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RESEARCH ARTICLE

Oliver Williamson: a Hero's journey on the merits

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Abstract
Joseph Campbell describes a narrative pattern for a hero's journey. 'A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from the mysterious adventure with the power to bestow boons on his fellow man' (2008: 30). This paper looks at Oliver E. Williamson's life through Campbell's lens and reveals his journey, challenges, and triumphs not only for himself but also for all students of the science of organization.

Key words: Economic History; Transaction Cost Economics; Oliver Williamson; Institutional Economics

1. A superior life and educational path

Joseph John Campbell (1904–1987) was an American Professor of literature at Sarah Lawrence College, a private liberal arts college in Yonkers, New York. Professor Campbell had an approach that we imagine Williamson would favor, as he worked in *comparative* mythology and *comparative* religion. Campbell states, 'A hero is someone who has given his or her life to something bigger than oneself' and submits that: 'We are in childhood in condition of dependency under someone's protection and supervision for some fourteen to twenty-one years – and if you're going on for your Ph.D., this may continue to perhaps thirty-five. You are in no way a self-responsible, free agent, but an obedient dependent, expecting and receiving punishments and rewards. To evolve out of this position of psychological immaturity to the courage of self-responsibility and assurance requires a death and a resurrection. That's the basic motif of the universal hero's journey – leaving one condition and finding the source of life to bring you forth into a richer or mature condition' (1988: 123–124). Williamson published his pathbreaking 1971 AER article on vertical integration at the age of 39. His life experiences then inform his move to follow his bliss and take responsibility for his own intellectual path. Below we describe his(story).

Oliver Eaton Williamson – known as 'Olly' to his friends, colleagues, and students – was born in the port community of Superior, Wisconsin on September 27, 1932. He was the second of three children to Scott and Lucille Williamson, who met as high school teachers in Minnesota. His father taught physics, chemistry, coached the baseball team, and later became a successful small businessperson and active participant in the community, culminating with nine years of service as President of the Superior City Council. His mother, who grew up in Superior, taught Latin, French, and German, and was the school's principal. His schools, while reflecting budgetary constraints of a seasonal shipping town of 30,000 people on the western side of Lake Superior, were nevertheless described by Williamson as 'a thoroughly democratic experience … Talents could take many forms and were everywhere assessed on merit' (1986: xi).

Following his mother's recommendation, Williamson began a 2/3 program at Ripon College before attending the much more competitive MIT. After the first two years, he joined MIT and earned a B.S.

degree that prepared him for his first job after graduation as a project engineer for General Electric and later with the CIA in Washington D.C., both of which informed him on how bureaucracy functioned.[1] As a junior at MIT, Williamson somehow became the object of his hometown draft board. A hometown friend at MIT encouraged him to apply as a project engineer with the CIA, which offered a special program that satisfied selective service requirements. With friends in the program and the promise of a technical cadre that was building up engineering capability, Williamson applied and was hired.[2] He met his wife, Dolores in September 1955, who also worked at the CIA, soon after arriving in Washington, D.C. They married two years later, in September 1957, and had five children – Scott, Tamara, Karen, Oliver, Jr., and Dean.

2. A new direction

After two years with the CIA, Olly and Dolores contemplated options on their merits and agreed upon him getting a Ph.D. and teaching at a school like Ripon College. Turning down MIT and Indiana, he accepted an offer from Stanford covering tuition and a $2,000 stipend annually. Williamson arrived at Stanford in 1958, intending to obtain a doctoral degree in business administration but was soon drawn to economics and statistics with teachers such as Takashi Amemiya, Kenneth Arrow, Herman Chernoff, Bernard Haley, Hendrik Houthakker, James Howell, Melvin Reder, and Hirofumi Uzawa. Indeed, Williamson was wavering in his interest in economics until he experienced an outstanding teacher, Ken Arrow, which persuaded him to take more economics courses in the future.

Because of a shortage of office space, a new faculty hire with a recent Ph.D. from Carnegie Tech, Charles Bonini, was located in an office with four Ph.D. students, one of them Olly. As fate would have it, recognizing Olly's interest in business and economics, Bonini repeatedly encouraged, 'You should be at Carnegie'. Also encouraged by Dean George Leland Bach, he arrived at Carnegie in September 1960, after having completed his MBA at Stanford.

