollars –\$250K and above – selected	\$3,022,986 <i>National Science Foundation /OERI (9/1/1999–8/31/2003)</i>
	\$2,520,000 <i>Office of Educational Research and Improvement (National Research Center on the Gifted and Talented/OERI: (10/01/00–9/30/06)</i>
	\$1,500,000 <i>Office of Educational Research and Improvement (Collaborative with University of Connecticut, University of Virginia, and University of Georgia): (6/90–5/95)</i>
	\$1,476,000 <i>Office of Educational Research and Improvement (Collaborative with University of Connecticut, University of Virginia, and Stanford University (10/1995–9/2000)</i>
	\$1,376,162 <i>Army Research Institute (10/92–6/99 with extension)</i>
	\$1,000,000 <i>Private Donation from Karen Jensen, Seattle, Washington (9/15/03–9/14/07)</i>
	\$780,221 <i>Army Research Institute (10/85–09/90)</i>
	\$749,976 <i>Institute of Education Sciences (8/01/03–7/31/06)</i>
	\$660,854 <i>Army Research Institute (1/01/03–10/30/05)</i>
	\$561,344

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	<i>Army Research Institute (9/30/00–11/30/03)</i>
	\$495,927
	<i>Temple University (1/01/01–12/31/05)</i>
	\$430,000
	<i>Office of Naval Research (10/77–09/82)</i>
	\$350,000
	<i>National Science Foundation (4/1/05–3/31/07)</i>
	\$330,000
	<i>Office of Naval Research and Army Research Institute (10/82–10/85)</i>
	\$309,265
	<i>William T. Grant Foundation (9/1/2000–8/31/2003)</i>
	\$299,988
	<i>Davis Educational Foundation (7/1/06–6/30/08)</i>
	\$298,416
	<i>Office of Naval Research (10/85–9/88)</i>
	\$297,093
	<i>McDonnell Foundation (in collaboration with Howard Gardner/Harvard University) (12/87–11/90)</i>
	\$289,000
	<i>Venezuelan Ministry for the Development of Intelligence (01/83–12/85)</i>
	\$273,000
	<i>College Board/Educational Testing Service (8/1/2000–7/31/2002)</i>
	\$270,200
	<i>Spencer Foundation (Collaborative with Lynn Okagaki/Yale University) (3/88–9/91)</i>
	\$256,894
	<i>National Science Foundation /Educational Research Initiative (Stevens Institute of Technology) (10/01/00–03/30/02)</i>
	\$250,000
	<i>Arthur Vining Davis Foundation (2/1/2009-6/30-2010)</i>
	\$249,150
	<i>Office of Educational Research and Improvement (2/17/1997–2/16/2000)</i>
	\$249,893

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	McDonnell Foundation (<i>Collaborative with Howard Gardner/Harvard University</i>) (2/91–2/94)
Editorship – selected	Founder <i>Review of General Psychology</i> , official publication of the <i>Society for General Psychology</i> , Division 1 of the American Psychological Association, now publishes by SAGE
	Editor-in-Chief <i>Educational Psychology Series</i> Lawrence Erlbaum Assoc., 1996–2007
	Editor <i>Cambridge University Press Textbook Series in Psychology</i>
	Editor <i>The APA Review of Books: Contemporary Psychology</i> , 1999–2004
	Editor <i>Psychological Bulletin</i> , 1991–1996
	Guest Co-Editor <i>Terminological Controversies in Gifted Education, Gifted Education International</i> , 2021-2022
	Guest Co-Editor <i>Teaching for Positive Creativity, Educational Sciences</i> , 2021-2022
	Consulting Editor, <i>Interamerican Journal of Psychology</i> , 2006-2010
	International Editor <i>Asian Psychologist</i> , 2005–2006
	Consulting Editor, <i>American Journal of Psychology</i> , 1979–1981, 1989– 2005
	Successful Supervision of PhDs & Post-Doctoral Researchers – selected count Notable former PhD students – also celebrated in this book
Academic Leadership – selected	Professor of Human Development Cornell University, 2014 - Present
	Provost, Senior Vice President, Regents Professor of Psychology and Education, and George Kaiser Family Foundation Chair of Ethical Leadership,

	Oklahoma State University, 2010-2013 President and professor of education and psychology University of Wyoming, 2013 Dean of the School of Arts and Sciences Tufts University, 2005-2010 Director & Professor of Management, Yale Center for the Psychology of Abilities, Competencies and Expertise (PACE Center), 2000-2005
Professional Committees – selected	Chair <i>James McKeen Cattell Award Selection Committee of Association for Psychological Science</i> (2009- 2010) Chair <i>Publications Committee, American Educational Research Association</i> (2007- 2009) Chair <i>Elections Committee, American Psychological Association</i> , 2004-2006 Chair <i>American Psychological Association Task Force on Governance</i> , 2003 Chair <i>AERA Outstanding Book Award Committee</i> , 2002 Chair <i>American Educational Research Association Nominations Committee</i> , 1986–1987 Chair <i>G. Stanley Hall Awards Committee (APA Division 7)</i> , 1986 Chair, <i>APA Early Career Award Committee in Learning and Cognition</i> , 1984
Marquis Who's Who Listings –	<i>Who's Who in America, Who's Who in American Education, Who's Who in American Men and Women of Science, Who's Who in the East, Who's Who in Medicine and Healthcare, Who's Who in Science and Engineering, Who's Who in the World</i>

II—Contributions: Introducing Sternberg’s Theories of Intelligence, Creativity, Wisdom, and Love

Triarchic Theory of Intelligence

A contextual view offers an escape from the vicious circularity that has confronted much past research on intelligence, in which an attempt is made to escape from old conceptions of intelligence (such as the psychometric one that gave rise to IQ tests) by creating new conceptions (such as the information-processing one); the new conceptions are then validated (or invalidated!) against the old conceptions for lack of any better external criteria.

- Sternberg (1984, p. 270)

Michael Gardner’s (2011) seminal review of theories of intelligence grouped major theories into four types – psychometric, cognitive, cognitive-contextual, and biological. *Psychometric theories* seek to understand individual differences, and identify sources of, and factors responsible for the differences on cognitive tests performance. Psychometric theories are arguably the earliest and most prominent of the four categories of intelligence and, ironically, ones that seemed to lack consensus amongst psychometricians on how best to approach the theory². *Cognitive theories* seek explanation for, and the understanding of thought processes that result from human behaviour. A characteristic of the cognitive theories is “their focus on the idea that how and what people think leads to the arousal of emotions and that certain thoughts and beliefs lead to disturbed emotions and behaviors and others lead to healthy emotions and adaptive behavior” (DiGiuseppe, David & Venezia, 2016, p.145). *Cognitive-contextual theories* “emphasize processes that demonstrate intelligence within a particular context (such as a cultural environment)”, (Gardner, 2011, p.79). In other words, intelligence – i.e. behaviour, thought process action – is determined or shaped by contextual factors and influences like culture. *Biological theories* see/view intelligence in terms of its relationship with the brain and its functions; or where intelligence is viewed as “essentially a genetically determined biological entity” (Wahlsten, 2002, p.245).

