Venture Capital in Canada: Lessons for Building (or Restoring) National Wealth

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Canada has technical talent. Ottawa has a cluster of high-tech firms. Montreal has a cluster of biotech firms—and circus training too (thanks to Cirque du Soleil). In Vancouver, the company MDA has been at the center of a range of innovations, from Radarsat-2 and underground mining vehicles to airborne biological threat detectors and meteorological instruments for explorations on Mars.

But despite the country's considerable endowment of human capital, half of the Canadian executives responding to a (2006) Accenture survey cited "inability to retain talent" as the biggest threat to their firms. And in a 2007 survey by Deloitte & Touche of over 500 general partners of venture capital (VC) firms around the world, 40% of U.S. investors singled out Canada as having the least favorable treatment of investors of any country they had dealings with. The survey also noted the dismally low returns on Canadian VC investment.

These findings are all related. Without investors and the know-how and networks they bring with them, a country's ability to attract, develop, and retain top talent—business and managerial talent in particular—is significantly reduced. Even mediocre teams can perform well when led by superior talents (think about what happens in team sports). But without the presence of these "vital few," performance tends to be mediocre or worse.[1]

As we argue in this article, the key to building a successful venture capital industry and a promising economic future is to match talent with capital in such a way that all three parties—talent, capital providers, and the "matchmakers" who bring together talent and capital—are rewarded for superior performance and held accountable for failure. The committed participation of each of these three groups is required to attract and maintain the continuous financing of entrepreneurs, whether they operate outside or inside corporations.

Back to Basics: Matching Talent and Capital

To bring about prosperity, then, matchmakers must put together talented people with capital. And let's start with the role of capital. In most countries there are three main sources: (1) private savings, either domestic or foreign; (2) capital markets; and (3) government.[2] When capital markets are shut down, whether by decree (as under Communist regimes) or inadvertently (as happened during the recent crisis),[3] they become if not the only source of capital, then a vastly more important one. By looking at the companies and institutions involved in the matchmaking process *at each of the different stages* of development, we can get a clearer picture of what happens, from the bottom up, when governments become both major matchmakers and main sources of capital.

The Seed Stage: Financing Entrepreneurial Dreams

At the seed stage, people can start a business by using their own savings (or putting up their assets as collateral) or the savings of families and friends. Family and friends are the matchmakers.

The capital needs vary, with the average estimated to fall in the range of $100,000–$250,000. At this stage, entrepreneurs have no access to either capital markets or government agencies because they have no track record. (University degrees do not count since they are not a substitute for experience.) Family and friends know the potential entrepreneurs best—their discipline, ambition, and level of commitment—and are in the best position to hold them accountable.

The ability and willingness of families and friends to be early matchmakers depends in significant part on *tax rates on income and capital gains*. The higher the income tax rates (or the lower the brackets at which the higher rates come into effect), the smaller the savings and the ability of family and friends to accumulate such "risk capital."[4] The fact that even in the U.S., with the deepest capital markets in the world, 80% of new businesses either fail or no longer exist within five

* The original version of the paper was commissioned by Industry Canada to shed light on VC's performance in Canada. We are indebted to Stephen Hurwitz and Irving Ebert for many detailed discussions.

1. See Brenner (2002), Chapter 3. Full citations of all sources mentioned in the text or notes are provided at the end of the article.

2. See Brenner (2002), Chapter 1. That book discusses other sources, such as military occupation of other lands rich in resources, and criminal activity as well.

3. See Brenner (2009).

4. To be sure, Canadian marginal tax rates have come significantly from what they were in the '90s. But more could be done. The top combined (federal and provincial) income tax rate today ranges from about 40% in Alberta, to almost 50% in Quebec and Newfoundland. But if that current combined 40% marginal tax rate were to come into effect at, say, $100,000 instead of $60,000, and the combined rate between these two brackets is, say, 30%, then people who earn more than $100,000 a year could accumulate $4,000 more every year. In ten years, with the help of compounding (at, say, 5% a year), such people would have accumulated nearly $50,000 more.

to seven years of formation[5] means that providing seed capital is a risky business indeed. And because family and friends are generally in the best position to assess the risk of funding new entrepreneurs without track records, high income taxes that prevent families from accumulating savings, and high capital gains taxes that reduce expected returns, are the two main deterrents to financing budding entrepreneurs and enabling smaller companies to get started and grow.

One major theme of this article, then, is that the higher the taxes on income and capital gains, the fewer the trial-and-error experiments on which the future growth of most economies depend. But what if governments use money raised through taxes and borrowing to fund such experiments? Both theory and evidence suggest they are not likely to do it well. Part of the explanation has to do with information: Match-making bureaucrats are not likely to know much about the people seeking funding unless they happen to be relatives or acquaintances. And disbursing capital based on nepotism or tribalism is no one's idea of an effective allocation scheme. The other part of the explanation has to do with control, with what happens after the capital is committed, a subject we come to later.

The Start-up Stage: A Step Beyond Dreams

The start-up stage is the next step, when anywhere from $250,000 to $5 million may be required. The entrepreneur is now one step beyond the seed stage, and may have come up with a prototype or ways to market and sell a product or service. The main sources of capital available at this point are "business angels," government funds, and, in rare cases, foundation grants and venture capitalists specializing in the early stage.

"Business angels" are private investors with experience in corporate settings, or as entrepreneurs, or both. Along with their capital, they offer the advantages of "smart money." They are capable of vetting, and in some cases improving, the business plan the entrepreneur puts forward. They also evaluate his or her character: Does he listen to advice? How disciplined and determined is she? Can he delegate so that the business can grow? When "angels" take an interest in an entrepreneur, they bring to the table their networks of contacts along with their managerial, operating, and mentoring experience—and in many cases on a daily basis.

But the abundance of angels in an economy—and their willingness to invest money, time and effort—depends on a number of conditions. Income and capital gains taxes are important, but there are other critical factors as well.

Take the case of Israel, which, in spite of terrorism and relatively high taxes, is a clear venture capital success story. Until 1990, Israel received massive amounts of money from abroad for various non-profit purposes, but negligible amounts for private investment. In 1990, the largest owners of banks and companies were the government and the national trade union (the "Histadruth"). But the rising deficits and national debt, and the difficulty of absorbing a large influx of Russian immigrants after the fall of the Iron Curtain in 1989, created an economic crisis that led in short order to radical deregulation, reductions in taxes, and the privatization of state-owned companies.