3. Striving for and achieving excellence

Williamson described Carnegie as 'a perfectly incredible experience', that 'bubbled with research excitement, much of it of an interdisciplinary kind. Although orthodoxy was respected, heterodox insights and intuitions were given a serious hearing' (1986: xiii; 3). Williamson's evolution as an interdisciplinary economist was influenced by teachers such as Herbert Simon, Richard Cyert, James March, and Allan Meltzer on his way to earning his doctorate in May 1963. Williamson received from his education here what he referred to as the 'Carnegie Triple' (1996: 25): be disciplined; be interdisciplinary; and have an active mind.[3] He called it the 'Camelot years' that produced among its then faculty four Nobel Memorial Prize in Economic Sciences (Herbert Simon, 1978; Franco Modigliani, 1985; Merton Miller, 1990; and Robert Lucas, 1995) as well as four prizes among its students (Finn Kydland, 1994; Edward Prescott, 2004; Oliver Williamson, 2009; and Dale Mortensen, 2010).

[1]Williamson's connections with General Electric would come into play years later as noted by Scott Masten (2020) as Williamson provided Masten with a letter of introduction to the General Manager of General Electric's Reentry Systems Division, located in West Philadelphia just off the University of Pennsylvania campus, where GE produced the re-entry vehicles for the Minuteman ballistic missile under contract with the US Air Force. Williamson's encouragement to Masten to provide empirical testing of transaction cost economics lead to Masten (1984), in which there are over 1,000 citations according to *Google Scholar*. Indeed, throughout his career, Williamson was an exemplar of what Andrew Van de Ven (2007) calls 'the engaged scholar', and at his core, Williamson was a phenomenologist.

[2]Williamson posited that his hometown draft board may have become interested in him because his father was President of the Superior City Council and that politics may have been responsible. He reports that his draft board went 'berserk' when they received notice directly from General Hershey, then director of the Selective Service System, that Olly was assigned to the CIA and could no longer be drafted.

[3]Williamson wrote to Herbert Simon toward the end of Simon's life: 'I trust you can see that Carnegie had a major influence on my [TCE] project' [Letter from Oliver E. Williamson to Herbert A. Simon, March 4, 1992, quoted in Augier and March (2008: 96)].

It was in Jim March's Organization Theory course that Williamson came up with the idea that managers, seeking to maximize slack *versus* profit, would make for an interesting dissertation. Along with a research comment on 'The elasticity of the marginal efficiency function', which appeared in the *American Economic Review*, Williamson published as a student 'Selling expense as a barrier to entry', which was the result of a term paper for Herbert Simon's course and appeared in the *Quarterly Journal of Economics*. He was well prepared for the job market.

In that year of 1963, Andreas Papandreou, Aaron Gordon, Henry Rosovsky, and industrial organization (IO) specialist Joe Bain were keys to bringing Williamson to the University of California at Berkeley instead of UCLA or the University of Minnesota. It was quite a recruiting year with the hiring of Williamson, Peter Diamond, David Laidler, Daniel McFadden, and Sidney Winter.[4] In December 1963, Williamson's dissertation was awarded the Ford Foundation Prize, which was published in 1964 (Williamson, 1964) by Prentice-Hall titled, *The Economics of Discretionary Behavior: Managerial Objectives in a Theory of the Firm.*[5]

Williamson worked at the RAND Corporation in Santa Monica, California in the summer of 1964, where he got to know Armen Alchian, Anthony Downs, Jack Hirshleifer, Ronald McKean, Almarin Phillips, and James Schlesinger and to renew relations with Richard Nelson who had been a visiting scholar at Carnegie and had taught Williamson there. Williamson noted a similarity shared by Alchian and Simon; they 'had the same criterion for evaluating social science research: anything that deepens our understanding of complex phenomena is valued' (1986: xiv).

In the fall of 1964, Williamson received several job offers and approached the new department chair at the University of California, Berkeley, Tibor Scitovsky, with a non-tenured, Associate Professor offer with a substantial increase in salary at the University of Pennsylvania, which Almarin Phillips initiated. Berkeley did not have a corresponding (non-tenured secondary) appointment, so Williamson, naively breaking with conformity, requested to be considered for tenure. The Berkeley faculty voted down this request and so Williamson left for the University of Pennsylvania the following academic year.