Sternberg’s Triarchic Theory of Intelligence is a type of cognitive-contextual theories which approaches the study of intelligence in relation to the context of its occurrence. According to Sternberg, the development of the triarchic theory was borne out of the need to “generate some kind of external standard that goes beyond the view, often subtly hidden, that intelligence is what IQ tests happen to measure” (Sternberg, 1984, p.270). In Sternberg’s view, traditional conception of intelligence is limiting, narrow in application and restricting contextually especially to academic activities such as academic success and achievements. In other words, aside from academic success and achievements, traditional IQ measures ignore social-cultural contexts of intelligence especially for non-specialists, or ordinary people, who might

equally be interested in social abilities (see also Sternberg & Grigorenko, 2004; Suzuki, Naqvi & Hill, 2014).

In other words, individuals have different abilities that enabled them to demonstrate intelligence in varied contexts – be it in academic or nonacademic contexts or environments. As the ‘father of cognitive psychology’, late Ulric (Dick) Neisser and his colleagues posited in *Intelligence: Known and Unknown* (1996, p.77):

Individuals differ from one to another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Although these individual differences can be substantial, they are never entirely consistent: A given person’s intellectual performance will vary on different occasions, and in difference domains, as judged by different criteria.

Still, Sternberg looked at the work of key contextualists in the field and their approaches to intelligence – including John Berry’s radical cultural relativism (1974), William Charlesworth’s ethological approach to studying intelligence (1976, 1979), and John Baltes’ attempt to reconcile methodologically contextual and psychometric intelligence theories (Baltes & Willis, 1979, 1982). Sternberg took a position that viewed intelligence as comprising a set of abilities, each of which represents a form of thinking. His contextualist approach thus sought to integrate psychometric theory and the componential theory in an attempt to “expand the ways in which intelligence is conceptualized as well as studied” (Sternberg, 1984, p.312).

Sternberg’s starting point was to offer a definition of intelligence in context, “as consisting of purposive adaptation to, shaping of, and selection of real-world environments relevant to one’s life” (Sternberg, 1984, p.271). He not only acknowledged constraints that might be placed upon this view of intelligence, but also addressed them preparatory to proposing the triarchic model. First, *the real world* ‘constraint’. Intelligence must be view in terms of behaviour in real world environment, not in a dreamt up, made-up or fantasy environment. Second, *relevance*. This has a dual condition: intelligent behaviour has to be relevant in the environment while the environment has to be relevant to the individual’s life. Third, *purposiveness*. Intelligence must serve a purpose or be goal-oriented “however vague or subconscious those goals may be” (p.272). Fourth, *adaptation*. Adaptation to the individual environment is as important as the *shaping* of the environment (fifth). The sixth condition relates to the individual’s selection of the environment. However, when it is not practical or desirable to *adapt* or *shape* the environment, “one may attempt to select an alternative environment with which one is able, or potentially able, to attain a better contextual fit” (p.273).

The Triarchic Theory of Intelligence (1985). The triarchic theory absorbed the componential theory of Intelligence offering a particularly contextual and broad understanding of the construct. The theory is made up of three subtheories – componential, experimental, and contextual. Componential subtheory comprised of three components – where a component is defined in this context as “an elementary information process that operates on

internal representations of objects or symbols” (Sternberg, 1984, p.281). The three components or types of mental processes are: metacomponents (critical for decision making, for example), performance components (the mental process involved in progressing, or taking actions on decisions or plans), and knowledge-acquisition components (the mental processes involved in operationalising decisions or plans).

Each of these subtheories is associated with three kinds of ability or intelligence: analytical or componential intelligence, creative or experimental intelligence and practical or contextual intelligence. Each kind of intelligence is highlighted in the following paragraphs:

Analytical intelligence. In essence, this is academic intelligence; it is the application of components of intelligence to analyse problems, examine information or to evaluate material in order to identify information (for example) needed to solve problems. Analytical Intelligence involves the ability to think abstractly; and how individuals relate to their internal world. The use of critical thinking skills and academic problem skills *aligns* analytical intelligence with the traditional IQ measures. According to Sternberg, analytical intelligence is akin to being *book smart*.

Creative intelligence. IQ tests do not necessarily capture creativity; creative intelligence fills this gap. Creative intelligence is the ability to use existing knowledge to solve problems; or the ability to apply knowledge in varied contexts to familiar or unfamiliar situations to achieve a *valued* outcome or goal (see also Ogunleye & Tankeh, 2013; Ogunleye, 2016).

Novelty and automation are two categories of creative intelligence – the former involves an individual’s ability to address a problem for the first time while the later involves an individual’s ability to perform a repeated task automatically (see Shrestha, 2017).

Practical intelligence. Key intelligence determinants are *adaptation* to changing environment or situations and *shaping* the world around the individual (for example). Practical intelligence is comparable to being *street smart* and the use of common sense to deal with every-day activities or tasks (i.e. knowledge and information application to real-world situations – Brown, 2002). According to Sternberg, individuals might score high in practical intelligence base not on any formal or taught learning but on the knowledge they have acquired tacitly. Practical intelligence abilities are generally not captured in traditional IQ measures and assessment. (See figure 1 from Sternberg’s (1985) Triarchic Theory of Intelligence.)

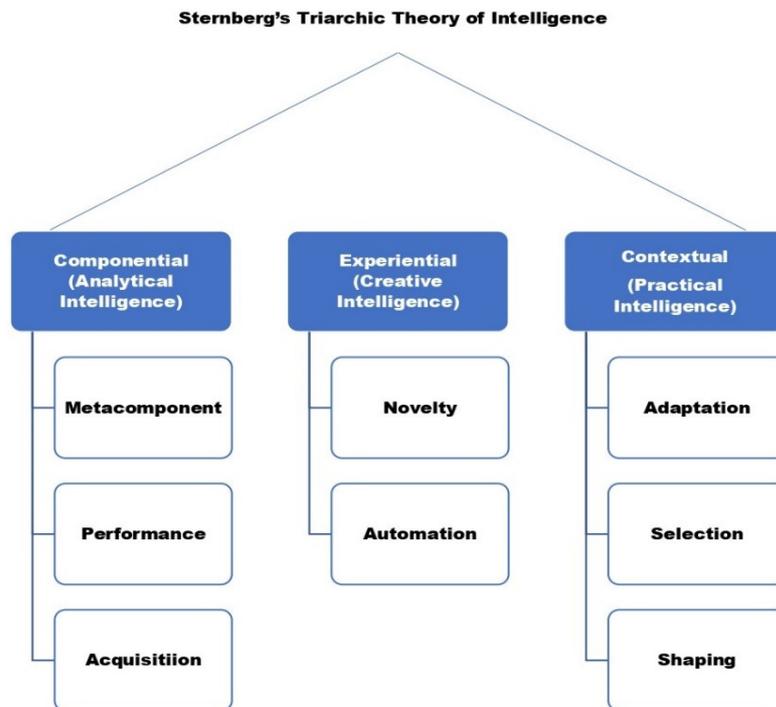


Figure 1: Sternberg's (1985) Triarchic Theory of Intelligence

Criticisms of the triarchic theory

It goes without saying that a major work of the kind of the triarchic theory of intelligence has not gone without criticisms – something that Sternberg did anticipate and welcome even if he rejected particularly those directed at the practical intelligence subtheory. One criticism was that the data on which the *triarchic theory of intelligence* was based was insufficiently robust to inspire confidence. One of the critics was late British academic psychologist Paul Kline whose thrust of argument was that the triarchic theory lacked thought and “non-contingent concepts” (Kline, 1991, p.873). Linda Gottfredson (2003a, 2003b) took issues with Sternberg's theory on practical intelligence, the third facet of the triarchic theory. She posited that Sternberg was selective in his choice of evidence thus ignored those that did not support the subtheory – and, consequently, overstated “the evidence for practical intelligence and understanding it for g [general intelligence]” (Gottfredson, 2003b, p. 416). According to Gottfredson, “practical intelligence is really job knowledge or personality or something other than intelligence” (p.420). She queried:

[I]n only two of the four tacit knowledge tests (management and academic psychology) did the subscales of a tacit knowledge test correlate among themselves, and only two studies administered

different tacit knowledge tests to the same sample. The correlation between tacit knowledge in management and in academic psychology was fairly high (.58), but that was in a sample of Yale undergraduates, not workers. In the only study of workers that administered two different tests, the correlations in its three samples (between knowledge for management and military leadership) were notably smaller, .06, .32, and .36. As for the correlations between IQ and tacit knowledge, they were .14 in the study of 45 managers, .02–.25 in the three samples of Army officers, and .04–.40 in five samples of college students or Air Force trainees. However, why should the former set (.06–.36 for workers, .58 for students) be labeled high and the latter not (.02–.25 for workers, .04–.40 for students), especially when the latter are all artificially depressed by severe restriction in range on IQ? (p.421).

The criticism that practical intelligence, in essence, measures personality or job knowledge, but not intelligence is strongly rejected by Sternberg. He rejected also the suggestion that he may have conflated his testing for personality (job knowledge) for tacit knowledge. According to Sternberg (2003b, p. 407-408):

This argument represents a misunderstanding of the nature of tacit knowledge. We have constructed tacit-knowledge measures for students (Sternberg, 2002; Sternberg et al., 1993) and for children living in rural Alaskan and Kenyan villages ... These children have no formal jobs so it is not clear what it would mean to say that their knowledge is “job knowledge.” Tests of practical intelligence do not correlate significantly with tests of personality such as the California Personality Inventory (CPI), insofar as we have assessed such correlations (see Sternberg et al., 2000). We used to believe that tacit knowledge is all domain-specific. Our research has convinced us that this belief was incorrect. We found high correlations between different subtests and tests of tacit knowledge, although we did not find high correlations of these tests with g-based measures. Thus, the tacit-knowledge tests seem to yield a general factor that is different from psychometric g (Sternberg et al., 2000).

Earlier, in a 1995 interview he gave to the *Skeptic* magazine, Sternberg was queried about practical intelligence abilities, and was asked whether he added anything new beyond Carroll (1993) extensive factor analysis of human cognitive abilities [in Carroll’s reanalysis of 460 datasets from published work from 1930 to 1985 covering measures of cognitive ability – see also Beaujean (2015)]. Sternberg told *Skeptic* magazine (Miele, 1995):

That criticism is simply false. If you look at the correlation between tacit knowledge for being an academic researcher and tacit knowledge for being an executive, the correlation was pretty high—about .5 to .6. But in terms of teaching job knowledge, probably no one who is a psychologist went to business school or vice versa. Tacit knowledge is something you pick up from the environment. I don’t care what you call it.

If you want to call it job knowledge or the ability to use job knowledge or the ability to use common sense knowledge that you pick up, the name isn't important. What I'm saying is, whatever you want to call it, it's at least as important as the academic sort of intelligence and it's not the same thing as that. I don't need to argue about the name attached to it.

Notwithstanding the criticisms, Sternberg's triarchic theory and its contextualist approach move away from the consensus around the general intelligence theory. The triarchic theory *thus* represents a significant shift in conceptual and theoretical understanding of intelligence – that intelligence is broad, pluralistic, multifaceted, and multidimensional in nature. The triarchic theory aptly captured this nature of intelligence beyond what traditional IQ measures.

The Investment Theory of Creativity

There are a number of different approaches one can take to understanding creativity. Torrance preferred a psychometric approach to understanding creativity. My colleagues [Todd Lubart, James Kaufman, Jean Pretz] and I have chosen to use a confluence approach as a basis for our work on creativity.

- Sternberg (2006, p. 87)

Sternberg once defined creativity as “the ability to produce novel, high-quality, task-appropriate products” (Sternberg, 2003b, p. 105). Decision making is at the heart of this definition; a decision to be creative has to be intentional – to produce ‘novel’ and tasks appropriate products, to shift through information to find one relevant or appropriate to the tasks to accomplish or outcome to achieve. This conception of creativity is consistent with the rational model of decision making which involves: identifying the problem, generating alternative solutions, evaluating alternative solutions, selecting and implementing the solutions. It is also consistent with the concept of buying low and selling high common in the stock market trading cycles; it is a form of strategy which traders generally used to time the market when they buy stocks at low prices and sell when prices peaked.

In the Investment Theory (Sternberg & Lubart, 1991; 1995), creativity is conceptualised as a decision making. In other words, it is not enough to possess creativity skills such as divergent thinking skills, etc, the creative individual has to make decision to be creative especially if rewards are attached to the outcome/product of the creative act. According to Sternberg (2006, p. 90):

To be creative one must first decide to generate new ideas, analyze these ideas, and sell the ideas to others. In other words, a person may have synthetic, analytical, or practical skills but not apply them to problems that potentially involve creativity. For example, one may decide (a) to follow other people's ideas rather than synthesize one's own, (b) not to subject one's ideas to a careful evalu-

ation, or (c) to expect other people to listen to one's ideas and therefore decide not to try to persuade other people of the value of these ideas. The skill is not enough: One first needs to make the decision to use the skill.

There are six aspects of the Investment Theory or what Sternberg called "a confluence of six distinct but interrelated resources" (2006, p.88) – each of which is presented in the following paragraphs:

Intellectual processes (intellectual abilities/skills). These are synthetic, analytic, and practical–contextual skills; the same skill sets identified in the *triarchic theory*. In the investment theory, the creative individual (the 'trader') follows the rational model of decision making – i.e. ability to think divergently, to see problems in new ways (synthetic skill); ability to sift through one's ideas to determine which idea/s to progress or not progress; ability to persuade others, or sell to others the value of one's ideas (the practical–contextual skill). It is important that the three skills set confluence.

Knowledge. The importance of knowledge in creativity is widely acknowledged (see Byrge & Hansen, 2011; Ogunleye & Tankeh, 2013; Ogunleye, 2016). At the individual level, Amabile's (1997) exposition on the componential theory of individual creativity identified *expertise* as a prerequisite for individual and small group creativity. In the investment theory, sufficient knowledge is needed to move the 'field forward'; but just as knowledge is important in facilitating creativity, it can also constitute a hindrance to creativity.

Intellectual style (styles of thinking). This is the way in which individuals apply their knowledge and abilities to problems (Lubart, 1994). In other words, styles of thinking involve *decisions* about how individuals apply their skills.

Personality. The personality attributes of the creative individual are ingredients for creative functioning; individuals' personality can influence not only how they go about making decisions, but also their attitudes to or preferences for risks.

