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### LESSONS FROM THE NEW ZEALAND SEED FUND: NEW ZEALAND'S VENTURE CAPITAL PIONEERS

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**ABSTRACT**

Venture capital is highly correlated with economic growth and innovation, and is an area of significant interest to governments worldwide. New Zealand currently has a fledgling venture capital market, which largely stems from government's involvement in the sector. Its small size and limited history are reflected in the scarcity of local literature, and industry is looking at ways to improve access to information on the market in order to increase interest and investment in it. This paper documents and evaluates one of New Zealand's first venture capital funds – the New Zealand Seed Fund – and uses its experience to contribute to local literature surrounding New Zealand's venture capital market. It uses data gathered from the research process to discuss the difficulties the local market faces in obtaining capital. It supports the finding in earlier literature that it is significantly challenging to find capital for venture capital funding locally, and it is suggested that an evaluation of local investment trends as well as the plausibility of finding capital overseas is required as a result. The report also discusses findings as they relate to the broader literature on university entrepreneurship and the relationships between start-ups and universities. It is suggested that many of the trends in university entrepreneurship detected overseas likely apply to New Zealand, and any future attempts to generate start-ups out of local universities may wish to consider that literature and the experiences of the Seed Fund.

## INTRODUCTION

For a developed economy like New Zealand, ensuring strong growth and innovation often presents significant challenges. One of the ways many developed countries seek to enable that growth and innovation is by creating a local venture capital market, the “holy grail of economic development.”<sup>1</sup> A venture capital market is seen as supporting innovation and job creation through the funding of start-up and early-stage companies, and venture capital provides an important role in broader finance markets by allocating capital to high-risk investments that might not otherwise be funded despite their broader social and economic potential. New Zealand has begun to create its own venture capital market over the course of the last 10-15 years, and as a result there is increasing desire for information about the state of the local market.

This report documents and discusses “probably the first genuine attempt at venture capital funding in New Zealand.”<sup>2</sup> The New Zealand Seed Fund was designed to emulate the American model of venture capital, and its story reveals some significant lessons about the opportunities and challenges for New Zealand’s development of a local venture capital market. At the time the Seed Fund was created a dedicated New Zealand venture capital market was almost non-existent, and even currently the market faces “considerable challenges” in securing the amounts of capital required to provide for new seed and start-up companies.<sup>3</sup> It is hoped that a better understanding of the challenges faced by one of the first venture capital funds in New Zealand can assist in surmounting current challenges and the further development of the local market.

The report is split into three parts. Part I summarises the history and existence of the fund, including legal structures utilised, the motivations and expectations of those involved as well as the histories of its investments. Part II evaluates the Seed Fund’s success, detailing the Fund’s returns and the success of its investments. Finally, Part III discusses the lessons that can be drawn from the Seed Fund experience, relating them to both the developing literature on the local market and the broader venture capital literature.

Venture capital funds are defined as “independently managed, dedicated pools of capital sourced from multiple parties... [and] invested in exchange for equity in privately-held, early-stage high-growth companies.”<sup>4</sup> These investments are usually made in the seed or early-stage of those companies, and often prior to their listing publicly. A discussion of the way the Seed Fund was structured to be a venture capital fund is given at the beginning of Part I.

On a personal note, the writer is extremely grateful for all of the enthusiastic and supportive input he has received through the course of this project. In particular, the writer thanks his supervisors Associate Professors Jane Bryson and Urs Daellenbach from Victoria University

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<sup>1</sup> Ronald J. Gilson, ‘Engineering a Venture Capital Market: Lessons from the American Experience’ in *Stanford Law Review* Vol. 55 No. 3 (2003) – p1068.

<sup>2</sup> Interview with John Ferner

<sup>3</sup> Sujit Kalidas, Andrew Kelly and Alastair Marsden, ‘New Zealand venture capital funds and access to new financing: an exploratory study’ in *Pacific Accounting Review*, Vol. 26 No. 3 (2014) – p217.

<sup>4</sup> Paul A. Gompers and Josh Lerner, ‘What drives venture capital fundraising?’ in *Brooking Papers on Economic Activity* (1998) – p150.

for their input and patience, and to Sir Roderick Deane for his significant enthusiasm and support throughout the project. The project was funded jointly by the University and the Deane Endowment Trust through a summer scholarship, and the generosity of those involved was immense. The writer is also extremely grateful to all of those interviewed during the project (many of whom are referred to or quoted in this report) for giving up their time and for their input into this research. From what the writer has experienced, there is significant enthusiasm and ingenuity across a wide variety of fields for this kind of development, and it has been a real pleasure meeting the bright and passionate people behind this story.

#### **A NOTE ON METHODOLOGY AND LIMITATIONS**

The data for this report has been gathered from several sources. Those involved with the Seed Fund provided access to electronic and hard-copy documents, and additional documents were gathered from investee companies and other sources. A significant source of data however were semi-structured interviews with different individuals involved in different aspects of the Seed Fund and its investee companies. These included the Fund's Board of Directors, senior management in investee companies (current and historical) and researchers involved in product development. Each interviewee was provided with a list of questions about their involvement in the Seed Fund prior to the interview, and during the interview they discussed their recollections with varying degrees of adherence to the question structure. Interviewing occurred between December 2014 and February 2015, and a total of 16 individuals were interviewed. This process was approved by Victoria University's Human Ethics Committee.

It needs to be acknowledged that there are some limitations in the data that underlies this report. The Seed Fund originated in 2000 and ceased having active investments in 2007, so some documentation is no longer available. As a result, some assumptions have had to have been made or some areas documented with less than ideal amounts of data. Similarly, although the interview process was very helpful in compensating for areas where documentation was thin, asking interviewees to recall events up to 14 years previously means issues around basic human memory exist (and indeed many interviewees emphasised that fact). The report proceeds on the best data still available, but there are some areas where conclusions are necessarily generalised as a result of weaknesses in the research data.

**Part I:**

The ‘story’ of the Seed Fund is split into four distinct sections. The first details the creation of the Fund, the second and third focus on the Seed Fund’s investments in Otago and Auckland respectively, and the last discusses the ongoing management of the Seed Fund and its eventual winding-up. As much as possible each section is chronological and each subsequent section builds upon the previous. All of these sections interrelate however and some internal cross-over is unavoidable. For the reader’s assistance, an appendix with a simple timeline (Appendix 1) sets out some of the key events described below.

*The Creation of the Fund:*

The idea for the Seed Fund was developed initially by Auckland Uniservices Limited, the independent commercialisation arm of The University of Auckland. It aimed to help develop a local market for higher risk investment and so enable local start-ups to stay in New Zealand for longer, slowing the rate at which start-ups had to move overseas to find capital for their growth.<sup>5</sup> “The game in VCs [venture capital funds] is if you can’t ride your bike to it, you don’t fund it”, and Uniservices’ attempts to fund one of its start-ups – NeuronZ – overseas had been met with polite refusals due to the distance between major venture capital markets in the USA or UK and New Zealand.<sup>6</sup> This led the company’s CEO, John Kernohan, and Chairman, Peter Menzies, to investigate possibilities for creating a venture capital fund to assist in funding local research.