Before heading East, Williamson remained on the West Coast in the summer of 1965 at UCLA where Armen Alchian and Roland McKean had assembled a group examining the economics of property rights that included Gary Becker, Harold Demsetz, Sam Peltzman, William Meckling, and Gordon Tullock. These (Coasean) property rights formulations contributed to (Coasean) transaction cost formulations that would be well underway one decade later.[6]

Williamson arrived at the University of Pennsylvania at a time of substantial growth in the Economics Department. Along with Almarin Phillips (a student of Wassily Leontief at Harvard), Williamson had primary responsibility for the field of IO, in which they infused much-needed innovative features in shaping the IO curriculum. In particular, both Williamson and Phillips thought the typical IO curriculum at that time gave undue reliance on the neoclassical theory of the firm in which the modern corporation, described as a 'black box', was represented by a production function for transforming inputs into outputs according to the laws of technology. Second, the conventional wisdom at that time mistakenly assumed that the internal organization of the firm could be ignored because it was inconsequential. Third, frictions were ignored or suppressed by selectively invoking the assumption of zero transaction costs. Penn, to its benefit, would then move forward with a non-

[4]Three from this cohort in 1963 would receive the Nobel Memorial Prize in Economics from 2000 to 2010. Daniel McFadden, an econometrician, received the prize in 2000, Williamson as an industrial organization specialist in 2009, and Peter Diamond, as a public finance specialist, received the award in 2010.

[5]Ménard and Shirley (2014: 547) provide a personal communication (April 9, 2010) in which Williamson confirmed having read Coase (1937, 1960) while working on his dissertation at Carnegie. Williamson (2015) articulates key lessons to be learned from Coase.

[6]Williamson (1975, 2010) acknowledged John R. Commons, a leading institutional economist during the first half of the 20th century for initiating the transaction as the unit of analysis, which focused attention on the problem of economic organization and achieving good governance. The 'Commons Triple' connects good governance and the transaction as follows: 'The ultimate unit of activity …must contain in itself the three principles of [mitigating] conflict, [realizing gains via] mutuality, and [infusing] order. This unit is a transaction' (Commons, 1932: 4).

conforming curriculum in which Williamson regarded himself as a conscientious teacher, and found that the one who teaches learns, especially when a student's curiosity is nurtured to ask the question: '*What is going on here?*' (Ketokivi, 2020).

In Spring 1966, Carl Kaysen inquired whether Williamson would be interested in going to Washington, D.C. to serve as the Special Economics Assistant to the head of the Antitrust Division of the Department of Justice, Donald Turner and his assistants, which included (now Supreme Court Justice) Stephen Breyer, as well as Richard Posner in the Solicitor General's office. With the enthusiastic approval of Penn's Department Chair Irving Kravis, Williamson began his work on a wide range of antitrust issues in September 1966. Here Williamson worked on the Schwinn vertical integration case in which he pushed back against conformity and advised on the merits against Turner and Posner proceeding with monopoly power arguments, but his advice came too late to influence the brief. He then worked on several antitrust cases, and on merger guidelines. This time-period provided the spark for a paradigmatic revolution in the economics of organization to come.[7]

4. Amassing the revolution

Williamson returned to the University of Pennsylvania, where he resumed his research and teaching, which now included responsibilities in the Fels Center of State and Local Government at Penn, which included stellar faculty such as Bruce Ackerman, Edward Banfield, and Julius Margolis. It is here that Williamson designed his organization theory course that was central in his research shift from applied price theory to what would become transaction cost economics (TCE) in which comparative institutional analysis of imperfect governance alternatives was emphasized. Being resolute to provide an efficiency argument for vertical integration (and organizational design, more generally), Williamson crafted his path-breaking paper in this doctoral seminar as he and the class went through the organizational failures literature, but from a behavioral point of view. The paper was completed in the summer and presented at the annual meeting of the American Economic Association in December 1970. It appeared in the May 1971 issue of the *American Economic Review*. Looking back on this work of scholarship and originality, Williamson stated:

> I really did feel, at the time when I wrote the paper, that I had cracked the problem. I remember, as a matter of fact, telling a colleague in the spring of 1971 that I felt that I was the first person in the world that had ever understood vertical integration. This was obviously a certain exaggeration. But I did have a sense that this reformulation really got to some of the basic issues (Swedberg, 1990: 119).

Four key academics Williamson identified as his 'teachers' in this shift to the economics of organization were Kenneth Arrow, Alfred D. Chandler, Ronald Coase, and Herbert Simon.[8] Arrow and Simon, as noted, were his teachers in the classroom. Williamson (1986: xvi) states:

[7]Oliver Williamson, as engaged scholar, states that, 'As I look back on the topics on which I have worked, I am impressed by the importance of first-hand contact: complex bureaucracies were something that I had been a part of and could relate to; managerial discretion was something that I had observed and participated in (R&D projects do not run themselves); the hazards of applying received theory too literally were evident from my experience with antitrust; that franchise bidding was a problematic solution for cable television was evident from the time I have been working on these matters as part of Mayor Lindsay's CATV Task Force [see Williamson, 1976]; that the organization of work was a fit subject for research was evident from the variety of jobs that I had held; that all forms of organization deserve only qualified respect was revealed by experience (including the Free Speech Movement at Berkeley) and by the insistent teachings of Arrow and Coase; that it was all right to remark about the emperor's clothes was encouraged by my father's forthrightness and my teachers at Carnegie' (1986: xviii).