Before 1990, Israel had no venture capitalists, and there were no Israeli equity offerings on U.S. stock exchanges. During the period 1990–1991 the total amount of venture capital raised in Israel was a meager $58 million. But by 1996, more venture capital (over $420 million) was flowing to Israel than to any other country except the U.S. And since then Israel's venture capital industry has grown like no other outside of Silicon Valley. In 2006, 402 Israeli high-tech companies raised over $1.6 billion—a more than 20% increase from the previous year (as compared to 8% growth in the U.S. during the same period, and 6% growth in the European market). That same year, moreover, Israel had 80 active VC funds with over $10 billion under management that was invested in more than 1,000 Israeli start-ups.[6]

The results of such activity are quite visible. With a population of just seven million, Israel now has the second largest number of high-tech start-ups (after the U.S.), and some 80% of the 3,000 Israeli companies that report doing R&D are now less than ten years old.[7] And foreign capital has powered much of this growth. IBM, Cisco, and Intel have all set up research centers in Israel. In May 2006, Warren Buffett provided his much-coveted seal of approval with his $4 billion acquisition of Israel's Iscar Metalworking Cos. And perhaps most impressive, by 2007 Israel became second only to the U.S. in the number of its companies (71) listed on the Nasdaq, having passed Canada.

There are at least two important aspects of the Israeli VC experiment that would be hard to replicate in most countries. First was the influx of a million Russian immigrants in the early 1990s, representing a 20% increase in the nation's population. Many of these immigrants were highly educated. More than 55% had post-secondary education, and more than half held academic and managerial positions in their former country: 15% were engineers and architects; 7% were physicians; 18% were technicians and other professionals; and 8% were managers.[8] By 1998, Israel had 140 scientists and engineers per 10,000 in its labor force, making it the world leader in these terms (followed by the U.S. with 80 and Germany with 55).

A second major contributor to the Israeli VC success story is the draft. Three-year army service is obligatory for Israeli men; and if they choose to study engineering or other special-

5. See GAO (2000), p. 19.
6. See http://www.finfacts.com/irelandbusinessnews/publish/article_10004428.shtml. For the latest statistics see http://www.iasplus.com/stats/nasdintl.pdf
7. http://www.start-ups.co.il/
8. Sharaby (2002).

ties before enlisting, they must serve for five years. This time ends up providing many people with the chance to develop discipline and perseverance and, in many cases, even find the team they want to start a business with. People get answers to questions such as: Who has leadership qualities? Managerial ones? Technical ones? Who can work well with others, and under stress? In the U.S., most future business careers start with undergraduate studies or an MBA program (where people hope to meet other smart, ambitious youngsters) and participation in team sports (a way of discovering personal traits). The talent-sorting process is accomplished later by headhunting firms and corporate HR departments.

But Israel is by no means the only case that demonstrates the benefits of deregulation and tax reductions in stimulating the flow of capital and talent. Consider the case of Ireland, which, until the financial crisis set in, was one of the star performers in the European Union. Much as the more recent business success of Israel can be tied to Russian immigrants, the rise of the "Celtic Tiger" had a lot to do with Polish "cubs." At its peak, Ireland had succeeded in attracting some 400,000 immigrants, mostly young Poles and other Eastern Europeans, many with entrepreneurial ambitions and skills.

Ireland, along with Britain and Sweden, allowed unrestricted migration to their labor markets from the ten European nations that joined the EU in 2004. But another part of the story was dramatic changes in Irish tax and fiscal policies. Like Israel in the early '90s, Ireland started to make major cuts in public spending in the late '80s; and by 1993, government non-interest spending had declined to 41% of GNP, down from a high of 55% in 1985. Income taxes were reduced in the late '80s; and, even more important, Ireland later cut its corporate tax rates to 12.5% at a time when the lowest tax rates in Europe averaged 30% and the U.S. rate was at 35%.

But such changes did not, of course, instantly transform local Irishmen into entrepreneurs and scientists. According to official statistics on Irish formal education, even in 2001 they were still at best mediocre. Compared to other OECD states that year, Ireland ranked 15th out of 30 in the number of people age 25–64 with degrees, and 14th out of 27 with research degrees. What turned the country around was the large-scale immigration that started in 1995. Immigration, together with Irish corporate tax policy, helped Ireland become one of the top three European nations in early-stage entrepreneurial activity—a position it enjoyed until the onset of the financial crisis.

The exceptional performance of the U.K. and Swedish economies in the years leading up to the financial crisis also reflected the inflow of ambitious young talent from Eastern European countries. While France and Germany banned people from the European Union's "junior members" until they gained full-member status, Ireland, the U.K., and Sweden welcomed them while in their "accession" status. Since 2004, 500,000 workers from Eastern Europe have registered with the British Home Office. According to a report issued in 2007, 98% of immigrants to the U.K. were employed, 80% were younger than 35, and none were eligible for the dole until they had worked at least a year.[9] To put these numbers in perspective, during the same time, the U.S., with roughly 300 million people (as compared to the U.K.'s 60 million), extended legal entry to 560,000 workers. For the U.K. such immigration flows represented a significant addition of much-needed talent.[10]

At the opposite end of the policy spectrum are countries that, like Canada, have used heavy taxation to establish *public-run* funds to finance start-up businesses—but with very little success. Some governments, while watching their entrepreneurial talent leave and their countries fall behind in new business creation, have experimented with various policies to fill the gap—and with many governments' access to very low borrowing rates, the idea looks appealing. But can bureaucrats be good VCs or "angels," and can they be held accountable?

The evidence from recent Canadian experience (which we review in the next section) suggests that the answer is no. As we pointed out earlier, whereas angel investment brings with it the experience of business founders who are often involved in start-ups on a daily basis, the people charged with allocating the capital of government funds are much less likely to offer effective monitoring and guidance.

First and Second Stages: Becoming a Business

This stage refers, somewhat arbitrarily, to investment in the $1–$5 million range (the "A Round"). It is the stage when companies begin manufacturing and shipping goods, are expected to offer 24/7 service, hire people in significant numbers, and build up inventories. At this stage, since management has now built up a track record, there are considerably more options for getting capital and attracting the interest of matchmakers. One possibility is venture capital funds. For companies pursuing R&D in biotech and life-sciences, the choices also include private placements, strategic and R&D partnerships, and licensing agreements with large pharmaceutical companies. Another possibility is to raise financing from vendors or leasing companies.