However, with no local venture capital market, Uniservices had to look for the skills it needed to help create that fund offshore. The company hired an American experienced in venture capital, Jerry Balter, to assist it in developing a venture capital fund in New Zealand along the lines of funds used in the United States. He, along with Kernohan and commercial law partner John Ferner, created a legal structure designed as much as possible to emulate the American limited partnership model used in venture capital funding within New Zealand law (a task made difficult by the lack of a direct equivalent to that structure locally).<sup>7</sup> The final structure featured a ‘US Side’ and a ‘NZ Side’, and was designed to attract investment from American investors and local investors (*see Figure 1 below*):

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<sup>5</sup> Interview with John Kernohan

<sup>6</sup> Interview with Participant 7

<sup>7</sup> Interview with John Ferner

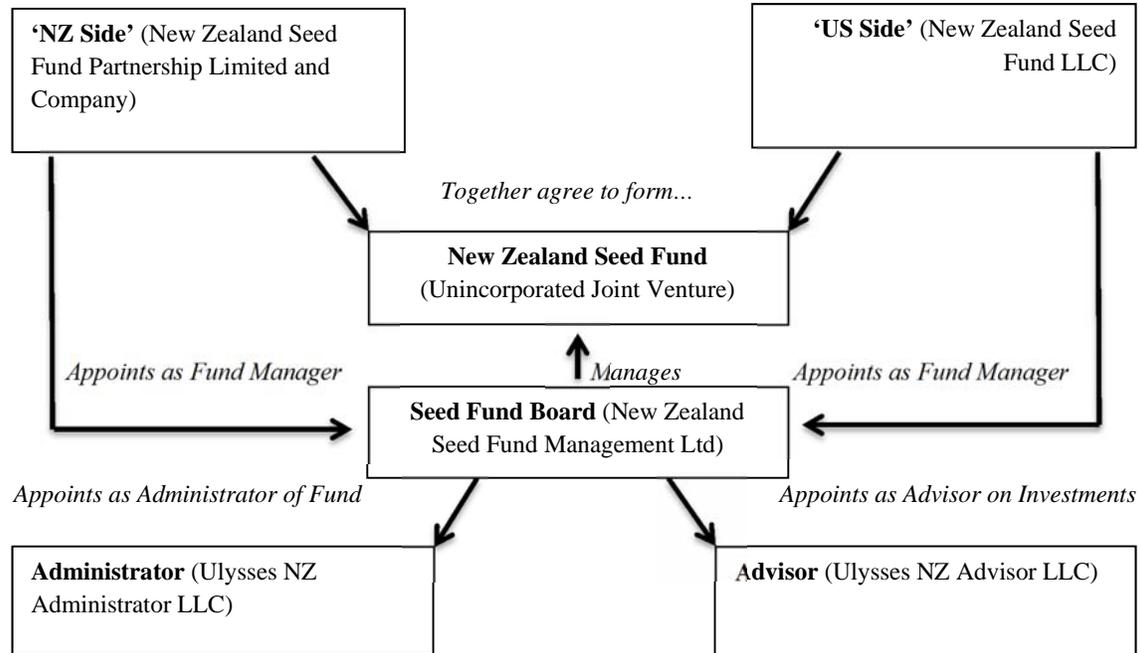


Figure 1: Simplified Illustration of the Legal Structure of the Seed Fund and the Parties Involved

The 'NZ Side' was represented by a special partnership, a legal structure permitted at the time under the Partnerships Act, whereas the 'US Side' was represented by a limited liability company under Delaware law. As is standard in venture capital investing, those entities were made up of a general partner and special partners (or the equivalent terms in the United States) which allowed for limited liability for investors as well as being see-through on profits for eventual returns. The general partner was a specially incorporated limited liability company, and special partners were ordinary investors (for the reader unfamiliar with this structure, the general partner is distinguished from the special partner primarily through the latter having limited liability but no control of the management of the investments, whereas the former has unlimited liability but also has control).

The two sides entered into an unincorporated joint venture agreement, and that joint venture was designed to represent the entirety of the 'New Zealand Seed Fund.' The Fund was then managed by New Zealand Seed Fund Management Ltd (the Board of which is the Board of the Seed Fund mentioned throughout this report) and it in turn appointed Jerry Balter as administrator and advisor of the fund through his Ulysses companies. In simple terms, the Board is equivalent to the Board of any company with Balter's functions akin to that of a CEO of said company.<sup>8</sup> Investors invested through respective 'sides' based on their country of origin in order to ensure the most efficient tax benefits and legal protections permitted by the laws of their country, with the Joint Venture being see through on both risk and return (leaving the respective sides of the fund liable for any risks and the benefit of any returns).

<sup>8</sup> Interview with Chris Swann

Once this structure was established, three individuals were approached to form the Seed Fund's Board: Peter Menzies, then chairman of Uniservices as noted above, Roderick Deane, then chairman of Telecom who became the chair of the Board, and Trevor Scott, then Chairman of the commercial activities Board of the University of Otago. Ferner joined them for their first year, assisting the Board in deciding its initial investments and (through his firm) assisting in the Fund's initial administration. The Fund had aimed to source at least \$30 million in capital. Initially that was difficult to gather both locally and abroad, and the Board had to "get on their bikes" by utilising personal connections and reputations to help encourage local investment.<sup>9</sup> This brought in local capital, but ultimately the 'US' side of the Fund was practically non-existent as no American money was invested in the Fund.<sup>10</sup> The Fund instead proceeded with the \$13.58 million it was able to gather in New Zealand (a significant statement on the local capital market discussed in Parts II and III) and was established in early 2000.

The Seed Fund was marketed as an opportunity to potentially generate significant returns to investors while also assisting the development of local science. Each member of the Board (as well as the Seed Fund's creators) differ in the extent to which delivering returns to investors was their paramount concern. Some considered the Fund to be acting more like an angel investor, providing start-up capital to the investments to help them 'get off the ground', while others believed people were involved primarily for the potentially significant returns associated with this kind of investing.<sup>11</sup> All three board members however ensured investors were aware of the high risk nature of their investment, and each "felt a keen sense of responsibility" to the investors who they felt had invested in the Fund based on directors' reputation in the business community and their delivery of appropriate level of governances and good business judgements in their respective careers.<sup>12</sup>

Perhaps as a point of difference from other venture capital firms, the Seed Fund already "had a couple of good projects... [so it] knew what it was going to invest in to some extent".<sup>13</sup> Whereas traditional venture capital funds would evaluate many prospects once it had obtained capital, the Seed Fund had been created in the knowledge of at least some prospects at the University of Auckland which reduced the need for it to embark on a similar exercise. Some of those involved believed that knowledge made the vetting process of investments more straightforward, as unlike the usual VC fund experience the Board already had a good understanding of the people and ideas involved. All emphasised however that decisions about investing and reinvesting in companies were still formally debated at length by the Board.<sup>14</sup>

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<sup>9</sup> Interview with Sir Roderick Deane

<sup>10</sup> Interview with Sarah Simmers

<sup>11</sup> Interviews with John Ferner, Trevor Scott, Sir Roderick Deane, Peter Menzies

<sup>12</sup> Quote from Sir Roderick Deane; Interviews with Trevor Scott, Sir Roderick Deane, Peter Menzies

<sup>13</sup> Interview with John Ferner

<sup>14</sup> Contrast e.g. interviews with John Ferner and Sir Roderick Deane

*The Otago Stream:*

One of the broad areas the Seed Fund invested in was cancer diagnostic research emerging out of the Cancer Genomics Laboratory at the University of Otago. Gillian Deane, who had privately supported researchers at that Laboratory for some time, introduced that research work to those involved in the Seed Fund. The researchers were, in her view, “dynamic” and “passionate”, and the strength of their research was complemented by senior members of the University (such as Trevor Scott and then Chancellor Eion Edgar) being “interested in taking Dunedin science to market... and reaching a wider audience.”<sup>15</sup> It was the combination of these two strengths that led the Seed Fund to investigate the research, and the Fund pushed for the incorporation of a company it could support that research through.