[8]Key contributions addressing the canonical problem of vertical integration due to frictions in intermediate product markets were Arrow (1969) and Coase (1937, 1960) concerning transaction costs. In addition, Simon's (1947) concept of bounded rationality (intendedly rational but limitedly so) was instrumental in helping Williamson (1975) explain why contracts were typically incomplete. Chandler (1962) was crucial for documenting the rise of the multidivisional (M-form)

> From Arrow I learned about the importance of information and not to shoe-horn difficult problems into orthodox boxes. Chandler taught me that organizational innovation was an important and neglected phenomenon that had pervasive ramifications for understanding American industry. Coase taught me that transaction costs were central to the study of economic organization and that such studies should be performed in a comparative institutional manner. And Simon taught me that behavioral assumptions were important and not to be intimidated by disciplinary boundaries.

Four years after Williamson (1971), the first book of Williamson's TCE trilogy (1975, 1985, 1996), *Markets and Hierarchies*, was published by the Free Press, in which Paul Joskow and Richard Nelson received special thanks for their penetrating criticism and strong encouragement.

A brief summary of the book is as follows (1975: 8–9):

> The general approach to economic organization employed here can be summarized compactly as follows: (1) Markets and firms are alternative instruments for completing a related set of transactions; (2) whether a set of transactions ought to be executed across markets or within a firm depends on relative efficiency of each mode, (3) the costs of writing and executing complex contracts across a market vary with the characteristic of the human decision makers who are involved with the transaction on the one hand, and the objective properties of the market on the other; and (4) although the human and environmental factors that impede exchanges between firms (across a market) manifest themselves somewhat differently within the firm, the same set of factors apply to both. A symmetrical analysis of training thus requires that we acknowledge the transactional limits of internal organization as well as the sources of market failure. Basic to such a comparative analysis is the following proposition. Just as market structure matters in assessing the efficacy of trades in the marketplace, so likewise does internal structure matter in assessing internal organization.

Williamson concludes *Market and Hierarchies* suggesting an organizational failures framework in which 'no comprehensive commitment to one approach rather than another needs to be made. What is involved, rather, is the selection of the approach best suited to deal with the problems at hand. Although the matching of models to problems is not always easy, I find the alternative of forcing one model to handle all of the issues to be even less satisfactory …' (1975: 249).[9]

Following the 1975 book, the next path-breaking work would be 'Transaction Cost Economics: The Governance of Contractual Relations', which was written when Williamson was at the Center for Advanced Study in the Behavioral Sciences in Palo Alto in 1977–1978. He described his creative tension of literally 'agonizing during much of this time over how to bring greater order into the study of contractual variety' (1986: xvii). He found particularly useful the contract law writings of Ian Macneil (1974, 1978). Williamson noted that he read Macneil's (1974) 'The Many Futures of Contracts', which mixes elements of sociology and law with occasional references to economics with 'sheer delight' (Swedberg, 1990: 120), and it then became clear to Williamson that what Macneil called 'relational contracts' were quite widespread. Williamson's governance work here, for the first time, made an express reference to a new mode of analysis, which he called *transaction cost economics*, to recognize and explicate why transaction cost differences vary between markets and firms depending on the nature of the transactions to be organized. It is also the first paper that

organization, in which Williamson (1970, 1975, chapter 8) explains the M-form as an adaptive response to frictions in the capital market.

[9]Williamson maintained his pluralistic and pragmatic philosophy throughout his career (see Williamson, 2009). In an October 2006 interview Williamson states, 'I regard the economics of organizations as a pluralist enterprise: there are lots of different ways of approaching this subject and we are a long way from of having an adequate understanding of complex economic organization. … We need to open the box and examine the mechanisms inside to get a better understanding of what is going on and why' (Gindis and Hodgson, 2007: 373).

Williamson (1979) submitted to the *Journal of Law and Economics* (JLE), and was accepted by the editor, Ronald Coase, and published in 1979.

Coase's fundamental contribution to this article was his request to Williamson to clarify the concept of *governance structure*. Williamson's response was that a governance structure refers to the institutional matrix within which transactions are negotiated and executed and will vary with the nature of the transaction, identifying uncertainty, frequency of exchange, and the degree to which investments are transaction-specific as the principal dimensions for describing transactions, and that efficient organization requires matching governance structures with these transactional attributes in a discriminating alignment. In particular, TCE is shown to be primarily an *ex post* governance structure in which continuity (or breakdown) of the exchange relationship can take on special importance. Dimensionalizing transactions was the pivotal step in operationalizing TCE, which provided the rudiments of a predictive theory. The article was justifiably influential and reprinted in various books.