9. In a 2007 study, Iakova found that what she calls "the immigration shock" added significantly to UK growth. Also see Fitch (2007).

10. Especially since, according to Peter Seiderman (2007), the U.K.'s labor force has a pronounced deficit of skills. A recent government-commissioned study by Lord Sandy Leitch reported that a third of U.K. adults lack basic high-school levels of general aptitude, half lack any proficiency in numbers, and a seventh is functionally illiterate. Seiderman argued that, through its relaxed immigration policies, the U.K. and Sweden had been prescient in going after the "cream of the crop." See also "Our Country Needs You," *The Economist*, May 7, 2003, p. 50.

Some Historical Evidence on the Importance of Talent and Immigration

The economic miracle of 17th-century Europe took place not in Spain or Portugal, with their hoards of gold and silver, but in below-sea level Amsterdam and Holland, whose riches were created despite—and some have argued *because of*—its natural disadvantages.[11] The Dutch created the first European republic, one distinguished by religious tolerance (at a time when religious discrimination was the general practice) and enforcement of property rights. The openness of the new republic attracted to Amsterdam well-connected and highly skilled immigrants, merchants and moneymen, with Jews and Huguenots prominent among them. The city had the world's first stock market, a place where one might see not only French, Venetian, and Florentine traders, but Germans, Poles, Hungarians, Spanish, Russians, Turks, Armenians, and even Hindus. And they traded not only in stocks, but in contracts like Tulip futures that were the forerunners of today's sophisticated derivatives. In short there was "globalization" during the 17th century, even if nobody bothered to use the term.[12] And the Netherlands prospered not because the Dutch suddenly stopped catching herring and became scientists and bankers; the main impetus was the immigration of entrepreneurs denied opportunities elsewhere.

The histories of cities like Hamburg, Hong Kong, Singapore, and Taiwan all have much in common with Amsterdam's. In all these places, the state provided an umbrella of law and order, had relatively low taxes, and gave people a stake in what the business society was doing, attracting immigrants and entrepreneurs from around the world. Singapore, for example, arose from a small trading settlement by attracting enterprising Chinese, Malays, and Europeans. After the 17th century, Taiwan, Singapore and Hong Kong offered Chinese emigrants opportunities denied them by the Chinese mainland, which was dominated at first by warlords and a status-conscious bureaucracy and then, until about 1990, by a rigid Communist bureaucracy. Hong Kong benefited from waves of emigration from China, especially from the inflow of Shanghai merchants and financiers when Mao Zedong came to power in 1949. Emigrants from Shanghai started Hong Kong's textile and shipping industries, establishing a network of merchants, traders, moneymen, and manufacturers. And the estimated 50 million Chinese diaspora in Hong Kong, Taiwan and Singapore accounted initially for over half of the private capital flows to China.[13]

The recovery of West Germany after World War II miracle also fits this pattern. Though the conventional wisdom attributes the recovery mainly to the Marshall Plan,[14] this explanation neglects the important role of the 12 million or so young and well-trained German immigrants from Poland, Czechoslovakia and East Germany, which represented a roughly 15% addition to the population at the time. The West German miracle was less about foreign aid than the massive migration of skilled people, combined with significantly lower taxes and less restrictive regulations compared to those in places people were fleeing from.[15]

Hong Kong introduced an approximation of a flat marginal tax rate, with the top incomes taxed at 18%, a tax policy that has been adopted by many Eastern European countries. And the tax policies of Eastern Europe have in turn appeared to influence Austria and Germany, both of which have significantly reduced their marginal taxes. At the same time, countries that have not followed suit—notably Denmark—have suffered an outflow of talent. In August 2007, the Confederation of Danish Industries estimated that the Danish labor force had lost 19,000 young Danes, many to London, thanks in large part to a 63% marginal tax rate on incomes starting at about $70,000.[16]

11. See Brenner (1994, 2002).

12. Max Weber did not consider migratory patterns when he came up with his speculation that religion had much to do with Amsterdam's success. Although often cited, Weber's concept of a "Protestant work ethic" has remarkably little power to explain the prosperity of Amsterdam or any other trading cities or states. See Brenner (1994, 2002).

13. The number refers to 2002. See http://www.imf.org/external/np/tr/2002/tr020502.htm

14. The fact that the role of the Marshall Plan may be much smaller than generally believed can also be inferred from the fact that following World War I, aid and loans to Europe in 1919 were estimated at about 5% of its GNP—a substantial amount, but no miracles then. A more compelling explanation is that the world moved toward lowered tariffs after World War II, which did not happen after World War I. And that in turn suggests that the post-WW II miracles should be linked to tariff reductions rather than foreign aid. See Brenner (1998, 2002).

15. At the start of 1948 in West Germany, marginal income taxes of 50% were levied on incomes of $600 or more, with the marginal rate rising to a confiscatory 95% for $15,000. By the end of 1948, a revision of the tax code meant that the 50% rate now applied to incomes over $2,250, and were effectively lower because of many newly allowed deductions for savings and investments. By 1955, the top rate was reduced to 63% for incomes over $250,000, and the 50% bracket did not kick in until $42,000.

16. Here is the reaction of a self-employed software engineer who first moved to Qatar and now is in Frankfurt: "When you are at 63% [marginal] tax rate, you do not look forward to the evaluation with the boss to get a raise. You look forward for more vacation or a training course in the tropics – something that you can get the full benefit of." As quoted in the *New York Times*, December 26, 2007 in Dougherty, C., "Denmark Feels the Pinch of Young Workers Flee to Lands of Lower Taxes."

In Canada, where "risk capital" has proven to be very scarce, there is also what might be called "the public option." Since 1980, a government fund run by the Labour-Sponsored Venture Capital Corporation (LSVCC) has been the primary government support mechanism for venture capital, having contributed an estimated $3 billion to a number of government established and managed "labour sponsored investment funds" (LSIFs).

But even with their significant tax advantages, the returns of these funds have been disappointing. A 2004 study by Cumming and MacIntosh reported that their returns have been less than those on 30-day U.S. Treasury bills.[17] The rationale for creating these funds was to expand the funding of small tech companies, and also to encourage "blue-collar ownership" of small- and mid-size companies. But the latter, predictably, has not happened. As reported by Vaillancourt (1997), although the funds must be sponsored by labor unions, the investors in LSIFs have been almost entirely white-collar workers.