Pacific Edge was “incorporated to build and commercialise novel cancer diagnostics” in 2001 as a result.<sup>16</sup> The company aimed to develop a gene expression database which it could ‘mine’ for data on specific types of cancer, and then from that data develop diagnostic products for those specific types of cancer to take to market. It built upon early developments in relevant theory that had occurred at the University, and which made “it much easier for the company to complete its larger scale efforts”. Several researchers at the University also worked in ‘stints’ at Pacific Edge developing that science for the company’s needs.<sup>17</sup> It eventually completed the database in 2005, and from it was able to extract data for the development of prototype tests for several types of cancer including gastric, colo-rectal and bladder cancer. (The database was the basis of the technology developed by the Seed Fund’s fourth - and smallest - investment, Prognostics Systems Ltd, but information on that investment is practically non-existent. The underlying research was seen as too futuristic, and it lacked a dedicated management team, focus and resources. The company was not successful.<sup>18</sup>)

Although the company has certainly had ongoing success in its scientific development, it struggled somewhat to obtain funding in its earlier years. The company listed in 2002 on the NZX in order to obtain funding from the general market, but the listing did not go as well as the company had hoped. That reflects in part a weak local appetite for high risk and biotechnology investment, discussed later in Parts II and III. It also reflects the difficulty of creating a business plan for such an unexplored area in New Zealand. The initial business plan had the company developing prototypes to be developed into commercial products by other larger companies, but it was not realised that there was no interest in those prototypes, and the company was forced to develop full commercial products as it does now.<sup>19</sup>

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<sup>15</sup> Interview with Lady Gillian Deane

<sup>16</sup> Pacific Edge Annual Report 2014 – p5.

<sup>17</sup> Interview with Professors Anthony Reeve and Parry Guilford

<sup>18</sup> Quote from Participant 9

<sup>19</sup> Interview with Participant 9 and Chris Swann

As a result the company has evolved its approach considerably over the course of its life. Whereas some start-ups have relatively defined approaches to market, what Pacific Edge was pursuing was a “completely novel approach.”<sup>20</sup> The company has succeeded, but it is generally accepted by those involved that “the [company] took so much longer to get off the ground” than people anticipated. It is only recently that the company’s first commercial product has emerged from the prototypes that were drawn from the gene expression database; ‘Cxbladder’, a non-invasive test for bladder cancer that is marketed locally as well as in Australia and the United States.

The Seed Fund was “supportive” of Pacific Edge but, from the company’s perspective, it didn’t provide “support” (capital).<sup>21</sup> The Seed Fund provided initial start-up capital to the company to the tune of \$2.5 million, and participated in a later capital raising by which it increased its investment to \$3.125 million in 2005 (the Seed Fund had 2.5 million preference shares from the first investment [which converted to 12.5 million ordinary shares] and acquired another 4.167 million shares prior to distribution).<sup>22</sup> That was not sufficient to meet the company’s needs as noted above, but the management of the company perhaps felt the Fund’s initial commitment came with the promise of more capital than it provided.<sup>23</sup> From the Fund’s perspective however, further investments were arguably undesirable, as the Fund wished to push those companies to be self-sufficient.<sup>24</sup> It may be that there was a breakdown in communications over the Seed Fund’s role in the company, or it may be that the Fund lacked sufficient capital to invest in the company further.

That is not, however, to undercut how important the Fund’s ‘supportive’ actions were to the company. Through the Seed Fund, Davis Farmer (an associate of Jerry Balter’s Ulysses companies) was appointed the initial CEO of the company and provided valuable knowledge of the biotechnology sector, helping the company establish itself. Trevor Scott, of the Seed Fund’s Board, was initially Chairman of Pacific Edge and provided valuable corporate governance experience to the company’s Board. This helped maintain investor confidence through some of the company’s ‘rougher’ earlier years, and having the Seed Fund continuing to invest in the company helped maintain investor confidence as well. The Seed Fund also utilised its role as a “cornerstone shareholder” and the contacts of its Board to bring in further cornerstone shareholders such as Stephen Tindall’s K1W1, which in turn gave the company access to more capital.<sup>25</sup> In the view of at least some of those involved, without the Seed Fund “the company wouldn’t have been created.”<sup>26</sup>

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<sup>20</sup> Interview with Participant 9 and Chris Swann

<sup>21</sup> Interview with Participant 9 and Chris Swann

<sup>22</sup> Seed Fund Annual Reports: 2000, 2005

<sup>23</sup> Interview with Participant 9 and Chris Swann

<sup>24</sup> Interview with Sir Roderick Deane

<sup>25</sup> Interview with Participant 9 and Chris Swann

<sup>26</sup> Interview with Professors Anthony Reeve and Parry Guilford

*The Auckland Stream:*

The Seed Fund had a similarly important, though distinct, relationship with the investments it had entered through different avenues in Auckland. The Seed Fund invested in three investments in Auckland, later reducing to two when two of the investments merged: NeuronZ and EndocrinZ, which merged to form Neuren, and Esphion. NeuronZ and EndocrinZ had close relationships with the University of Auckland and Uniservices at their inception (and this was how they were introduced to the Seed Fund), but Esphion was a wholly distinct investment designed to help diversify the fund out of biotechnology and away from the University of Auckland.<sup>27</sup>

NeuronZ, mentioned earlier, was a start-up that was incorporated around 1996 and that partly catalysed the concept of the Seed Fund. The company was focused on investigating various neurological pharmaceuticals based around the naturally occurring compound Glypromate (GPE) and later the mimetic analogue NNZ-2256, which was developed by researchers working with the company. The early research around GPE was a result of what would become the Liggins Institute at Auckland University and the work of then Professor Peter Gluckman.<sup>28</sup> That work is now the fundamental part of Neuren's development program, and was expanded upon once NeuronZ had merged with EndocrinZ.