Motivation. This can incentivise individual *decision* to be creative; motivation is central to Amabile's (1997) componential theory of individual creativity that identified, among other things, "intrinsic task motivation" (p. 420) as a prerequisite for individual creativity.

Environment. Creativity is a condition of the environment in which people live and operate: the environment nurtures, enriches, and sensorily stimulates human creativity (Cheyette, 1977; Taylor, 1971). According to the investment theory, a supportive and rewarding environment is essential for creative ideas; the individual must then *decide* how to respond to challenges that might exist in the environment.

Confluence. None of the six components could achieve outcome in isolation; interactions of the six components are essential to achieve the desired outcome (i.e. decision to be creative).

Creativity is a decision making; creative individuals are willing and able to *buy low* and *sell high* in the realm of ideas. The premise behind the theory is similar to the concept of buying low and selling high common in the stock market trading cycles.

The Propulsion Theory of Creative Contributions

A creative contribution represents an attempt to propel a field from wherever the field is to wherever the creator believes the field should go. Thus, creativity can be seen as being propulsive in nature. The creator may or may not intend his or her creative work to be propulsive, but creativity of a work is a function of the way the work is judged in the context of a field rather than of what the creator intends to happen to the work. Some people attempt unsuccessfully to be creative; others create with no particular intention to do so.

- Sternberg, Kaufman & Pretz (2001, p.78)

Creativity is multifaceted and multidimensional. So are the developmental trajectories of creativity. So are the creative contributions arising from these trajectories – be they everyday creativity (Richards, 1990, 2010), ‘little c’ Creativity (Craft, 2001), ‘mini c’ Creativity (Beghetto & Kaufman, 2007), and ‘Pro-c’ Creativity (Kaufman & Beghetto, 2009).

Creative contributions arising from each trajectory differs variedly in terms of the amount of creative products or outcomes that the individuals have created or achieved, and in the kinds of the creative products or outcomes that they have created or achieved. The questions then become: what forms of creative contributions might these take? How might these forms of creative contributions and the relationships between them be best captured, categorised and dichotomised to reflect the amount and the types of creativity they display? Sternberg’s attempt to answer these and related questions led to the development of the *Propulsion Theory of Creative Contributions* in the late 1990s. He published the theory originally in 1999 but extended it in 2001 when he collaborated with his former PhD students James Kaufman and Jean Priez.

Sternberg’s (1999b) Propulsion Theory of Creative Contributions examined uniquely creative outputs/products, which could be “anything from a creatively-written e-mail to a revolutionary new communications device” (Kaufman & Skidmore, 2010, p.378). The propulsion theory identified seven kinds of creative contributions; four of these forms of contributions were situated within the existing paradigms of work while the other three represent achievements that were situated outside the paradigms.

The eight forms of creative contributions are highlighted in turn as follow:

1. Replication – essentially, a reproduction of the past or current creative products/outcomes; replication form of creative contributions neither moves the field forward nor establishes it; the field is where it should be and all that *replication* does is to maintain the status quo.
2. Redefinition – in the context of propulsion theory, redefinition involves a re-examination/re-evaluation of the current field with a view to change; it is often a realisation that contrary to the current belief the field is not where the people thought it is.
3. Forward Incrementation – this type of creative contributions moves the field forward gradually in the direction the field is heading “to a point to which people are ready to go,” (Sternberg, Kaufman & Priez, 2001, p.85).
4. Advance Forward Incrementation – creative contributions arising from the advance forward incrementation pushes the field forward twice the rate of forward incrementation; in propulsion theory, advance forward incrementation moves in the same direction as the field but further down than others expected or are ready for the field to go.
5. Redirection – this is a form of creative contributions that takes the field to a new and different direction from where it was at a point in time.
6. Reconstruction/Redirection – creative contributions of the form of reconstruction/redirection looks backwards. According to Sternberg, Kaufman & Priez (2001, p.92), “an individual suggests that the field should move backwards to a point it previously was at but then should move in a direction divergent from that in which it has moved”.
7. Reinitiation – this category of creative contributions represents a paradigm shift; it pushes the field to a different but still yet-to-be-reached starting point, the creative individual then moves the field in a different direction from that point.

Sternberg’s collaboration with James Kaufman and Jean Priez resulted in the eighth form of creative contributions.

8. Integration – the type of creative contributions involves a synthetisation of hitherto opposing and unrelated ideas as the bases for new creative outcomes/products, for example.

There is a view that the characterisation of different types of *creative contributions* will continue as technology innovation particularly noticeable in the 21st Century advances (see Kaufman & Skidmore, 2010); the propulsion theory of creative contributions nonetheless offered a unique basis for evaluating creative work.

The Balance Theory of Wisdom

I have come to realize that some of the world's cruelest despots and greediest business tycoons are successfully intelligent. They have played within the sociocultural rules, which they have largely set. Thus, they have been enormously successful, often at the expense of countless countrymen who are left to their own devices, and often to death. It is for this reason that I have now turned my attention to wisdom.

- Sternberg (2003, p. xviii)

There is a view that Sternberg helped significantly to initiate and develop the scientific study of wisdom (see for example Maxwell, 2013). His *Balance Theory of Wisdom* (1988) is one of the most prominent theories on wisdom alongside Paul Baltes postulations on wisdom – especially his explicit theory of wisdom, otherwise known as the Berlin Wisdom Paradigm (Baltes & Staudinger, 2000). In Baltes' & Staudinger's Model, wisdom is conceived as knowledge – specific, general, factual and contextual – and conditions of life and the judgement individuals have to make about those conditions. In other words, wisdom is synonymous with expertise in the pragmatics of life but only to the extent that the wise individuals meet these criteria – rich factual knowledge, rich procedural knowledge, lifespan contextualisation, relativism, and uncertainty (Baltes & Staudinger, 2000).

Sternberg's *Balance Theory of Wisdom* is an explicit theory of wisdom. Like Baltes' Model, Sternberg's theory emphasizes knowledge but only to the extent that the knowledge is tacit – defined as “the procedural knowledge not explicitly taught and often not even verbalized that one needs to know to succeed in an environment” (Sternberg, 2003a, p. xv). The theory conceives successful intelligence, creativity, and tacit knowledge as critical conditions for wisdom. According to Sternberg (2003a, p. 152), wisdom is:

the application of successful intelligence and creativity as mediated by values toward the achievement of a common good through a balance among (a) intrapersonal, (b) interpersonal, and (c) extrapersonal interests, over (a) short and (b) long terms, in order to achieve a balance among (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments.

Sternberg's conception of wisdom is depicted in figure 2 (on page 711).

Wise, wisdom, and successful intelligence go together. It is not possible to be wise without an application of successful intelligence, but a balance is needed in terms of the responses to environment interests. Similarly, wisdom is required to *adapt* and *shape* the existing environment, and where appropriate, to select a new environment (see figure 2).