One reason the returns on LSIFs have been so disappointing is lack of managerial attention and oversight. The investment managers of the public funds have been responsible for an average of 6.5 companies, as compared to 2.5 companies for managers of independent limited partnership funds.[18] At such early stages of development, VCs have to do a considerable amount of handholding and stay on top of the companies in the fund. In addition to spreading their funds over almost three times as many companies as private VCs, the public funds are also likely to be less successful in choosing good business plans. In venture capital, spreading the money over a larger number of start-ups, while lacking the capability and experience to do effective due diligence on each, is a prescription for failure.

And so is lack of experience in monitoring, mentoring, and, where necessary, firing the operating managers of VC-funded companies. In a recent study called "Should Investors Bet on the Jockey or the Horse?," Steve Kaplan and two of his University of Chicago colleagues looked at the evolution of 50 companies that started with an initial business plan, raised VC financing, and eventually went public in an IPO. Kaplan et al. reported that, although the companies remained in the business lines they started with, the management turnover at these companies was strikingly high. Their conclusion was that making effective choices of business plans at the start (what they refer to as "choosing the horse") is more important than the initial bet on management ("the jockey"). The implication here is that if a management team is failing to execute a good business plan, experienced VCs will use their networks to bring in a new team to turn the business around.

In view of the dismal returns of the ventures funded by LSVCC, the best option for Canadian policy makers may well be to end the subsidies from Canadian taxpayers, shut down the funds, and then reduce tax rates (capital gains taxes in particular) and eliminate the various tax credits that now complicate the tax code and corporate investment priorities. The expected results of such a policy change are greater private accumulation of risk capital and stronger incentives to make the best possible use of it. Such steps would help to match capital and talent at all levels. And the talents and skills developed through this process are the kinds that are required by any economy to grow companies and create jobs.

"B and C Rounds": Growing a Business and Grooming Talent

Finance vocabulary distinguishes between the "B Round" and "C Round," the first referring to investments between $5 to $10 million, and the second to $10 to $25 million. These sums are invested in companies with a track record and some degree of success. The money goes for investment in plant expansion, marketing, product improvement and working capital, either to sustain growth in the company or provide the "leap forward" to bigger things.

In Canada, the "C" round generally involves U.S. partners. But the U.S. partners tend to be brought in only after the company has proved itself to a local VC, and with the Canadian firm acting as the lead investor. This pattern can be understood in terms of the matchmaking metaphor that we used earlier. The local VCs are best acquainted with the management team, and with the local business, fiscal, and regulatory environment. And in large part to avoid putting themselves at an informational disadvantage, many VC funds voluntarily restrict themselves from investing in any company more than two hours by plane from where the partners are located.[19]

The availability of capital for both B and C rounds in Canada is quite limited, which should not come as a surprise, given the recent performance of Canadian VC. The ten-year average return of private Canadian funds for the period 1995-2005 was 2.5%, as compared to 20.7% for U.S. funds. And no doubt reflecting this performance, the total amount of VC raised in Canada actually fell significantly in 2006, indeed by over 25%. (As noted earlier, 2006 was generally a good year for VC fund raising, with U.S. venture capital growing by 8% and Israeli VC by over 20%.)

Here are some other published statistics on the VC industry that reflect the "capital gap" in Canada:

17. See Cumming (2007), pp. 4-5.

18. See Cumming (2006)

19. This is one reason that comparisons of the number of Canadian and European "transnational" companies make little sense. In most of Europe, if people drive one hour in any direction, they will find themselves in a different country, many with relatively small populations. In Canada, with most of its population living within about one hour drive from the U.S. border—but at least seven hours from Europe—most of the required VC link should be North-South. If it is not, then taxes and regulations must be at fault—as we argue here.

• In 2007, according to Thomson Financial, almost $30 billion of venture capital was invested in ventures in the U.S., as compared to just over $2 billion (Canadian dollars) in Canadian ventures. Even adjusting for Canada's smaller population, and with the dollar roughly at parity, the amount of capital received by Canadian ventures was about one fourth what one might expect.

• Thomson Financial also reported that the amount of funds flowing to Canada's life science sector was $632 million (Canadian), as compared to $9.4 billion in the U.S.[20]

• In 2006, Canadian companies that had completed early- and later-stage financings raised an average of $4.2 million, as compared to $10.1 million for comparable U.S. companies.[21]

Why are the VC returns and levels of capital in Canada so low, given the country's abundance of "knowledge workers" and other advantages? For example, foreigners routinely rank Canadian cities high in terms of standard of living. And Canadian governments are spending significant sums, directly and indirectly, on what they call "R&D" and "centers of excellence." Why do so many of their best business talents leave, and what keeps them from coming back? After all, Vancouver is close to Seattle and Silicon Valley. And Ottawa and Montreal are just one or two hours away from New York, Boston and Chicago.[22]

The answers lie in some of the arguments we made earlier, and in others we are about to make. The Canadian combination of VC subsidies and regulations (which we describe next) has resulted in fewer "critical masses" of talented business teams that VCs can bet on to grow Canadian start-ups. With less risk capital and seed money, and the emigration of many ambitious young Canadians to the U.S. (an estimated 200,000 during the 1990s), the gap is not surprising.[23]

In 2005, the Canadian Foundation for Innovation (CFI) reported that in Canada, the amount of license income from each $1 million of research spending increased from $10,000 in 1997 to $20,000 in 2004. By comparison, in the U.S. during the same period, income per million of spending jumped from $30,000 to $60,000. The report attributed these results to "the lack of *private sector receptor capacity* in Canada." Although the report does not define "receptor capacity" or identify what factors contribute to it, the main implication is pretty clear: R&D spending remains a cost, and not an asset, unless and until something comes out of it that people want to use and are willing to pay for. The facts reported above suggest that Ottawa is very generous with taxpayers' money for funding "R&D infrastructure." But even if good ideas come out of this funding, they may never be exploited within Canada. This happens because taxes and regulations prevent the accumulation of risk capital and the creation of a sufficient "private receptor" experimentation capacity for commercializing these innovations.

To provide just one example of the importance of early-stage "private sector receptors," take the case of David Huber, an engineer working for General Instruments who came up with an invention in the field of fiber optics. For years he tried to promote development of the concept within his company but without success. With the encouragement of an angel who gave him a few hundred thousand dollars, he left General Instruments and later established a company that went public in an IPO in 1997. When that happened Huber's stake was valued at $200 million. Without this angel, Huber may well have spent the rest of his career as a corporate engineer, and someone else would have created the fiber optics industry.