The final path-breaking article of Williamson's Penn years was the 1983 publication of 'Credible Commitments: Using Hostages to Support Exchange' in *American Economic Review*, which develops the importance of credible contracting to support interfirm exchange. A kind of 'Zen moment' is provided with the insight that sunk cost commitment is a key to both competition and cooperation! To be sure, preemption and first-mover advantage can be achieved by a firm's *unilateral* sunk cost investment as the IO literature emphasized at the time, but *mutual* sunk cost commitments provide mutual safeguards that support (ongoing) exchange relationships. Williamson's (1983) use of the term 'mutual hostages' was meant to convey the ancient wisdom of this safeguard, which included tribes' mutual exchange of their highly-valued tribe leaders until all exchanges were finalized, as noted by Schelling (1956: 300). Williamson (1983) further advanced the understanding of hybrid organization – such as long-term contracts and franchising – and explained why hybrid contracts had robust characteristics.[10]

Williamson's years at the University of Pennsylvania were crucial to the theory and practice of TCE. He regarded Penn as giving him substantial latitude and support on both his teaching and research. However, toward the conclusion of his time at Penn, he did not concur with (non-)selection and non-retention of faculty decisions in the area of IO. Williamson noted that 'with many fond memories and even regrets, I left Penn to accept an appointment at Yale' (1986: xviii).

5. The Abyss, death

Williamson expected that he was moving to a more productive appointment in the School of Organization and Management, the Law School, and the Economics Department at Yale with the Gordon B. Tweedy Chair in 1983, as well as serving as the founding editor of the *Journal of Law, Economics, and Organization*.[11] Williamson believed these positions would help spark a new Camelot, with an interdisciplinary Ph.D. program at the intersections of law, economics, and organization theory to examine adaptive, sequential decision-making under uncertainty at its core.

Before discussing the success of this educational revolution, a highlight of the Yale years (1983–1988) was the 1985 publication of the second book of the Williamson TCE trilogy, on the *Economic Institutions of Capitalism.* Williamson gave greater attention to inter-temporal issues in the exchange relationship. For example, the 'fundamental transformation' (Williamson, 1985:

[10]The concept of safeguards, we suggest, speaks to the spirit of TCE, in which Williamson reveals that, 'one of the concerns that I have …is that the world should not be organized to the advantage of the opportunistic against those who are more inclined to keep their promises. I would simply say that introspection supports this view. And all of Shakespeare's tragedies and comedies support it' (Swedberg 1990: 126).

[11]Joskow (2020) commenting on Williamson's editorial judgment notes that, 'As a journal editor, Olly always had his eye out looking to find interesting research work outside the mainstream to bring to the attention of our readers. And he always worked hard with young scholars who had new and interesting ideas to help them to refine their work and to get it published.'

61–63) is an inter-temporal consideration that comes to the foreground once bounded rationality, opportunism, and asset specificity are acknowledged. Thus, Williamson (1985: 61) states:

> Transaction cost economics holds that a condition of large numbers bidding at the outset does not necessarily imply that a large numbers bidding condition will prevail thereafter. Whether *ex post* competition is fully efficacious or not depends on whether the good or service in question is supported by durable investments in transaction-specific human or physical assets. Where no such specialized investments are incurred, the initial bidder realizes no advantage over non-winners. Although it may continue to supply for a long time, this is only because, in effect, it is continuously meeting competitive bids from qualified rivals. Rivals cannot be presumed to operate on parity, however, once substantial investments in transaction-specific assets are put in place. Winners in such circumstances enjoy advantages over non-winners, which is to say that parity is upset. Accordingly, what was a large numbers bidding condition at the outset is effectively transformed into one of bilateral supply thereafter. This fundamental transformation has pervasive contracting consequences.

Williamson's focus on inter-temporal transaction costs not only addresses the Coasean question of the existence of the firm (i.e. why not always use the price system?) in terms of 'the fundamental transformation', but also the Coasean question of why not handle all exchange in one big firm? To address this question, Williamson suggests 'the impossibility of selective intervention', in which case the integrated firm *cannot* wholly replicate outside procurement (1985: 138).

Williamson's appointments seemed like a unique opportunity to advance an intellectual revolution. The university already had a faculty with unusual depth in organization theory that was not reflected in its Ph.D. program. Williamson envisioned that Yale could become a new Camelot in which academic excellence would thrive and nurture a new interdisciplinary science of organization and questions would be resolved on their merits. The Ph.D. program would be the centerpiece, as Williamson firmly believed that learning and teaching go hand in hand. As part of this revolution, Williamson proposed that Yale's School of Organization and Management (SOM) become the premier school of organization and management.