EndocrinZ pursued a somewhat different research area, focusing on endocrinology and the use of growth hormone to combat various medical problems in humans and animals. Incorporated around 2002, the company was partially owned by a major pharmaceutical company who wanted a subsidiary to do basic research work. It was developing a novel form of growth hormone, but the "IP wasn't solid" and the research was considered to be "a pale cousin of the neurology work" being done at NeuronZ.<sup>29</sup> Further, the major pharmaceutical company was taken over and lost interest in the company, and both companies had significant overlaps in staff and management. Those similarities, along with the significant potential of the NeuronZ research, led to the companies merging in 2004.<sup>30</sup>

Neuren was incorporated as a result, and listed on the ASX in 2005. The local biotechnology market was considered to be too small and immature to generate the amount of investment capital the company needed, so the decision was made to take the company to Australia (a decision that eventually resulted in the company moving its head office and core operations there in 2013).<sup>31</sup> The company started with a relatively strong position, but suffered several setbacks that culminated in the failure of a study into the effects of GPE, which put the company in a difficult position. The company has rebuilt from this though, through careful use of its research relationship with the US Army and its reliance on NNZ-2256, now the company's main product. It now stands in a much stronger position, with results from Clinical Stage-II

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<sup>27</sup> Interview with John Kernohan

<sup>28</sup> Interview with Participant 7

<sup>29</sup> Interview with Participant 13

<sup>30</sup> Interview with Trevor Scott

<sup>31</sup> Interview with Trevor Scott

trials for NNZ-2256 very positive for Rett Syndrome (and with two other conditions – Fragile X Syndrome and TBI – reporting results in the first half of 2015).

NNZ-2256 was discovered by Professor Margaret Brimble, medicinal chemist at the University of Auckland, around 2004 through a research contract with the company. Professor Brimble had been approached by Professor Gluckman to assist the company to develop the compound, as GPE by itself “didn’t last long enough... and didn’t cross the blood brain barrier that well.” The new molecule, NNZ-2256 (trofinetide), helps combat neurological problems caused by conditions like Traumatic Brain Injury, Rett Syndrome and Fragile X Syndrome by “acting on several receptors in the brain with the correct quanta to afford neuro-protective properties.”<sup>32</sup> The value of the compound for treatment is reflected by the FDA awarding Orphan Drug status to NNZ-2256 for both Rett Syndrome and Fragile X Syndrome, providing market exclusivity for resulting products and achieving a key commercial milestone for the company on the drug development track.

By the time the companies formally merged and Neuren had listed on the ASX, the Seed Fund had a total investment of \$5,229,322, accumulated through share issues in the company itself as well as partial ownership of the two predecessor companies (this equated to a total shareholding of 11,441,670 shares).<sup>33</sup> The Seed Fund Board had pushed strongly for the merger because it “made sense”, helping the company through the merger process and through to its initial listing.<sup>34</sup> The Fund also brought its status as a cornerstone shareholder and managerial experience to the company, with Trevor Scott becoming a director at the time of the merger. “To have an individual [Trevor], as a shareholder and a director, supporting our efforts is immensely helpful.”<sup>35</sup> The “respectability and credibility” the Seed Fund brought helped bring in further major shareholders (again Stephen Tindall’s K1W1 as an example) and Trevor’s experience in corporate governance has helped the company considerably, especially during the difficulties it faced earlier in its life.

Distinct from all of the other investments was the Seed Fund’s investment in Espion (initially named JSD Limited). Espion was an IT company specialised in developing network-security solutions which improved network bandwidth usage and protected against DDoS (Distributed Denial of Service) attacks, a wide-spread form of cyber-attack where the attacker uses a variety of means to disable or overload a network. The company was narrowly focused on a single software package that could not be diversified into other products however, and it was acquired by Allot Investments, an Israeli IT company, in 2008.<sup>36</sup>

There is little information on Espion as, unlike the two major investments mentioned, the company was not a success (the Seed Fund received c. \$22,000 from that acquisition). It is however clear that, after its initial investment of \$2.5 million the Seed Fund did not

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<sup>32</sup> Interview with Professor Margaret Brimble

<sup>33</sup> Seed Fund Annual Report 2005

<sup>34</sup> Interview with Trevor Scott

<sup>35</sup> Interview with Richard Treagus

<sup>36</sup> Interview with Peter Menzies

significantly increase its investment (adding only another \$116,677) and avoided accumulating further losses as a result.

*The Management of the Fund and its Eventual Conclusion:*

The Board utilised a variety of means to ensure the Fund was well-managed and that investors were kept informed. Significant amounts of managerial effort was made through non-documented means (like phone calls and personal follow-ups), and much documentation is no longer available, but a broad understanding can be gained nonetheless. In addition to mandatory annual reports, investors were kept informed of developments in investee company research and products through quarterly reports, and presentations by researchers were a popular feature of the Seed Fund's early AGMs. Board members met regularly with agendas and minutes being kept, with information for all of these gathered by the Fund's advisor and administrator, and the Board also consulted experts on the IP being developed by the investee companies and the IP they were targeting.

The Board took a flexible approach to analysing investment opportunities, and its members had a broad consensus of points that were considered when making investment decisions. Each individual involved in the decision-making process had differing ways of articulating these points, but common elements include:

- the size of the market the investee was developing a product for (and the ability of that product to yield multiple market opportunities) ;
- how far through the process the investee is in developing that product (and the cost involved in getting the product to market);
- the ability of the Fund to make money and add shareholder value to the investee (including whether management had the skills needed as the company developed); and
- ensuring expectations were clearly communicated between both parties.<sup>37</sup>

“This whole area of venture capital is dominated by [the] relationship between people and their skills and abilities, [all] contributing freely to give a unified and dynamic sort of tour de force.”<sup>38</sup> These relationships were complicated somewhat however by the ‘pioneering’ nature of the Seed Fund. Part of the challenge of having a lack of local experience in venture capital is in knowing how to establish effective milestones for investee companies and other managerial benchmarks. In addition to Pacific Edge’s “novel” route to market, Neuren is only now more easily able to be benchmarked because of the clear standards provided by the FDA testing process, which NNZ-2256 is progressing through currently.<sup>39</sup> While milestones were created for all companies and checked consistently by the Board, those milestones “were probably optimistic”, and those involved acknowledged they generally expected the investees

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<sup>37</sup> Interviews with John Ferner, Trevor Scott, Sir Roderick Deane, Peter Menzies and Chris Swann

<sup>38</sup> Interview with Peter Menzies

<sup>39</sup> Interview with Trevor Scott

to get products to market considerably faster than they have (or in Neuren's case are likely to).<sup>40</sup>

In addition, the Fund did have some managerial complications early in its life, due to disagreements between the Board and Jerry Balter's Ulysses Group. This led to a parting of ways, with the Seed Fund Board taking a more active role in monitoring investments and the appointment of Chris Swann (later chairman of Pacific Edge) as the administrator of the Fund. Balter had proven "quite talented at finding [investment] opportunities", but he and the Board differed in how they saw the Fund's managerial responsibilities and so separated.<sup>41</sup> It may have been more helpful to have a more local based fund manager initially, given the distances between the USA (where Balter was based) and New Zealand, and it may have been that a local manager would have also found the investment opportunities that Balter did, but it is too speculative to say with any certainty.