Which bring us back to a question we raised before: If some kinds of business talents may be lacking, why couldn't Canada, with all its technical talent and sound infrastructure, *attract* such people from the rest of the world?

"Critical Masses of Talent": More Evidence

According to a 2007 report by the U.S. Small Business Administration, companies with fewer than 20 employees account for half of non-farm GDP, and have created 60–80% of the new jobs in the past decade.[24] But who has been responsible for the creation of these smaller, growing businesses?

In a 1999 study, Anna Lee Saxenian reported that Chinese and Indian engineers were at the helm of 24% of the technology companies started in Silicon Valley between 1980 and 1998. In a 2007 update of that study, Wadhwa, Saxenian and others found that, in over 25% of the high-tech and engineering companies started between 1995 and 2005, at least one key founder was foreign-born. What's more, in 2005 these immigrant-founded companies produced $52 billion in sales and employed 450,000 people.[25] In 2006, immigrants were responsible for 24.2% of the international patent applications filed in the U.S. (with Chinese entrepreneurs accounting for

20. Mr. Gavin Penny from Thomson Financial was kind enough to give me the numbers in these two paragraphs.

21. See Hurwitz (2007b).

22. Although Montreal advertises itself as having among the lowest business operating costs in North America and as having a cluster of biotech and life-sciences firms and four universities, local ventures received only $400 million in VC funds in 2006. By contrast, Boston, with roughly the same population, and a one-hour flight from Montreal, got more than $3 billion. Also, since its creation in 1997, the Canada Foundation for Innovation (CFI) has committed $3.8 billion in support of 5,585 projects at 128 research institutions (Montreal's universities among them) in 64 municipalities. Where does the talent developed and the research done in these programs show up? It does not. It seems important to answer this question, since governments now put so much emphasis on spending more on "education."

23. What is surprising are the many U.S. obstacles to importing ready-made human capital from the rest of the world, and the political discourse that fails to distinguish between the effects of low-skilled and high-skilled immigration.

24. Such job growth at small businesses, Hess (2007) notes, is a "direct outgrowth of what is happening in corporate America"—corporate managerial and technical talent flowing from larger corporations and to smaller companies.

25. Of the immigrant-founded companies, 26% had Indian founders; 7% British and Chinese; Taiwan, 6%, Japanese and German, each with 5%, Israel, 4%, Canada 3% and Iran 2.5%. In Massachusetts, the single largest founding groups are Israelis, at 17%. Indian entrepreneurs dominate in New Jersey, with 47% of all immigrant-founded start-ups.

the most, followed by Indians, even though immigrants from China and India constitute less than 1% of the U.S population).

The presence of extraordinary talents in sports, and in arts and sciences as well, is widely recognized, as is their ability to raise the performance of decent teams.[26] And what holds in these fields also holds in business. Consider, for example, what Guy Laliberté, the founder of Cirque du Soleil (and a former street-performing fire-eater), did for Montreal. He not only reinvigorated a dying enterprise called "the circus," but through the success of his global ventures has made Montreal into a global training center for circus performers. Also as a result of his efforts, Las Vegas has become the center of this re-invented art form, running five shows at the major hotels (out of 18 running around the world).

Or consider the recent ups and downs of Apple. When the company was "between Jobs," top management saw the company as "in the computer and software business," with Microsoft and Dell as its main competitors. There is little doubt that the company's scientists and engineers at that time were very talented. But they were hired solely for their technical expertise in those two areas. The design and management of digital libraries, be it music, literature or video, was not envisioned as part of the company's future. Apple's stock was trading in the 20s, and many had written off the company as a major force. The return of Steve Jobs changed that, as did the focus of Apple's technical staff, most of whom stayed with the company. The lesson here, then, is that a talented group that performs decently under a competent leader may well perform brilliantly under a brilliant one.

Let's take another well-known company: Walt Disney. The company's market value did not change during the 20 years following the death of its founder in 1964. Then in 1984, the triumvirate of Michael Eisner, David Katzenberg and Frank Wells took over. Within a few years, they had increased the company's market value from roughly $2 billion to $22 billion. And just as Apple employed many bright computer engineers, Disney employed many accomplished graphic artists. But having such talents rarely leads to commercial success without the vision of entrepreneurs and their ability to raise capital and guide their organizations.

Or consider Coca-Cola. Roberto Goizueta was a penniless but well-educated Cuban immigrant when he arrived in the U.S. When he became the CEO of the company in 1981, Coca-Cola, though having achieved a global presence, was floundering and had a market value of only $4 billion. The company had diversified into a mix of unrelated businesses, from shrimp to wine. Goizueta turned the company around by refocusing it on its trademarks and soft drinks, selling everything else, and redesigning his organization to produce high returns on capital.[27] When Goizueta died, the company was valued at $150 billion.

But now let's consider a somewhat more complicated case. When Deborah Hopkins announced that she was leaving her job as CFO of Boeing to become CFO of Lucent, the stocks of both companies *dropped* by roughly $2 on the announcement, wiping out billions in market value. The most plausible interpretation of these market responses is that while Ms. Hopkins was perceived by investors as a significant contributor to Boeing's value, she was seen as a mismatch for Lucent. And investors' perceptions were borne out by future events. While widely regarded as a highly competent CFO for a manufacturing company, Ms. Hopkins apparently proved less effective at a company in the R&D stage—at any rate, she left Lucent a year after taking the job.

As one more sign of the importance the market attaches to corporate talent, and of its penchant for correcting perceived mismatches, consider what happened when, in October 1996, Robert Allen, then CEO of AT&T, named John Walter, former chairman of R.R. Donnelley & Sons, as his likely successor. On the day of the announcement, AT&T's stock lost over 10% of its value, representing a shareholder loss of $6.4 billion. When it was announced two months later that the company's board would not appoint Walter as chief executive, AT&T's shares rose by some 4%, recovering much of the ground they had lost.

How NOT to Become Global 101

From this larger picture of how capital markets attempt to influence the matching of individual talents with companies, let's now go back to some of the micro details we started with, and look at some of the obstacles that prevent Canadian (and other) financial markets from becoming deeper. Much of our focus will be on esoteric rules and regulations whose origins, in many cases, are lost in the mists of time. Though buried in thousands of pages of documents, such regulations can act as serious deterrents to the financing of entrepreneurial companies.