Sadly, impediments to his vision turned out to be considerable. By his own account, Williamson faced provincialism in terms of faculty hiring, protectionism of courses and programs, political maneuvering to steer students away from open inquiry and TCE, and an unwillingness of leadership to upset the applecart, which signaled a lack of commitment to excellence based on the merits. Instead of viewing Williamson as an asset that could help the school to seize a unique intellectual opportunity, all too often he was viewed as (and was directly told so that he was) a threat. As a result, he was never embraced to be fully involved in the life of the university, which was a core promise that attracted him to Yale in the first place. He concluded that Yale could not become his envisioned Camelot that would lead the revolution in the science of organization. He needed a new home.

6. Rebirth and transformation at Berkeley of Berkeley

Harvard, Indiana, and Washington University in St. Louis vied to attract Williamson, but it was Berkeley, where he had deep roots and personally experienced the 'Berkeley triple' of 'excellence, energy, and joy' that won him back. Berkeley not only provided him with appointments in business, economics, and law but also it embraced his vision of a new Camelot in which questions would be resolved on their merits. He returned to Berkeley in the summer of 1988.

By January 1989, he proposed to then Dean of the business school, Ray Miles, an organizational scholar himself, a sweeping strategy that included a new curriculum for a Ph.D. including the already established course Economics of Institutions (Econ 224), the Workshop in Institutional Analysis (IDS 270), and Organizational Analysis (BA 296); a new course for MBAs and one for advanced undergraduates; new appointments; an expansive visiting scholar program; additional student financial support;

an international research consortia; a new center with the support of the Center for Research in Management, Center for Law and Economics and the involvement of faculty from diverse fields including law, economics, and organizational behavior; and a collaboration with UCLA. On the whole, and in contrast to his experience at Yale, Williamson's proposal was warmly received on the merits by the business school dean, with mutual respect by his colleagues across departments and across schools, and, importantly, with student interest. Most of the elements of this proposal were eventually implemented.

In terms of publications, to begin the Berkeley years, Williamson published in July 1988 his article, 'Corporate Finance and Corporate Governance' in the *Journal of Finance*. This research examined corporate finance through the lens of TCE in which debt and equity were not regarded simply as 'financial instruments', but rather were better regarded as different governance structures. In particular, Williamson (1988: 576) states that:

> The parallels between corporate finance and vertical integration are especially striking. Thus the (corporate finance) decision to use debt or equity to support individual investment projects is closely akin to the (vertical integration) decision to make or buy individual components or subassemblies. Not only is the 'market mode' (debt; outside procurement) favored if asset specificity is slight, but the costs of the market mode go up relatively as the contractual hazards increase [when assets are less redeployable].

Following this seminal work written to the Finance discipline, Williamson pivoted and wrote his most interdisciplinary paper to that time, which he hoped would have an impact in the field of organization theory as well as applied economics. This work was titled: 'Comparative Economic Organization: The Analysis of Discrete Structural Alternatives', which was submitted to, and published by, the *Administrative Science Quarterly*.[12] This 1991 article describes marginal analysis as potentially very useful second-order refinements, but emphasizes the selection of organizational form (market, hierarchies, hybrids) as *first-order economizing* in which discrete contract law differences provide crucial support for and serves to define each generic form of governance (e.g. the organizational form of franchising is supported by an institutional framework of franchising law). Williamson (1991) also offers a 'contract as framework' approach and makes the case that firms are different *in kind* from market transactions, in which the firm's corporate office is its own court of appeal, due to the law of forbearance where the judiciary limits its intervention and recognizes the need for business judgment.

Williamson's third book of the TCE trilogy, titled *The Mechanisms of Governance*, was published in 1996, which brought together his various ideas (from the past decade in particular). A notable contribution in this work was increased attention to the interplay between governance structures and the institutional environment (North, 1990; Ostrom, 1990). Williamson (1996, 2005) emphasizes the criterion of remediableness in which an extant organizational mode for which no superior *feasible* form of organization can be described and implemented with expected net gains is presumed to be efficient. Further, after having developed TCE in 'a modest, slow, molecular, definitive way', with the single transaction as the unit of analysis, Williamson began to consider more closely potential spillover effects of multiple transactions.

Following Williamson's TCE trilogy of seminal works, which were written for posterity, we highlight two further contributions. First, the application of TCE's discriminating alignment lens to the choice of public and private governance (Williamson, 1999a) and, second, a comparative assessment of the governance and capabilities perspectives (Williamson, 1999b).