The Fund continued in substance until around 2007. The Board decided to distribute in-specie the shares it had in Pacific Edge and Neuren to individual investors, with the former distributed in 2006 and the latter in 2007. This left the Fund without any investments that had current or future value, but the Fund could not be wound-up at that time due to the requirements imposed by the various Acts and contracts that governed the Fund's existence (and which had envisaged a 14 year term).<sup>42</sup> As a result, the Fund continued up to 2014, effectively funding its minimal administration costs with interest payments and distributing its remaining funds once it was wound-up.

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<sup>40</sup> Interview with Sir Roderick Deane

<sup>41</sup> Interview with Sir Roderick Deane

<sup>42</sup> Interview with Sarah Simmers

**Part II:**

The performance of the Seed Fund can be analysed against two metrics: its success in generating local start-up companies and developing New Zealand science, and its success in delivering returns to investors. This part of the report discusses these two metrics, but it also discusses the environment within which the Seed Fund existed, especially the state of local capital markets at the time the Seed Fund was created. It is suggested that, given the difficulties inherent in the market at the Fund time, the Seed Fund cannot be properly evaluated without an understanding of the difficulties it faced throughout its existence.

These two metrics parallel the different emphases on aims placed by different individuals involved in the Seed Fund. The discussion of the success of the Seed Fund's investee companies and comparable rates of success expected in venture capital investments overseas broadly reflects the emphasis on scientific development mentioned earlier, whereas the discussion of the Seed Fund's commercial returns reflects a similar emphasis held by others when the Seed Fund was created. In this respect, these somewhat diverging perspectives reflect the reality that venture capital occupies a dual role wherein it helps develop entrepreneurial and scientific ideas while simultaneously delivering economic benefits to its investors.<sup>43</sup>

As noted, the Seed Fund had two successful investments: Pacific Edge and Neuren. This reflects the role venture capital has traditionally had in providing a strong support base for start-ups. In their review of the literature, Zacharakis, Meyer and DeCastro note that 75% of new start-ups fail within seven years generally compared to 18% of venture-capital backed companies.<sup>44</sup> This reflects the difficulty of getting ideas into commercial products, especially in the context of the long development times of the biotechnology industry. Stevens and Burley note that it is only from about 3000 ideas that a single commercial product eventually gets to market, and that the number is higher (between 6000 – 8000) for drug companies.<sup>45</sup> In simple terms, the fact that the Seed Fund helped fund two companies to listing, and that those companies have survived significantly into the product development process is a success, given the rates of failure at play generally. The difference in success rates with the overseas experience may well reflect the immature state of the local market or the very small set of data presented here, but a 66% success rate (2 out of 3 major investments) appears broadly comparable. It also means those who invested in the Seed Fund hoping to contribute to scientific development can consider their investment to have achieved that end.

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<sup>43</sup> Samuel Kortner and Josh Lerner, 'Assessing the contribution of venture capital to innovation' in *Rand Journal of Economics* Vol. 31 No. 4 – p691.

<sup>44</sup> Andrew Zacharakis, G Dale Meyer and Julio DeCastro, 'Differing perceptions of new venture failure: a matched exploratory study of venture capitalists and entrepreneurs' in *Journal of Small Business Management* Vol. 37 No. 3 (1999) – pp1 and 2.

<sup>45</sup> Greg Stevens and James Burley, '3000 Raw Ideas = 1 Commercial Success!' in *Research Technology Management* Vol. 40 No. 3 (1997) – p16.

Despite that success, the Seed Fund has not (or at least has not yet) delivered significant financial returns to its investors. The analysis that follows estimates the return to investors first on a simple ‘cash to cash’ basis, and then on a more complex compounded returns basis. There are a substantial number of limitations and uncertainties in these calculations, and the more complex the picture the more these become an issue. This analysis is thus a broad indication of financial performance.

To repeat, the total capital the Seed Fund started with was \$13.58 million. This was divided into ‘investor units’ of \$50,000 each (of which there were 271.6) and investor return is measured against this benchmark. The simpler calculations do not take into consideration any discount rate, tax, inflation or the like. The more complex calculations have some factoring for a discount rate, but the picture is not an easy one to complete for various reasons. Both companies (especially Neuren) have undertaken capital raisings that have diluted the value of the Seed Fund’s distributed shares, and it is not straightforward to track the opportunity of ex-Seed Fund investors to take up some or all of those capital raisings. The ‘cash to cash’ basis assumes no rights are taken up at all, and values only the assets distributed by the Seed Fund to its investors, to present a simpler picture.

On a ‘cash to cash’ basis, the return to investors was approximately 25% less than that capital amount at the ‘points of distribution’ (i.e. the value at the time the investor acquired the shares), or about \$37,560 per unit:

<b>Investment:</b>	<b>Amount Invested: (\$)</b>	<b>Number of Shares held by Seed Fund:</b>	<b>Value at Time of Distribution: (\$)</b>	<b>Value per Investor Unit: (\$)</b>
Pacific Edge	3,125,000.00	16,666,666	3,666,666.52*	13,500.24
Neuren	5,229,322.00	11,441,670	6,112,975.00	22,507.27

\* = the Pacific Edge shares were not valued when distributed according to the documentation (unlike the Neuren shares) so a share price of \$0.22 – the median share price for the 2006 year – was used.

The Seed Fund also made cash distributions to its shareholders totalling \$1549 per investor unit, which takes the balance to the total above. The picture changes somewhat if the shares are valued at current prices however, a valuing which perhaps more accurately accounts for the long delays for returns in the biotech sector:

<b>Investment:</b>	<b>Amount Invested: (\$)</b>	<b>Number of Shares held by Seed Fund:</b>	<b>Value at January 1 2015: (\$)</b>	<b>Value per Investor Unit: (\$)</b>
Pacific Edge	3,125,000.00	16,666,666	12,333,332.84	45,409.91
Neuren	5,229,322.00	11,441,670	1,945,083.90	7,161.58

With the cash distributions mentioned above, each investor unit has assets worth \$54,120.49, or a little over 4% more than what they started with (again on a cash to cash basis). By way of comparison, if that \$50,000 had been invested in a term deposit with a compound interest rate of 5%, it would now be worth \$98,996.58 (before tax), so clearly on a cash to cash basis the return is disappointing (if still positive). This is nothing more than a simple picture though. It would for example be substantially different if an investor had sold out of Pacific Edge at the height of the market (in which case their shares would have been worth \$1.69 per share and their return would have been \$112,417.01, which is higher than the term deposit), and indeed several interviewees mentioned they had done that. An investor who wished to meaningfully take up the opportunities presented by both companies would have needed to avoid their shareholding being diluted and taken up some of the companies' rights issues in any event.

Such an investor would have taken up additional shares as seen below. It is assumed that the investor took up the maximum number of shares they were eligible for (although in all cases there was no minimum take-up required), and the table displays the increases in cost and share holdings over time (it is possible that the investor would have qualified as an 'institutional or habitual investor' and so been eligible to take up further share offers beyond these, but it is assumed they could not have). A more detailed discussion on the likelihood of an investor taking up options is discussed below.