Let's start with the Canada-United States Tax Treaty, which provides that investors from both countries, when investing in the other, will be taxed on their investment gains only once, and in the investor's home country. The U.S. tax authorities recognize a Canadian VC investor's exemption from double taxation. There is no paper work, no delay, and no U.S. tax. The Canadian VC is immediately free to take his sale proceeds back to Canada.

In sharp contrast, American VCs wanting to invest in Canada face a variety of regulations and administrative hassles stemming from Section 116 of the Canadian Income Tax code. For example, when a U.S. VC invests in a

26. One of the most important differences between sports and business is that whereas the "genetic accidents" of athletic skills and unusual hand-eye-feet coordination, are visible endowments, business and financial talents are less easy to detect.

27. Coca-Cola under Goizueta was one of the first U.S. companies to adopt an EVA performance evaluation and reward system, an approach that was later imitated by many others and widely credited with improving corporate efficiency in using capital.

private Canadian company (or a U.S. institutional investor in a Canadian VC fund) and eventually sells his shares, the investor must apply for a clearance certificate to one of the 45 Canadian government offices that grant it. To receive this certificate, *every* partner (both general *and* limited partners) in the U.S. VC firm must prove that he or she is a resident of a country that has a treaty with Canada that has a double taxation avoidance clause. Some U.S. VC firms have well over 100 LPs, and a VC wanting to sell out of a Canadian venture would have to get a signature from every partner, and for every single stock transaction.

What's more, once they get their Section 116 certificates, all the LPs are required to file Canadian tax returns. But for many U.S. VC firms, there is a catch. Since the charters of many U.S. VCs prohibit investments in foreign jurisdictions where LPs are required to file tax returns, many U.S. firms *cannot even consider* investing in Canada.

Stephen Hurwitz, head of the North American Venture Association, has described the process U.S. VCs have to go through as follows:

Inconsistent practices and procedures in these 45 Canadian offices, wholly unpredictable in their timing and requirements, often lead to protracted waits of up to four to eight months for U.S. VCs to obtain clearance certificates. Further, 25% of the gross sale proceeds [not profits] must be withheld by the buyer of the VC-backed company until the clearance certificate is granted. When those proceeds are in the form of stock of a public company that is listed on an exchange and the stock declines in value during the long wait for tax clearance, it can cost U.S. VC investors millions of dollars.[28]

As a result of such restrictions and paperwork, many U.S. VCs just look elsewhere. Or they propose that Canadian entrepreneurs move to the U.S. and expand their businesses there.

It's true there are ways to circumvent Section 116, such as registering holding companies in Delaware, Luxembourg, or Barbados. But the process is not without costs. The Delaware-related legal costs for reorganizing a Canadian company into a U.S. holding company with a Canadian subsidiary amount to roughly $400,000, which for, say, a $4 million dollar investment, would amount to a 10% "tax." And although island-based corporate structures may be initially cheaper, the attraction of lower costs is offset by the greater inclination of tax authorities to audit such legal entities—especially in 2010, when all governments are desperate for funds.

For many Canadian entrepreneurs, then, the most straightforward solution to this problem has been to move their businesses to the U.S, and as soon as they are large enough to attract cross-border interest. As a result of such decisions, Canada loses talent, fails to increase the performance of those who stay in Canada, and, somewhat ironically, ends up losing tax revenues it might otherwise have had.

Final Rounds and Overcoming the "Canadian Control" Obstacle

Canadian VCs routinely seek out U.S. partners when they see their companies ready to move beyond the stage of R&D and initial commercialization, preparing them for an IPO or an acquisition. But if the U.S. investment is large enough, a company's "Canadian Control" status is threatened, which can have a number of negative financial consequences for Canadian investors, including the loss of any government subsidies.

Once again, this obstacle can be overcome with legal and financial maneuvers. U.S. VCs can set up a Delaware corporation using convertible preferred stock that gives them most of the rights they would receive if investing in a U.S.-based company, while maintaining the fiction of Canadian control. But these arrangements do not come cheap.[29]

Moreover, it's worth recalling that the costs of such taxes and regulations are not really borne by the legal entities on which the government appears to be imposing them. In other words, such costs are not effectively paid by foreign investors, or by any entity with the mobility to avoid them. The effective burden falls instead on the relatively immobile—on those Canadian citizens and taxpayers with limited ability or inclination to move elsewhere.

Take the case just mentioned in which a Canadian firm remains a "Canadian Corporation," but effective control is shifted to a U.S. VC by creating a Delaware structure. In this case, the costs of the Canadian "control" requirement are effectively borne by the Canadian company, which must pay to put up the Delaware structure. And this in turn begs the question: Who in this legal entity called a "Canadian Corporation" is really bearing the cost of such taxes and regulations, and who benefits from the subsidies provided by Canadian taxpayers?

The net effect of these complex arrangements is that instead of funding R&D projects, part of the tax credits and grants supplied by the Canadian government (and thus Canadian taxpayers) ends up paying Delaware legal fees, which amount to 2–3% of a deal's value. This means that on

28. Stephen Hurwitz, *Journal of Venture Capital* (2007). In addition, the U.S. investors must apply weeks or months in advance of the proposed sale of stock. Ruffolo et al. (2007) makes similar observations and concludes that requiring foreigners to file tax returns when they owe no taxes, creates hundreds of pages of unnecessary paperwork, and is a barrier for cross border transactions.

29. And other tax laws affecting U.S. investors could further complicate the structure. Hurwitz and Marett (2007), for example, note the limitations of tax-free rollovers. Since VCs and investors on both sides of the border take into account these tax laws when they invest in a Canadian company, the deal is adjusted to limit the effects of these constraints. While the U.S. investors get the preferred stock to accommodate the Canadian investors, the Canadian investors get exchangeable shares that accommodate the U.S. investors upon exit by either party. Meanwhile both parties continue to have access to benefits provided by the Canadian government (those offered to companies fitting the "Canadian Control" definition.

a $20 million deal, the parties incur $400,000 to $600,000 in fees, an amount that could otherwise have been used to fund one or two start-ups. In other words, part of the tax money that government matchmakers intended to be spent on R&D ends up rewarding lawyers and accountants, many of them in the U.S.