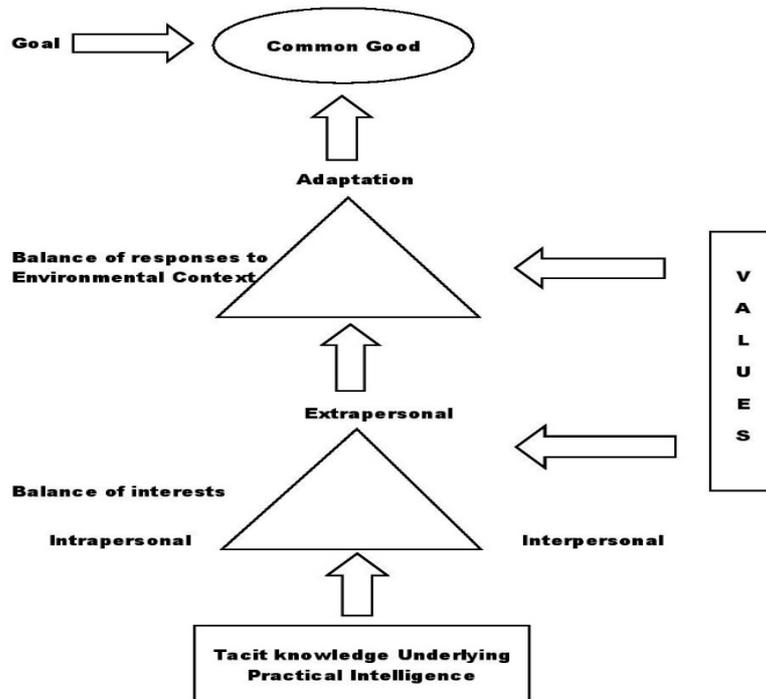


Figure 2: Sternberg's (1988) Balance Theory of Wisdom

According to Sternberg, there are seven *sources* of individual and developmental differences that have direct effect on the balance processes – these are:

Wisdom goals. People have differences in believe, views, and understanding of what constitutes 'common good', goals of wisdom.

Balancing responses to environmental contexts. Individuals respond to situations/environments differently; just as they adapt, shape or select new environments in different ways or differ in the way they balance their responses.

Balancing of interests. Personal interests and professional interests (for example) differ; such differences might necessitate the way people balance their interests.

Balancing of short and long terms. Differences in emphasis, short vs long-term goals, for example, might necessitate differences in the balance process.

Acquisition of tacit knowledge. The extent to which people acquire tacit knowledge may differ and might impact positively or negatively on the balance process – for example, in the approach to solving problems.

Utilisation of tacit knowledge. The balance process will be affected to the extent that people have differences not only in the way and manner they acquired and utilise their tacit knowledge but also in how well and how fully they have utilised the knowledge tacitly.

Values. The balance process will also be affected to the extent that people hold different values that underpin their approach to or the way they required or utilize intelligence and creativity to achieve balance in interests and responses.

Other skills that relate to wisdom

According to Sternberg, wisdom relates to other psychological constructs including: a) knowledge – tacit, and informal knowledge, b) analytical thinking – non-academic, but “the analysis of real-world dilemmas where clean and neat abstractions often give way to messy and disorderly concrete interests” (Sternberg, 2003a, p. 157), c) creative and wise thinking – often lead to creative and wise solutions, d) practical thinking – wisdom requires practical thinking; good practical thinkers are also wise individuals, e) also, wisdom requires social intelligence (see Sternberg & Smith, 1985) and emotional intelligence (see Goleman, 1995).

Foolishness

Foolishness is a psychological concept which manifests in a pattern of behaviour (Markovic, 2008), lacking wisdom (Sternberg, 2003a). Foolishness takes a variety of forms: a) the *fallacy of egocentrism*, when a person thinks that the world centers around them, b) the *fallacy of omniscience*, when a person (leader, for example) think they can have almost any information at the snap of a finger, or at their beck and call c) the *fallacy of omnipotence*, when a person wields so much power and can do almost anything they want, d) the *fallacy of invulnerability*, when one has the illusion of total protection from a huge staff or a large number of subordinates around them.

In the *balance theory of wisdom*, foolishness is often but not always excluded in the wisdom balance process.

In sum, wisdom is the application of successful intelligence and creativity directed towards achieving a common good. In achieving a common good, balance is needed among personal, interpersonal and intrapersonal interests and in the way one responds to this balance.

Triangular Theory of Love

My whole life I have been searching for love. At a personal level, after a number of false starts, I have found it. In my research – initiated when a love relationship in my personal life was failing – I have tried to come clos-

er to understanding what love is, how it develops, and why it succeeds or fails.

- Sternberg (2013, p.98)

The nature of intelligence, creativity and wisdom is multidimensional and multifaceted. So too is love. The philosophical and social constructions of love (Beall & Sternberg, 1995), the knowledge and understandings that people have about love and their experiences of love are different, multiple, and varied in forms. So were Sternberg's knowledge, understanding and experience, and the variables that informed his conceptualisation and theorisation of love. His theories were structural model of love, triangular theory of love, theory of love as a story, and the WICS theory – the wisdom, intelligence and creativity synthesised model.

The triangular theory of love is the most widely acclaimed among these theories and is discussed separately.

In conceptualising and theorising love, Sternberg adopted a stage-by-stage research approach as he did in the development of the theories of intelligence, creativity, and wisdom. He divided his research on love theory into five stages. The first stage examined three structural models of the nature of love in collaboration with Susan Grajek (Sternberg & Grajek, 1984). The research was based on the psychometric models of intelligence advanced by English psychologists Charles Spearman in the theory of general intelligence *g* (1927) and Godfrey Thomson in the theory of the 'bonds' of intelligence (1939), and American Louis Thurstone's theory of primary factors (1938). Sternberg & Grajek compared love intimacy (bonds) with each of these alternative models using factor analytic approach. The finding of the research was consistent with the Thomson's model in that, there were similarities in the structure of love "across the various close relationships in which one engages" (Sternberg & Grajek, 1984, p.312).

Two years later, Sternberg proposed the *triangular theory of love* (Sternberg, 1986, 1988) at the second stage of his research. The theory comprise three interactive components of love – namely intimacy, passion, and decision/commitment – which together form the vertices of a metaphoric triangle. The triangular theory of love was followed by the theory of love story at the third stage of his research. The latter theory identifies 26 types of love stories from a diverse range of social and cultural contexts – from business story to cultural story and from fantasy story to horror story. Sternberg argued that individuals love stories determine the kind of relationship they create; and that individuals with close loving relationships are likely to succeed if their stories closely match or if they relate closely to their love stories.

The fourth stage of his research examined *compatible styles* in love relationships. According to Sternberg:

Although the triangular theory and theory of love as a story captured diverse elements of love, they did not fully predict which couples would succeed and which would fail. ... I discovered that relationships could rise or fall depending on how well people were able to be

compatible across their stylistic preferences (2013, p.100).

In other words, love triangles and love stories are just as important as styles compatibility in relationships.

The fifth stage of Sternberg's research examined the interrelationships among intelligence, creativity, and wisdom (the synthesis of the three constructs) which led to the development of the WICS theory – an acronym for wisdom, intelligence and creativity synthesised model – and the role of WICS (see Sternberg, 2003a, 2003c, 2004).

The Triangular Theory of Love (Sternberg, 1986). The triangular theory of love conceptualised love as a metaphoric triangle with each of the three interactive components – intimacy, passion, and decision/commitment – not only connects by 'feelings' but which together form the vertices of a triangle. At the top of the vertex is intimacy, the left-hand vertex is passion, and the right-hand vertex is decision/commitment (figure 3).