<b>Date:</b>	<b>Company:</b>	<b>Share Uptake Ratio: (Current : New)</b>	<b>New Shares if Maximum Taken Up: (per Investor Unit)</b>	<b>Cost of New Shares: (per Investor Unit) (\$)</b>	<b>New Total Number of Shares:</b>
17/12/2007	Neuren	2 : 1	21,063	3,370.15	63,190
20/06/2011	Neuren	1 : 1	63,190	1,074.24	126,381
01/08/2011	Pacific Edge	7 : 3	26,299	4,996.81	87,664
14/10/2013	Pacific Edge	15 : 2	11,689	6,428.95	99,352

This would leave an ex-Seed Fund investor with 99,352 Pacific Edge shares and 126,381 Neuren shares at 1 January 2015, for an additional cost of \$15,870.15. Their shareholdings would be worth \$73,520.48 for Pacific Edge and \$21,484.77 for Neuren, giving a total return over the course of their involvement with the investee companies of \$96,554.25 (or a profit of approximately 47% on a cash to cash basis). Given the additional cost involved (and the opportunity to gain returns on that cash), that is still not as successful as the (before tax) term deposit comparator above, but it is still a modestly successful return nonetheless.

Appendices 2 and 3 compare the return an investor would have received from investing in a term deposit at 5% against the value of their investment in Pacific Edge and Neuren respectively. It also tracks the share prices of both companies after listing, giving an indication of their performance after the Seed Fund exited both. A discount rate of 5% is applied to the value of the investment, and the rights mentioned above are factored into the calculations. Applying this discount rate, the investment in Pacific Edge is worth \$1.05 and the investment in Neuren is worth \$0.20 (again at 1 January 2015). This is not overall a successful financial return, and perhaps (at least on this measure) the high risk did not deliver the rewards some hoped it would.

It will be noted however that the performance of Neuren and Pacific Edge have both changed significantly over time, with Pacific Edge at one point reaching \$1.69 per share and delivering a return higher than the discounted comparator. Since share options in Neuren were renounceable and often had low take-up costs as seen above, an investor who purchased significant amounts of shares when the price was as low as \$0.01 would have made significant returns now that the share price has rebounded to \$0.17. If a Seed Fund investor was a habitual investor in either company, then the estimated returns above may be too low as they could well have purchased additional shares in other capital raisings that would have reduced their average cost per share substantially. The above conclusions need to be considered in-light of the fact that it has been readily possible for investors to make larger returns in the investee companies if they invested at times when the share price was low, although by the same token there were times where an investor could have suffered a lower rate of return if they invested at a poor stage of the market.

Two points may help explain those varying estimates of returns. Firstly, both Neuren and Pacific Edge have the potential to grow significantly in value, and that growth would increase the Seed Fund's return accordingly. Pacific Edge has a product (Cxbladder) in the market, but it will still take some time for the company to grow its market share or develop multiple products based on its research to deliver those returns. Neuren has yet to successfully get NNZ-2256 through all of its Clinical Stage-II trials, and it will be some time before the FDA green lights the marketing of a product that could then bring in revenue to the company. A significant return would not be expected from investments until they had successfully established a product (or several products) in the market, and especially in the case of Neuren that date is still some way off. It was mentioned several times in Part I that those going into the Seed Fund did not envisage the investee companies would take as long as they (will) have to deliver returns, and it might be said (at least in the case of biotechnology investments) a 14-year term is too short a timeframe for a company to deliver the returns some investors expected. In fact, the type of investments the Seed Fund made (seed investments in biotechnology) are the kinds of investments VC funds are now moving away from.<sup>46</sup> The Seed Fund's real return is probably best estimated at a later date, when its investments have succeeded (or failed) in delivering those returns, since that is when the underlying value of those investments will be more readily discernible. It is also possible that the companies' underlying value will have crystallised by then through a takeover by a large pharmaceutical company. To some extent, this explanation also accounts for why the Fund delivers a positive return if its investments are valued now as opposed to at distribution.

Secondly, the Seed Fund was somewhat limited in its ability to diversify its investments and chances of return. The Seed Fund had a small capital base (\$13.58 million), and so could only make substantial investments in three companies as noted. Many argue that a VC fund needs to be of a certain size such that it is able to make a range of investments and so diversify its risk (and increase its chances of returns from successful investments). The literature suggests that there is an 'optimum size' for a VC fund to be, wherein it is able to sufficiently diversify its risk while also avoiding low quality investments that might be taken up if the fund had more capital than it could easily find investments for.<sup>47</sup> It is not known exactly what that optimum size is (and it likely varies depending on time and location amongst other factors), but it seems fairly intuitive that if a Fund is too small to be able to have a notable number of investments it is likely to be at risk of failing to pick a 'big winner' which significantly increases its value and delivers the fund corresponding returns. It may be that, though the Seed Fund did pick two successful investments, had it had more capital it may have picked a 'winner' that delivered big returns in a shorter timeframe than Neuren and Pacific Edge may do. More capital may also have allowed the Seed Fund to diversify more outside biotechnology, which would have allowed returns to come in at a faster rate from its investments. These capital problems the

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<sup>46</sup> Margaret McCammon, Edwina Pio, Shima Barakat and Shailendra Vyakarnam, 'Corporate venture capital and Cambridge' in *Nature Biotechnology*, Vol. 32 No. 10 (2014) - p975.

<sup>47</sup> Vesa Kannianen and Christian Keuschnigg, 'The optimal portfolio in venture capital finance' in *Journal of Corporate Finance* Vol. 9. No.5 (2003) - p522.

Seed Fund may have had are very likely not unique to it, and are discussed in more detail in Part III.

On the other hand, it may be that part of the reason the Seed Fund was able to have those two investee successes is precisely *because* it was so small in size. There is evidence to suggest that the ability of venture capital funds to be successful decreases as they get larger (beyond an optimum size), as the managerial assistance they can provide is diffused across a greater number of investee companies and is less useful to those companies as a result.<sup>48</sup> Given the amount of work the Seed Fund Board did on helping its investee companies through their start-up process (especially from the university origins of Neuren and Pacific Edge), it may be that effort is a notable factor associated with their success which would not have possible had the Board needed to spread that effort across a greater number of investments. Conversely, the apparent lack of personal connections and managerial relationships with Esphion may well partially explain that company's failure (although it was backed by other venture capital firms) as noted above. It is too speculative to infer whether the Board would have provided less managerial assistance to the detriment of its investments if it was larger, but it should be acknowledged that capital is by no means the only requirement to a venture capital fund's success.

In sum, the Seed Fund did successfully contribute to the development of two innovative scientific ideas into commercial companies and with one already marketing a product from its idea. At least to the current day however, the Fund has not delivered meaningful returns to its investors (although opportunities for meaningful returns have arisen, such as shares in Pacific Edge peaking at \$1.50, and there are likely some investors who have done better than the analysis suggests). Some of the potential reasons behind these results may relate to the broader emerging venture capital market in New Zealand, and Part III discusses these reasons in that context.

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<sup>48</sup> See e.g. James Bartkus, M. Kabir Hassan, and Geoffrey Ngene, 'Does venture capital portfolio size matter?' in *Studies in Economics and Finance* Vol. 30 No. 3 (2013) – p205.