[12]Williamson (1990, 1993) emphasizes the important role of organization theory in developing a science of organization. Baudry and Chassagnon (2010) highlight three critical elements: (a) human relations and the crucial role of informal organization (Barnard, 1938); (b) behavioral theory (Cyert and March, 1963; March and Simon, 1958); and (c) theory on bureaucratic dysfunctions (Gouldner, 1954; Merton, 1957).

Williamson (1999a) challenges the property rights view that the public agency is always and everywhere to be understood as a haven for inefficiency that can be remedied by realizing the correct assignment of property rights in which the activities in question are privatized. As an alternative (better) theory, TCE suggests understanding the public agency as a governance mode, which is well suited for some purposes (e.g. foreign affairs, the military, and prisons) and poorly suited for others. As an example, those in prisons are highly vulnerable to abuse, and the system is ripe for 'quality shading' (Hart *et al*., 1997) or more generally, what Williamson refers to as 'probity hazards', in which a high standard of integrity that includes professional excellence is required (1999a: 323). What to do? Williamson maintains that responsiveness in governance to probity hazards will be realized when there are (1) very low-powered incentives, (2) extensive administrative controls and procedures, and (3) a staff with considerable training, social conditioning, and security of employment. As between public and private, a public bureaucracy better realizes those attributes. Williamson concludes that, 'To denounce public agencies because they have lower-powered incentives, more rules and regulations, and greater security than are associated with a counterpart private bureau completely misses the point if those features have been *deliberately crafted* into the public bureau, thereby mitigating contractual hazards, albeit at a cost' (1999a: 318).

7. The revolution expands

By almost any measure, Williamson's strategy to create a new Camelot at Berkeley was a success. Berkeley became a magnet for scholars interested in the science of organization. Williamson IDS 270 course, which was really a speaker series, became one of the leading presentation forums for organization theory luminaries from across the social sciences including law, economics, strategic management, organizational behavior, anthropology, public policy, evolutionary biology, and many more. Long-term visitors from around the world walked Berkeley's halls engaging in conversations and research about organizations.

Students were among Williamson's most essential concerns in propelling the revolution as well as the primary beneficiaries of this new Camelot. His curriculum strategy manifested in a revision of the Business and Public Policy Ph.D. program at the Haas School of Business that focused on organizations and strategy. Nick Argyres, Peter Klein, Vai-Lam Mui, and Howard Shelanski were students already matriculated in the economics Ph.D. program before Olly arrived. They became the first Berkeley students for whom he served on their dissertation committees. Soon more students for whom he would serve on their dissertation committee arrived. In the fall of 1989, Business and Public Policy (BPP) Ph.D. students Emerson Tiller and Joanne Oxley matriculated. Brian Silverman arrived in 1990 followed the next year by Janet Bercovitz and Jackson Nickerson. John de Figueiredo, Bruce Heiman, Witold Henisz, Kyle Mayer, Barak Richman, and Tetsuo Wada followed. Williamson did not restrict his attention to BPP students as he advised others like Tim Johnston in marketing and Lyda Bigelow in organizational behavior.

Williamson's programmatic focus on BPP and strategy is not entirely surprising given his impact on the field; indeed, Williamson's (1999b) governance research has been extraordinarily influential in the strategic management field (Mahoney, 2005; Nickerson, 2010). Williamson also reveals a cautionary but open-minded assessment of the competence perspective (1999b: 1106):

> Given that both governance and competence are bounded rationality constructions and hold that organization matters, both share a lot of common ground. To be sure, there are differences. Governance is more microanalytic (the transaction is the basic unit of analysis) and adopts an economizing approach to assessing comparative economic organization, whereas competence is more composite (the routine is the unit of analysis?) and is more concerned with processes (especially learning) and the lessons for strategy. Healthy tensions are posed between them. Both are needed in our efforts to understand complex economic phenomena as we build towards a science of organization.

Indeed, joining governance and competence perspectives is in progress in the strategy field, as it contributes to the science of organization (Argyres *et al*., 2007; Henisz, 2016; Klein, 2008; Mahoney and Kor, 2015; Mowery *et al*., 1996; Nickerson and Zenger, 2004).

Individually and collectively, his Berkeley and Haas students, along with earlier students like Scott Masten (Ph.D. in Economics at the University of Pennsylvania, and currently Professor of Business Economics and Public Policy at the University of Michigan) achieved career success and had a sustained impact on the evolving science of organization.[13] For instance, as of January 8, 2021, *Google Scholar* citations across this faculty total 107,234 in which 11 of his students have achieved well above 3,000 citations each.