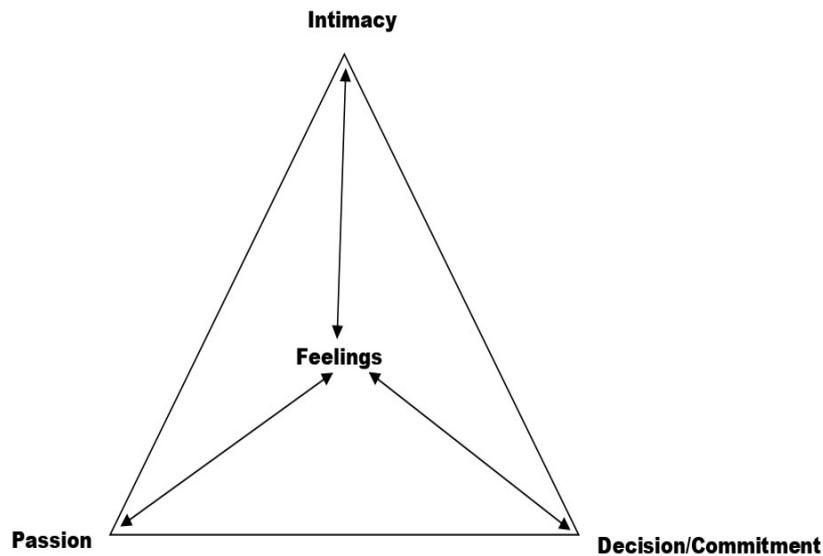


Figure 3: Author's adaptation of Sternberg's (1986) Balance Theory of Wisdom

The three components interact but result in different love types. According to Sternberg (1986), intimacy, passion, and decision/commitment in loving relationships connects by 'feelings' and show different aspect of love. Intimacy involves feelings of closeness, connectedness, and boundedness; passion involves feelings (that lead to), motivation and drive for romance, physical attraction, and sexual consummation; decision/commitment involves

feelings of and the decision to love in the short term and to commit to maintain that love in the long term.

According to Sternberg (1986, p. 119):

In general, the intimacy component might be viewed as largely, but not exclusively, deriving from emotional investment in the relationship; the passion component as deriving largely, although not exclusively, from motivational involvement in the relationship; and the decision/commitment component as deriving largely, although not exclusively, from cognitive decision in and commitment to the relationship. From one point of view, the intimacy component might be viewed as a “warm” one, the passion component as a “hot” one, and the decision/commitment component as a “cold” one.

As depicted in figure 3, the three components of love are separable but connected and interacted; thus the greater the intimacy the greater the likelihood for passion or decision/commitment and vice versa. In combination, the three components may give rise to the following eight types of love:

1. *Non-love*. The presence of intimacy, but absence of passion and decision/commitment in a loving relationship.
2. *Liking*. The “feelings one has toward casual acquaintances and passers-by in one’s life” (Sternberg, 1986, p.123).
3. *Infatuated love*. Love ‘at first sight’ is characterised by the presence of passion but absence of intimacy and decision/commitment.
4. *Empty love*. Characterised by the presence of commitment but absence of passion and intimacy. In other words, empty love comes from “the decision that one loves another and has commitment to that love in the absence of both the intimacy and passion components of love” (Sternberg, 1986, p.124).
5. *Romantic love*. Combines the intimacy and passion components of love.
6. *Companionate love*. Combines the intimacy and decision/commitment components of love.
7. *Fatuous love*. Combines the passion and decision/commitment components of love but excludes the intimacy component.
8. *Consummate love*. Combines the three components of love. It is “a kind of love toward which many of us strive, especially in romantic relationships” (p.124). However, reaching the apex does not mean that the attainment of *consummate love* is a guarantee that the loving relationship would last.

Sternberg’s triangular theory of love is a significant contribution to the body of knowledge on love relationships. The theory conceives love in terms of intimacy, passion and decision/commitment. These three components are separable but connected and interacted. The theory “provides a rather comprehensive basis for understanding many aspects of the love that underlies close relationships” (Sternberg, 1986, p.119).

III—Publications

Sternberg is a prolific writer and author of well over 1,800 publications including journal papers, books, chapters. What follows in table 2 is a selection of his publications leading to, and arising from the development of theories of intelligence, creativity, wisdom, and love—with running commentary by Sternberg.

Publications	Sternberg
Sternberg, R. J. (1972). A decision rule to facilitate the undergraduate admissions process. <i>College and University</i> , 48, 48–53.	My very first publication.
Sternberg, R. J., & Bower, G. H. (1974). Transfer in part-whole and whole-part free recall: A comparative evaluation of theories. <i>Journal of Verbal Learning and Verbal Behavior</i> , 13, 1–26.	The only publication I ever did that actually solved a problem definitively.
Sternberg, R. J. (1977). <i>Intelligence, information processing, and analogical reasoning: The componential analysis of human abilities</i> . Hillsdale, NJ: Lawrence Erlbaum Associates.	The book based on my dissertation. It introduced componential analysis.
Sternberg, R. J. (1979). The nature of mental abilities. <i>American Psychologist</i> , 34, 214–230.	My first attempt to write for a general psychological audience.
Sternberg, R. J. (Ed.). (1982). <i>Handbook of human intelligence</i> . New York: Cambridge University Press.	My first edited handbook. The start of a 40-year relationship with Cambridge University Press.
Sternberg, R. J. (1984). A contextualist view of the nature of intelligence. <i>International Journal of Psychology</i> , 19, 307–334.	My first attempt to apply a contextualist approach to human intelligence.
Sternberg, R. J., & Grajek, S. (1984). The nature of love. <i>Journal of Personality and Social Psychology</i> , 47, 312–329.	My first publication on love.
Sternberg, R. J. (1986). Intelligence, wisdom, and creativity: Three is better than one. <i>Educational Psychologist</i> , 21, 175–190.	My first paper linking intelligence, wisdom, and creativity.
Sternberg, R. J. (2000). In search of the zipperump-a-zoo: Half a career spent trying to find the right questions to ask about the nature of human intelligence. <i>The Psychologist</i> , 13(5), 250–255.	My first career retrospective—after 25 years.
Grigorenko, E. L., & Sternberg, R. J. (2001). Analytical, creative, and practical intelligence as predictors of self-reported	We showed that practical intelligence became more important in Russia following the fall of Communism.