How NOT to Become Global 102

In the past few years, both the IMF and OECD have produced studies that have repeated recommendations that were made 16 years ago by the Monitor Group.[30] Economists from these organizations have suggested that Canada's ability to compete in a global economy is reduced by its significant barriers to foreign investment, particularly in industries such as transportation, utilities, broadcasting, and telecommunication.

In addition to the obstacles on foreign investors already mentioned, there are others imposed by the Investment Canada Act ("ICA"). The main problem with the Act is the requirement that, to obtain approval for investments, foreign investors must demonstrate the "net benefits" of such investments for Canadian citizens. In cases not involving national security or other "sensitive sectors," the ICA requires foreign investors to go through a long and time-consuming administrative procedure. And to obtain a favorable "net benefit ruling," the foreign investor must make a number of legally binding commitments to the Canadian Minister of Finance, including commitments to levels of production, employment and capital expenditures in Canada.[31]

What are the effects of these requirements? While the Canadian Bar claims to be unaware of any potential transactions (outside the "cultural" sector) that have been blocked by these provisions of the ICA, it concedes the possibility that the ICA discourages "foreign bidders in auction settings." But the reality is that the ICA does a great deal of damage to the ability of Canadian companies to retain and attract talent. First of all, when faced with such barriers and costs, most foreign investors with options to invest anywhere in the world today do not even consider Canada. Even if they decide to invest, foreign investors take into account these constraints and the associated costs by offering a lower price for the company to start with. And by reducing the purchase prices paid by foreign investors for Canadian companies, the ICA reduces the value of all Canadian corporate assets and the amount of capital available for corporate reinvestment. And by so doing, the ICA limits the ability of Canadian companies to grow, attract outside talent, and provide career opportunities within the firm.[32]

Here's a recent deal that illustrates what the ICA requirements mean to a potential foreign investor. In January 2008, Federal Public Works Minister Michael Fortier and Industry Minister Jim Prentice announced that U.S. aerospace giant Boeing Co. had awarded contracts worth more than $420 million to companies in Quebec. Such contracts were linked to the Canadian government's 2007 order to purchase four of Boeing's C-17 Globemaster 3 aircraft. Under the Canadian Industrial and Regional Benefits Policy that is coordinated by Industry Canada, all major government defense purchases require that the prime contractor match the government's spending dollar for dollar by investing in the Canadian economy.

So far, Boeing has announced only two-thirds of its obligations. In addition to the $420 million worth of investments in Quebec, the company has announced its intent to spend $166 million in Ontario and $157 million in the Western provinces. The company has also agreed to a collateral agreement that provides further industry benefits worth $750 million over 20 years in return for in-service support of the C-17 fleet.[33]

To be sure, such defense contracts are negotiated with governments and represent a special category, one where government involvement in the negotiations is understandable. But to the extent such commitments were made not voluntarily but in response to ICA or other directives, Boeing almost certainly factored in the net costs associated with such "required" investments when pricing the contracts. And unless Boeing views these contracts as a "loss leader" to be compensated by future, higher-priced contracts from the Canadian government, the Canadian taxpayers are likely to be net losers in this contracting process.

In addition to the required commitments by foreign acquirers, the ICA also discourages foreign bidders in auction settings by requiring successful (non-Canadian) bidders to obtain ministerial approval before closing. Even if such approval is not in doubt, it can take time; and a Canadian seller may choose a lower local bid because of concerns about timing. In either event, the Canadian company would be sold at a lower price.

30. A study that was commissioned by then Minister of International Trade, Michael Wilson, and has since been gathering dust on some shelf.

31. In the words of the Canadian Bar Association (2008): "The Minister typically requires foreign investors to provide legally enforceable commitments or "undertakings." These undertakings have a term of three to five years and set forth annual benchmarks and expenditure targets with respect to employment levels, production and manufacturing activity, exports; research and development and Capex; technological, product or service innovation; and the level of Canadian participation in senior management." But, as Kilby (2008) notes, the fact that there would be a major flow of capital into Canada, and that the purchase price would represent at a premium to the historical value of the company, is *not* counted in assessing "net benefit."

32. The effect will not be reflected in lower returns or profits to foreign buyers, but in lower wages—especially for the lesser skilled—and lower costs for real estate. The burden of taxes is always imposed on the relatively less mobile. That's why so many studies publicizing Canada's low housing costs are seriously misleading. Residential costs will be high where people can expect to make more after-tax money.

33. These contracts involve flight-simulator firm CAE Inc., Bombardier Inc., training system specialist Eedo, and several others. In addition, Boeing has teamed up with RTI International Metals and invested in the RTI Claro facility in Montreal to support the $346 million worth of contract work that RTI Claro will perform for Boeing Commercial in Quebec.

Finally, besides discouraging foreign acquirers, such constraints also reduce Canadian companies' access to international capital markets. And the net effect of reduced access to capital is lower corporate values. It also means lower prices for less mobile assets, including employees and real estate, and less tax revenue available for maintaining local infrastructure, roads and schools.

Taxing Risk Capital

When societies are intent on encouraging innovation (and spend trillions on education and health infrastructure to build and sustain human capital), they must focus on two seemingly contradictory goals. One is to hold out incentives for people to specialize; the second is to provide incentives for people to adapt to change—a function performed by financial markets.

Innovation means departure from traditional ways of doing things, whether in the arts, science, or business. It thus tends to be the result of extensive—and in most cases, expensive—trial and error. Flexibility is needed to pursue innovation, and also to make use of innovations and adapt to them. At the same time, to do something well, whether manufacturing cars or computers, or writing code, people must narrow their focus and specialize. Creativity is nice, but successful innovation generally requires painstaking attention to detail as well.

Manufacturing companies, for example, rely heavily on specialization for efficiencies. At the same time, however, it is the role of capital markets to ensure that companies are pursuing the most valuable kinds of specialization—those that preserve enough flexibility to keep companies from digging themselves deeper into specialized holes. There is no point in improving music and DVD-selling retail chains when people shift to downloading.

Countries that encourage the acquisition of specialized knowledge but, perhaps unknowingly, discourage the feedback that would come from well-functioning financial markets at all levels tend to have less vibrant economies and lower standards of living. High tax rates, both on income and capital gains, discourage the formation of deep pools of risk capital and so act as a deterrent to investments. At the same time, high capital gains taxes, by discouraging the sale of assets, slow down decisions by companies to change course. Innovation depends on the willingness of matchmakers to move capital and people from yesterday's ways to those of the future. This in turn requires mobility of capital, which is encouraged when investors have incentives to *switch* money from one enterprise to another. But to the extent such switches are taxed—whether through capital gains or rollover taxes—there is less of an incentive to shift resources out of an older enterprise and into a new one.