**Part III:**

While the venture capital market has grown somewhat since the Seed Fund was created in 2000, many of the challenges faced by it are still faced by venture capital funds and start-ups today. This part of the report discusses the lessons that can be learnt from the Seed Fund's experiences, relating challenges faced by the Seed Fund to current discussions in the literature on venture capital. The first discussion is of the difficulty in obtaining capital in the New Zealand market and potential implications for local funds and start-ups flowing from that. The second discussion focuses on the relationships between researchers and investee company management, suggesting venture capital funds and start-ups should manage that relationship carefully as well as managing the relationship between fund and investee.

It is suggested that the small capital base of the Seed Fund is reflective of a broader difficulty in obtaining funding for venture capital in New Zealand. As part of the interview process for researching this project, those involved with the funding of the investee companies were asked what they thought about the ability of high-risk, high growth companies to raise capital locally. The response from interviewees was an almost unanimous belief that capital is difficult to raise locally, perhaps extremely so. New Zealanders are perceived as being averse to high-risk investment, having a tendency towards property and retail rather than start-up investment.<sup>49</sup> One interviewee went so far as to call New Zealanders "unrealistic" in their investment expectations, although another suggested that New Zealanders may have learned from the high-profile troubles of investment companies during the global financial crisis.<sup>50</sup> Perhaps of greatest concern was the amount raised by the Seed Fund – comparatively small to overseas examples of VC – was seen as a large amount by interviewees, with one interviewee suggesting "you would struggle to get that [amount] today."<sup>51</sup> The Seed Fund Board did succeed in raising that amount, and one member of the Board at least believed they raised the capital fairly easily.<sup>52</sup> However, it is suggested that, without the pre-existing reputations of the Board members, the Seed Fund probably would not have been able to raise that capital, and their reputations are likely the difference between the Seed Fund's success in raising capital and potentially lower amounts gained by other funds.

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<sup>49</sup> See e.g. Interviews with John Kernohan, Trevor Scott

<sup>50</sup> Interviews with Trevor Scott and John Ferner respectively

<sup>51</sup> Interview with Trevor Scott

<sup>52</sup> Interview with Sir Roderick Deane

There is very little literature on the New Zealand venture capital market, but what there is supports these findings. Kalidas, Kelly and Marsden report that most VC fund managers they interviewed believed domestic capital was “exhausted or severely fatigued”, with those local investors willing to invest in venture capital likely already as committed as they are willing to be.<sup>53</sup> This reinforces the views expressed above, and the broader patterns of investment by New Zealanders mentioned above may partially explain the lack of local knowledge about VC funding found by the authors.<sup>54</sup> Lerner and Shepard, in their paper studying the Government’s involvement in this sector (the New Zealand Venture Investment Fund (NZVIF)) suggested government involvement in the sector will need to come with the provision of additional capital if the emerging market is to continue to grow, otherwise “managers may find it challenging to raise further funds”.<sup>55</sup> That study and its predecessor have also noted a tendency for low investment in venture capital locally (albeit that investment rates appear to be increasing).<sup>56</sup> There thus seems to be a basis for believing that (at least without further government involvement in the sector) raising capital for local funds is likely to be difficult and funds may struggle to reach the ‘optimum size’ discussed earlier.

Kalidas, Kelly and Marsden suggest this is due to the “chicken and egg” problem whereby local investors are averse to investing capital without managers having a proven track-record, and managers only being able to get said record if they have capital to invest.<sup>57</sup> It is suggested that the problem may well be compounded by the general investment behaviours of New Zealanders discussed earlier, and those behaviours and their implications for the emerging market should be investigated by a further study. It is also important to expand upon that “chicken and egg” problem by highlighting that the ‘incubation time’ for managerial skills in venture capital is a very long one, and even once the information sought by the authors’ study is obtained, it may be some time before managers develop the reputations that are the core aspect venture capitalists tend to trade-on overseas.<sup>58</sup> As Lerner notes, the growth of the sector is a “long-term” task and requires “patience”.<sup>59</sup> The corollary to that however appears to be domestic capital difficulties may well be a mid or even a long-term issue, potentially creating a significant capital shortfall for new investments – as highlighted in studies by the NZVIF.<sup>60</sup>

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<sup>53</sup> Kalidas, Kelly and Marsden, *op cit note 4*, p211.

<sup>54</sup> *Ibid*, p198.

<sup>55</sup> Josh Lerner and Stuart Shepard, *Venture Capital and its Development in New Zealand*, paper prepared for the New Zealand Investment Fund, [http://www.nzvif.co.nz/documents/publications/LECG\\_Report\\_Jun\\_09.pdf](http://www.nzvif.co.nz/documents/publications/LECG_Report_Jun_09.pdf) (2009) - p59.

<sup>56</sup> *Ibid*, pp51-52.

<sup>57</sup> Kalidas, Kelly and Marsden, *op cit note 4*, p216.

<sup>58</sup> See e.g. David Hsu, ‘What Do Entrepreneurs Pay for Venture Capital Association?’ in *The Journal of Finance*, Vol. 59 No. 4 (2004) - p1086.

<sup>59</sup> Lerner and Shepard, *op cit note 54*, pp7 and 59.

<sup>60</sup> New Zealand Venture Investment Fund, *Annual Report 2011*, p4.

Flowing on from all this, it is suggested that new venture capital funds and start-ups likely need to look off-shore to satisfy their capital needs (as the Seed Fund attempted to do with United State investors). This is unlikely to be an easy task; venture capital investors overseas prefer investments that are geographically proximate to them, as investments often require significant monitoring and close relationships that are difficult to maintain across large physical distances.<sup>61</sup> As one interviewee put it, “we have to work hard to differentiate ourselves” from overseas opportunities.<sup>62</sup> In saying that, there are advantages to the local biotech space at least, with local science often being competitive at an international level and local science suffering fewer hierarchies than overseas.<sup>63</sup> As another interviewee put it, the difficulties “can lead to a superior outcome, because there’s no room for complacency.”<sup>64</sup> In any event, it is perhaps difficult to see how the short term funding shortfall identified can be ameliorated in an alternative way, if the long-term problem described is accepted (and assuming no greater intervention by Government in the market than currently exists). It is suggested those looking to start up VC funds or high-growth, high-risk companies be aware of this issue from the outset (as perhaps some of those involved in the Seed Fund did not have the opportunity to be) and develop effective strategies to obtain that capital.

On a different note is the relationship between managers and researchers or scientists involved in the development of a start-up company’s product. The academic literature discusses at length the importance of the relationship between the VC investor and the entrepreneur whose idea it is funding. The VC model refined over time in the United States is largely committed to ameliorating agency and information asymmetry problems between these two parties.<sup>65</sup> However, in those situations where the investor appoints company management (like the Seed Fund had a role in doing with its investee companies), or research is done through research contracts with University academics there can potentially be similar problems between management and researcher. In these situations it seems likely that effective strategies need to be established to ensure all parties maintain the mutual trust and respect necessary for investee success.<sup>66</sup>

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<sup>61</sup> See e.g. Josh Lerner, ‘Venture Capitalists and the Oversight of Private Firms’ in *Journal of Finance*, Vol. 1 No.1 (1995) – p302.