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adaptive functioning: A case study in Russia. <i>Intelligence</i> , 29, 57–73.	
Sternberg, R. J., & Grigorenko, E. L. (2001). Unified psychology. <i>American Psychologist</i> , 56(12), 1069–1079.	An attempt to argue for the unification of psychology as a discipline—followed in the footsteps of one of my advisors, Lee Cronbach.
Sternberg, R. J. (Ed.). (2003). <i>Psychologists defying the crowd: Stories of those who battled the establishment and won</i> . Washington, DC: American Psychological Association.	An important edited book for me—shows that really great psychologists are willing to defy the crowd, despite the price they pay for doing so.
Sternberg, R. J., Kaufman, J. C., & Pretz, J. E. (2003). A propulsion model of creative leadership. <i>Leadership Quarterly</i> , 14, 455–473.	Our application of the propulsion model of creative contributions to leadership.
Sternberg, R. J., & Sternberg, K. (2008). <i>The nature of hate</i> . New York: Cambridge University Press.	My first written book, with Karin Sternberg, on hate.
Sternberg, R. J. (2010). The dark side of creativity and how to combat it. In D. H. Cropley, A. J. Cropley, J. C. Kaufman, & M. A. Runco (Eds.), <i>The dark side of creativity</i> (pp. 316-328). New York: Cambridge University Press.	My first take on the dark side of creativity.
Sternberg, R. J. (2014). I study what I stink at: Lessons learned from a career in psychology. <i>Annual Review of Psychology</i> , 65, 1-16.	A review of the history of my research and why I did what I did.
Sternberg, R. J. (2015). Still searching for the Zipperumpazoo: A reflection after 40 years. <i>Child Development Perspectives</i> , 9(2), 106-110.	A review of my research for the first 40 years of my career.
Sternberg, R. J., Fiske, S. T., & Foss, D. J. (Eds.) (2016). <i>Scientists making a difference: One hundred eminent behavioral and brain scientists talk about their most important contributions</i> . New York: Cambridge University Press.	Contributions from 100 truly eminent psychological scientists on what made their careers what they were. They had in common their willingness to defy the crowd.
Sternberg, R. J. (2017). The danger of contempt in universities and in modern society. <i>Journal of College and Character</i> , 18(3), 208-214.	Contempt is rife in academia. Bad idea.
Sternberg, R. J. (2018). A triangular theory of creativity. <i>Psychology of Aesthetics, Creativity, and the Arts</i> , 12, 50-67.	My first paper on the triangular theory of creativity.

Sternberg, R. J. (2020, August 31). COVID-19 has taught us what intelligence really is. <i>Inside higher ed</i> , https://insidehighered.com/views/2020/08/31/pandemic-has-proven-standardized-tests-dont-measure-whats-important-opinion	In this article, I argue that COVID-19 has taught us what intelligence really is, and it's not IQ.
Sternberg, R. J. (2020). Toward a theory of musical intelligence. <i>Psychology of Music</i> , https://doi.org/10.1177/0305735620963765	A theory of musical intelligence combining my own theory of successful intelligence with Howard Gardner's theory of multiple intelligences.
Sternberg, R.J. (2021). Transformational creativity: The link between creativity, wisdom, and the solution of global problems. <i>Philosophies</i> 6, 75. https://doi.org/10.3390/philosophies6030075	This article presents a theory of transformational creativity as a link between creativity and wisdom.

Table 2: Selected Publications leading to and arising from the theories of Intelligence, Creativity, Wisdom, and Love

IV—Sternberg's Pride and Joy Triangle – Children, wife, and Students

When you're young, one of the things you don't realize as much as when you're older is how you can make lasting contributions through your work, but the most important lasting contribution I think you ever make in your life is through your kids.

- Sternberg in *Casper Star Tribune*, 8 March, 2013

As intimidating as his professional accomplishments were, Sternberg takes absolute pride and joy in his children, wife, and students. He is particularly convinced that his five children and dozens of doctoral students will carry – and pass on – the touch, a sure way to achieve immortality. Sternberg's Pride and Joy Triangle relates to his children, wife, and students. The metaphoric triangle is depicted in figure 4: Sternberg's five children, his "number one accomplishment", sit at the top-corner of the vertex while wife and students respectively sit at the right-corner and left-corner of the vertices. Sternberg sits at the centre of the triangle.

First-child Seth, from his first marriage, holds a bachelor degree in political science (with concentration in international relations) from Yale University, Connecticut, USA. He was over a year into his MBA programme at Stanford University, California, USA, when he literarily 'defied the crowd' (see Sternberg & Lubart, 1995), and dropped out of the course to follow his passion – tech entrepreneurship. In 2005, Seth co-launched Meebo, an instant messaging and social networking service provider which he sold in 2012 to Google for \$100 million. Seth was product management director with Google in 2014, when he defied cross-sectoral thinking at the time to co-launch and head up Honor Technology Inc., a California-based disruptive

home care network and technology platform that has raised over \$325³ million in equity funding to date. In August 2021, Honor Technology Inc. acquired Nebraska-based home care services group, Home Instead, Inc., to become the largest player in the global home care industry with the combined organisation representing \$2.1 billion in home care services revenue⁴ employing over 100,000 people across 14 countries.

Second-child Sara, also from Sternberg's first marriage, too holds a bachelor degree – *magna cum laude* and with distinction – in political science from Yale University (2002) and a JD from Yale Law School (2005) where she received the Stephen J. Massey Prize for excellence in advocacy. Also at Yale, she served as notes editor for the *Yale Law Journal* and articles editor for the *Yale Law and Policy Review*. In 2014, Sara received her PhD in social policy and sociology from Harvard University, Massachusetts, USA. Currently, Sara is full professor of law at Duke University, North Carolina, USA.

Sternberg's 10-year old triplets Samuel, Brittany and Melody are children of Karin, his wife of thirteen years. Karin is a cognitive psychologist, researcher and author; she holds a PhD in psychology from the University of Heidelberg, Germany, her native country. Sternberg described the type of love Karin has for him as “unconditional” – or what Canadian psychologist John Lee in his influential book, the *Colours of Love* (1973), labelled *agape*, the purest form of love. Karin returned the heart-soothing words in kind, described Sternberg's love for the family as first before anything else, second to none – *nulli secundus*.

Next to Sternberg's family are his students – particularly his several dozens doctoral, and post-doctoral researchers many of whom have distinguished themselves in their various fields. Two of his former PhD students, James C. Kaufman and Todd Lubart, are celebrated in this book. The students' feelings for Sternberg are mutual.

Sternberg's pride and joy triangle is complete – immortality is assured (figure 4).

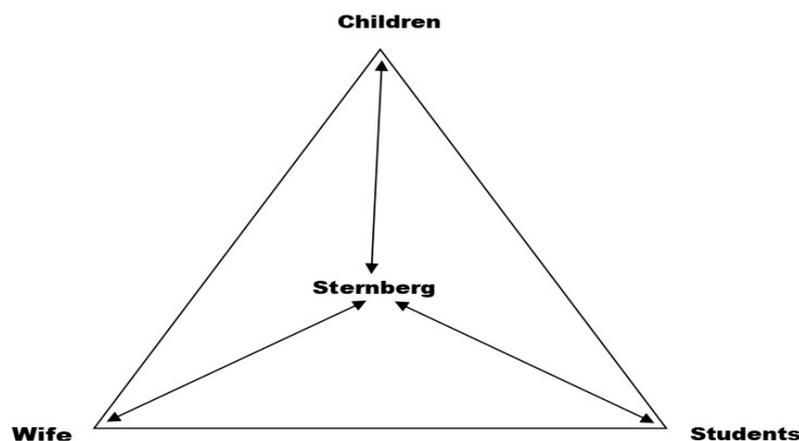


Figure 4: Sternberg's Triangle of Pride and Joy—the author's characterisation of Sternberg's pride and joy in his children, wife, and students.

Interview with Robert J. Sternberg

JO: What do you think are the main under examined areas of intelligence and creativity research 70 years after JP Guilford's APA lecture? More generally, what are your thoughts on the future of intelligence and creativity research?