Higher capital gains tax rates also discourage capital formation in a number of other ways. In a world where capital can readily cross borders, the expected after-tax returns on capital must rise to internationally competitive levels to attract private capital from even domestic sources. This means that private capital will become relatively scarce in higher-taxed countries—scarce enough to allow the after-tax returns to rise to competitive levels. And the effect of capital scarcity is not only a shortage of entrepreneurial talent, but also, as we saw earlier, a shift in the effective burden of taxation to less mobile, lower-skilled employees. Consistent with this argument, Mathur and Hassett's 2006 study of 72 countries over a 22-year period shows that higher capital gains and corporate taxes are associated with lower wages in manufacturing, especially in cases where neighboring countries have lower-tax policies.[34]

But what about the case of *corporate* income taxes? Who effectively bears those costs? While higher income taxes prevent the accumulation of risk capital, and higher capital gains taxes keep capital from seeking new uses, higher corporate income taxes also have the *direct* effect of lowering wages of the less-skilled workers, who again are typically the least mobile. If companies and investors can deploy capital in countries with lower corporate taxes, they will pay a lower price for a company in the higher-taxed jurisdiction. In such a case, neither the companies nor their investors end up paying the corporate tax: either consumers pay it in the form of higher prices (if they can't escape it by forgoing the product or service) or employees pay in the form of lower wages.[35]

Consistent with these arguments, many developing countries have made significant reductions in capital gains and corporate tax rates in recent years. At the start of 2007, 11 countries that had emerged from behind the Iron Curtain had flat rate taxes of 25% or lower. Kuwait recently announced its decision to reduce its corporate tax on foreign companies from 55% to 15% (after a year in which it attracted less than $300 million in foreign investment, as compared to $18 billion by lower-taxed Saudi Arabia). And since 2005, 26 *developed* countries have reduced either personal or corporate taxes.

34. Paradoxically, one important reason for the negative effects of higher capital gains taxes is that most people almost never have to pay them. Taxpayers can either avoid investing in assets subject to this tax to start with, or they can defer the sale of assets they already own. In the case of the U.S., for example, Leonard Burman of the Brookings Institution found that at least half of capital gains are held until death or donated to charity, thereby escaping the capital gains tax during one's lifetime. Leonard Burman, *Labyrinth of Capital Gains Tax Policy* (1999), p. 51. In this sense, high capital gains taxes can actually be seen as contributing to the building of *dynasties*. Another common way of avoiding capital gains taxes is emigration, voting with one's feet.

35. And since 1980, OECD countries have reduced average personal income taxes from 64% to 40% and cut average corporate taxes by 20%. Mitchell (2007) and *Wall Street Journal* editorial, "A Supply-Side World," January 7, 2007.

Closing Thoughts: Adjusting to a More Mobile World

For today's policy makers, the issue is not about reaching some particular targeted, or revenue-maximizing, tax rates. The aim should instead be to maintain rates that are low enough to ensure sufficient levels of risk capital to keep the country's entrepreneurial talent from moving out. Canada failed to do that during the 1990s, when part of its younger entrepreneurial talent moved to the U.S.

On the plus side, Canada's more conservative financial system and ability to avoid the U.S. blunders, private as well as public, have enabled it to stop the outflow of talent, at least for the time being. But perhaps not for long. With the restoration of the U.S. banks and protection of the payment processing system now under way,[36] the top priority for Canadian policy makers should be to create the conditions necessary to attract and retain top talent—and to build risk capital.

As for the U.S., which continues to have the deepest and most "democratized" capital markets in the world, the greatest risk at the moment is the temptation of politicians and policy makers to extend the current government funding programs and continue the government's present role as a dominant player in capital markets. What the U.S. needs most is to ensure the availability of financing for the next generation of entrepreneurs and small businesses.

This article describes the conditions most likely to encourage the activity of venture capitalists and other important sources of new-business financing. To develop, attract, and retain such investors, countries should adopt policies designed to promote a "virtuous cycle" of talent creation—one in which successful entrepreneurs and their ventures in turn create a healthy risk capital market for the next round of entrepreneurs. This cycle is undermined in many countries by fiscal and regulatory policies that discourage the formation of one of the four key ingredients in producing promising, and ultimately profitable, new businesses: (1) capital, (2) talent, (3) matchmakers, and (4) a financial system of rewards and accountability on which the first three depend.

What is the role of government finance in promoting this cycle? Given the mobility of talent and capital, how much should governments spend and on what? Until the fall of the Berlin Wall in 1989, policy makers in Western democracies had a relatively easy job, with so many foreign countries ruled by corrupt and dictatorial regimes, whether of a Communist or Latin American or African variety. As a result, North America had little trouble attracting their top talent and capital. But even though that world is disappearing, policy makers have been slow to adjust.

One possible reason for this glacial adjustment process is the outdated language of orthodox "Keynesian macroeconomics"—often mistakenly attributed to Keynes himself—that continues to dominate today's political discourse. Economists and politicians continue to talk about "job creation," but with almost no concern about or interest in the kinds of jobs being created. Politicians pay lip service to reviving the "entrepreneurial spirit," but rarely acknowledge the role of government taxes and regulations in suppressing that spirit, by preventing the build-up of risk capital.[37] With greater access to risk capital, entrepreneurs would experiment with innovative water, grid, and highway management and pricing systems, and new models for schools and preventive care. The opportunities are everywhere if people only had the access to risk capital, and the incentives, to go after them.

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36. In our view, the best way for U.S. policymakers to guarantee the reliability of its payment processing system is to separate and insulate both it and U.S. short-term loan markets from risks taken in long-term capital markets.

37. See Brenner (1985, 1994). The theoretical foundations of the arguments upon which this paper is based can be seen in Brenner (1983, 2002, 2008), which deals with entrepreneurship, the distinction between risks and uncertainty, shows why the approach of risk-aversion is inaccurate, what risk-taking and financing risk-taking implies, and solving the much debated issue concerning the links between uncertainty and profits, and much else, also trying to falsify the arguments in a variety of ways.

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