8. Nobel Prize: the gift of the goddess

Williamson experienced the anguish and joys of the Nobel Prize. Throughout the 2000s, he was considered in the running for the prestigious honor. In 2004, he told his Berkeley doctoral students that if he did not receive the honor within the next five years, he would not be chosen. On October 9, 2009, in the very early morning, he received 'The Call', as he termed it. Two days later Williamson, showing his characteristic sense of stewardship, met with then Haas School of Business Dean Rich Lyons to inform him that he and his wife wanted to donate a large portion of the Nobel Prize money to create the endowed Oliver E. and Dolores W. Williamson Chair of the Economics of Organizations.

Williamson (2010) in the *American Economic Review* titled 'Transaction Cost Economics: The Natural Progression', is a revised version of the lecture he delivered in Stockholm, Sweden, on December 8, 2009, when he, along with Elinor Ostrom, received the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel. In this article, Williamson emphasized that, 'governance is the overarching concept and transaction cost economics is the means by which to breathe operational content into governance and organization' (2010: 673).

In April of 2010, many of Williamson's students descended on his home bearing gifts of food and drink to celebrate the prize with him. Putting the merriment on hold for a few moments, they handed him a binder of thank you letters from all of his students written on their respective university letterhead. Silence befell him as he read through the letters. His ears and brow grew red and the bright glow from his face and eyes revealed the unmistakable reflection of Camelot.

9. The institutions of institutions

Williamson recognized that like Carnegie, the Camelot episode at Berkeley in pursuit of the science of organization also would come to an end. But, does the end of one episode foreclose the potential for future episodes? Some have maintained that Williamson's TCE has ascended into the pantheon of economics. With such an ascension, scholarship all too often cites the cannon but moves into other territory perceived to be more fertile for discovery. Yet, Olly once advised that TCE cuts a wide swath leaving many fruitful opportunities to be developed in a modest, slow, molecular, definitive way.

[13]No comprehensive list of Williamson's dissertation students is known. Search of Proquest's dissertation database revealed the following list of active faculty. Nick Argyres, Professor of Strategy at Washington University in St. Louis; Janet Bercovitz, Professor of Strategy and Entrepreneurship at University of Colorado at Boulder; Lyda Bigelow, Associate Professor of Entrepreneurship and Strategy at University of Utah; John de Figueiredo, Professor of Law, Strategy, and Economics at Duke University; Bruce Heiman, Professor of International Business at San Francisco State University; Witold Henisz, Professor of Management at University of Pennsylvania; Tim Johnston, Professor of Marketing at Murray State University; Peter Klein, Professor of Entrepreneurship at Baylor University; Kyle Mayer, Professor of Management and Organization at University of Southern California; Vai-Lam Mui, Associate Professor of Economics at Monash University in Australia; Jackson Nickerson, Professor of Organization and Strategy at Washington University in St. Louis; Joanne Oxley, Professor of Strategic Management at University of Toronto; Barak Richman, Professor of Law at Duke University; Howard Shelanski, Professor of Law at Georgetown University; Brian Silverman, Professor of Strategic Management at University of Toronto; Emerson Tiller, Professor of Law at Northwestern University; and Tetsuo Wada, Professor of International Business at Gakushuin University in Japan.

Perhaps because of its complexity, seeing and then seizing these opportunities is not obvious. It requires relentless intellectual inquiry and pursuit using comparative institutional analysis, which in some ways is reflective of the challenges Williamson confronted not only in developing his theories but also in legitimizing them against strong headwinds from orthodoxy. Will the revolution continue to advance now that Williamson has passed away? Will others create new Camelots in pursuit of the science of organizations?

Similar in message to Joseph Campbell's (1988) 'A Hero's Journey' is that of the poet Henry Wadsworth Longfellow's in 'A Psalm of Life' (see Gale, 2003), in which Williamson had the sense that 'art is long, and time is fleeting', and in the bivouac of life, he chose a hero's journey. Williamson leaves behind his footprints on the sands of time yet invites others to continue the revolution on its merits. His call resonates with taking heart in achieving, and pursuing a 'science of organization', which Chester Barnard (1938: 290) referenced. It is an interdisciplinary undertaking for the purpose of mitigating conflict, realizing gains via mutuality, and infusing order. This undertaking relies on a pragmatic methodology relying on the four precepts of developing theory that keeps it simple, gets it right, makes it plausible, and derives refutable implications to which data can be brought to bear (Williamson, 2009). Such is the worthy mission of governance scholarship and practice as the revolution marches on.

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