RJS:

1. *Test development.* Development of tests of intelligence/creativity based on broader theories. Without investment in this area, educators and employers will keep using outdated tests.
2. *Instruction.* How can recent theories of intelligence/creativity be incorporated into teaching in schools? In particular, how can we put more emphasis on not only the accumulation of knowledge, but also on the intelligent, creative, and most of all, wise use of that knowledge.
3. *Theory development and testing.* We need theories, research, and development that relate intelligence and creativity to consequential real-world problems rather than to the trivial problems that have characterized so much of research and practice. We, as researchers, need to be more creative (and that includes me).
4. *Transformational creativity.* Why and how do some people use their creativity to make the world a better place, and what can we do to ensure that creativity is used wisely rather than selfishly for people's own personal ends, including ones that damage others.
5. *Transformation of the field.* The field is stuck in a narrow, somewhat conservative elitist mentality of the early 20th century. How can we reward research with a broader outlook that may help to challenge the assumptions that traditional research often has failed to question?

JO: Looking at your widely acclaimed theories of intelligence, creativity, wisdom and love, are there things (or comments) you would like to add that you have not published previously?

RJS: My most recent work is on five topics:

1. Intelligence, creativity, and wisdom as person x task x situation interactions. Only a first paper has just been published within the last week (on intelligence as a p x t x s interaction). The idea is that none of these constructs exist simply "in the mind." They exist interactionally. Those of us who view ourselves as "smart" should think about how we would do if we were living in a hunting/gathering culture, in a prison cell as a political prisoner who will be forcibly interrogated for strategic information we do not even have, or as a citizen of a dictatorship (which may indeed happen to us all).

¹Sternberg, R. J. (2021). Adaptive intelligence: Intelligence is not a personal trait but rather a person x task x situation

interaction. *Journal of Intelligence*, 9: 58, DOI: 10.3390/jintelligence9040058

2. Transformational creativity. I just had a first paper come out on that within the last month. I, like many scholars, once viewed creativity as a force for good. I believe that view was naïve. Creativity can be a force for good or bad. It's too easy to hope that, if we teach for creativity, it just will be used to good ends. Social media should have convinced anyone that that will not happen. How can we ensure that creativity is used for good purposes?

¹Sternberg, R.J. (2021). Transformational creativity: The link between creativity, wisdom, and the solution of global problems. *Philosophies* 6, 75. <https://doi.org/10.3390/philosophies6030075>

3. Cultural intelligence. We tend to be very narrow in viewing intelligence within our own cultural context. We want to go to another culture: Translate OUR test! Not their test, OUR test! We are studying now how to understand and assess intelligence in a multi-cultural context.

¹Sternberg, Robert J., Wong, C. H., & Kreisel, A. P. (2021). Understanding and assessing cultural intelligence: Maximum-performance and typical-performance approaches. *Journal of Intelligence* 9: 45. <https://doi.org/10.3390/jintelligence9030045>.

4. Transformational giftedness. Many of the people we are identifying as gifted are gifted in advancing their own interests but neither identify with nor care about the interests of others—perhaps beyond the context of the “service” they write down on their college application. We need to identify as gifted people who want to make the world a better place rather than merely get themselves into the best college, graduate school, or job.

¹Sternberg, R. J. (2021). Transformational vs. transactional deployment of intelligence. *Journal of Intelligence*, 9 (15), <https://doi.org/10.3390/jintelligence9010015>

²Sternberg, R. J., Chowkase, A., Desmet, O., Karami, S., Landy, J., & Lu, J. (2021). Beyond transformational giftedness. *Educational Sciences*, 11, 192. <https://doi.org/10.3390/educsci11050192>.

5. Scientific wisdom. We are developing scientists who are knowledgeable but often not wise. We need scientists who recognize the importance of their science serving a common good.

¹Wong, C.-H., & Sternberg, R. J. (2021). Measuring scientific wisdom. Paper submitted for publication.

JO: What are your thoughts on the recent upsurge in scientific research into wisdom? What role do you see for wisdom in the global response to the current pandemic?

RJS: It's great! That is exactly what we need. The field is burgeoning. Judith Glück¹ and I just had a book come out on the topic, and we have a textbook on the topic in press². The greatest problem is that people often study the topics that they find challenging. That certainly is true of me. We have to hope that the field of wisdom does not encounter the same dismal fate as the field of intelligence, converging on a commonly accepted but narrow model before the topic is fully explored.

¹Sternberg, R. J., & Glück, J. (2022). *Wisdom: The psychology of wise thoughts, words, and deeds*. Cambridge University Press.

²Sternberg, R. J., & Glück, J. (Eds.) (in press). *The psychology of wisdom: An introduction*. New York: Cambridge University Press.

JO: What is your number one accomplishment?

RJS: My five children: Seth, Sara, Samuel, Brittany, Melody. Professionally, nothing I have done has mattered a whole lot. I'm hoping my children and students do better!

JO: As you reflect upon your career, is there anything you would do differently?

RJS: That is a question one often asks oneself. I've made so many mistakes I don't know where to begin. In my theory of love as a story, I talk about a "history story," in which couples focus on their history and where they came from. I'm kind of the opposite. I try to think as little as possible about the past—both the modest successes and the more notable failures. Rather, I try to focus on what I can do to make a better difference in the future. My greatest failure is that almost nothing, or perhaps nothing I have done has really changed anything in the world. As someone once said to me, though, you have not failed until you give up, and I have not given up.

JO: What advice do you have for students and new academics/faculty who may have been inspired by your accomplishments, and want to follow your footsteps and distinguish themselves in the field?

RJS: Don't listen to all the people who tell you what you should or must do. Follow your own mind and heart. Focus on problems that are important to you, and try, through your research, to make the world a better place. A lot of academia is smug, small-minded, and very concerned about issues that are reminiscent of the philosophical conundrum of how many angels can dance

on the head of a pin. Find important personally meaningful problems that potentially can make a positive, meaningful, and enduring difference to the world beyond yourself and your close colleagues. And remember, if you are being creative, you will make a lot of enemies and people will try to sabotage you. So, develop a very thick skin. If everyone likes what you are doing, your career may go well, but you will make little difference or no difference at all.

Thank you.

Concluding Remarks

Robert Sternberg is undoubtedly a colossus when it comes to his contributions in the field. His development of the theories of intelligence, creativity, wisdom and love have contributed significantly to the conceptual understanding of constructs. This chapter merely introduces Sternberg's work – and barely scratches the surface – to give readers some 'one-stop shop' to celebrate a true giant in the field.

End Quote—Sternberg's Words on Marble

My work, like the work of most scholars who fall short of Piaget or Freud, will not be immortal. But I will be immortal through my students and through my five children and their children and their children onward. The secret sauce to achieving immortality is the form God intended for us—the ability to create a new generation of life and to have the greatest possible pride in the accomplishments of those who will follow.

- Sternberg (2016, p. 19)

Notes

- ¹. <https://thebestschools.org/features/most-influential-psychologists-world>
- ². <https://www.britannica.com/science/human-intelligence-psychology/Psychometric-theories>
- ³. <https://www.prnewswire.com/news-releases/honor-acquires-home-instead-to-transform-care-experience-for-caregivers-and-older-adults-301350109.html> ('Honor Acquires Home Instead to Transform Care Experience for Caregivers and Older Adults')
- ⁴. <https://www.joinhonor.com/about>

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