<sup>62</sup> Interview with Richard Treagus

<sup>63</sup> Interview with Professor Parry Guilford

<sup>64</sup> Interview with Jon Pilcher

<sup>65</sup> Gilson, *op cit* note 1, p1077.

<sup>66</sup> See e.g. Josh Lerner, ‘The University and the Start-Up – Lessons from the Past Two Decades’ in *Journal of Technology Transfer*, Vol. 30 No. 1 (2005) – p52.

In interviews, it became apparent that there was often a tension between the views and expectations of those taking a research perspective in the investees and those taking a management perspective. Those involved from the research perspective tended to feel they were sometimes treated poorly by management and not rewarded as well as they should have been for their work. Those involved from the management perspective acknowledged the difficulty in finding the ideal role for researchers in company structure, having to balance knowledge of the research and product against experience in commercial operations. Part of the tension seems to have stemmed from the relative inexperience the researchers involved had of commercial contexts prior to this work, especially at The University of Otago where there was less experience working with venture-capital investors.<sup>67</sup> A deeper issue though is the (potentially now historical) tendency for academic scientists to see commercial research as 'less pure' or to have difficulty understanding its utility, creating a potential 'gap' in academic CVs or hurting their career opportunities.<sup>68</sup> From a managerial perspective challenges emerge from the need to keep investors supportive of the company, which often requires placing their needs ahead of researchers. Wasserman notes a tendency for founder CEOs (and so perhaps those generally involved in the company from the outset) to step-down because of the demands of newer investors in the company and to ensure the company continues to be funded.<sup>69</sup> Those problems potentially exacerbate tensions and respective lacks of knowledge, because lack of knowledge or respect for commercial contexts may engender a lack of networking and skills necessary to both understand those commercial contexts and assistance for both sides in ensuring the trust and respect discussed above is developed.

As one interviewee put it, however, part of the exercise for management and researchers working together in these commercial contexts is the development for mutual respect for the work each side does.<sup>70</sup> One of the potentially useful perspectives discovered during research is that researchers often appreciate a different range of incentives to those that might be expected by corporate management. Participants noted examples of incentives they appreciated (or would have appreciated) included funding for travel to conferences, research jobs for graduate students and the ability of researchers to claim criteria within academia for the results of their research through publication (in addition to the company using the data itself).<sup>71</sup> Share bonuses and cash are also helpful inasmuch as they allow researchers to feel like they 'are a part' of successes the company has, but these are sometimes poorly executed or poorly explained to scientists.<sup>72</sup> It may be worth future studies investigating how companies target these sorts of incentives to researchers and whether they can be more effectively utilised. If management is able to use those incentives more effectively, it helps to build the kind of mutual trust and confidence between the two 'sides' that helps relax potential tensions and ensure positive outcomes for all involved.

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<sup>67</sup> Interviews with Professors Anthony Reeve, Parry Guilford and Margaret Brimble

<sup>68</sup> Interviews with Professors Anthony Reeve, Parry Guilford and Margaret Brimble

<sup>69</sup> Noam Wasserman, 'Founder CEO Succession and the Paradox of Entrepreneurial Success' in *Organisation Science*, Vol. 14 No. 2 (2003) – p156.

<sup>70</sup> Interview with Professor Margaret Brimble

<sup>71</sup> Interviews with John Kernohan; Professors Anthony Reeve, Parry Guilford and Margaret Brimble

<sup>72</sup> Interviews with Professors Anthony Reeve, Parry Guilford and Margaret Brimble

From a wider perspective, the tensions between academic and commercial expectations in the venture capital context are discussed in some detail in the literature. McCammon, Pio, Barakat and Vyakarnam note that there is a “mismatch” in expectations between faculty members at universities and commercial venture capital (CVC) funders, with CVC funders placing different stages of scientific development to researchers as of greater importance to project success.<sup>73</sup> In accordance with some of the views found in this research, some faculty members saw themselves as “naïve” and had difficulties with the networking that plays a notable part in CVC funding.<sup>74</sup> Lundqvist and Middleton note that venture capital is seen as the most challenging area for researchers to work with, although they also note that universities which provide environments that assist researchers in developing an understanding of entrepreneurship help reduce the difficulty of that challenge.<sup>75</sup>

As noted, those researchers involved in the Seed Fund story seemed to have felt relatively inexperienced in the commercial context. If further start-ups are to be spun out of university research, it may well be worth investigating whether cultures like those that existed at the outset of the Seed Fund story continue to hinder local academics working in commercial contexts. The cultures within universities are often “very different” from those within commercial funders, and the short exposure many universities have had to the venture capital and start-up industry is likely to aggravate a lack of understanding of funder’s needs.<sup>76</sup> Several interviews noted these challenges, and in the words of one, the two areas “seem to march to the beat of a different drum.”<sup>77</sup> That very same interviewee rightly pointed out however, that with “mutual respect and understanding appropriate relationships can be struck.”<sup>78</sup> It seems likely that here in New Zealand, where the venture capital industry itself is still a relatively new phenomenon, cultural differences are likely to be even larger than overseas where venture capital is much more established. If venture capital funds (or investors generally) seek to commercialise university research as the Seed Fund did, it is suggested that those funds work with universities to ensure they understand the requirements of funds in getting a successful investment company established.

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<sup>73</sup> McCammon, Pio, Bakarat and Vyakarnam, *op cit note 43*, p975.

<sup>74</sup> *Ibid*, p976.

<sup>75</sup> Mats Lundqvist and Karen Middleton, ‘Academic entrepreneurship revisited – university scientists and venture creation’ in *Journal of Small Business and Enterprise Development* Vol. 20 No. 3 (2013) – p 606.

<sup>76</sup> Mike Wright, Andy Lockett, Bart Clarysse and Martin Binks, ‘University spin-out companies and venture capital’ in *Research Policy* Vol. 35 No. 4 (2006) - p482.

<sup>77</sup> Interview with Richard Treagus

<sup>78</sup> Interview with Richard Treagus

## CONCLUSION

It might be thought that the Seed Fund, starting almost fifteen years ago in an almost non-existent venture capital market, would have little in-common with current venture capital funds in New Zealand. The gradual emergence of a broader venture capital market and Government support for it has not changed the environment as much as might be expected however, and the challenges faced by the Seed Fund may well reflect problems that continue to challenge current VC funds. The lack of local investment capital continues to be a problem perceived by local start-ups and VCs, and it is suggested that the Seed Fund's idea of looking overseas for supplementary capital – even if it did not work out for the Fund itself – is an approach that other funds may want (or even need) to follow. Further, the experience of researchers and management involved in the Seed Fund story broadly reflects similar challenges faced by university researchers interacting with venture capital across the world, and potentially offers lessons for any future start-ups emerging from local universities in the future.

The Fund itself currently has not proven to be a financial success. Unless Neuren or Pacific Edge 'spikes' in growth in the mid-term, the returns to investors from the Seed Fund are relatively low. That potential is still there though, and as discussed, the difficulty the Seed Fund had in delivering returns may be due to broader factors outside the control of those involved. Further, the Seed Fund helped establish two moderately successful ventures which may well go on to widely deliver important and beneficial products to market. That aim of the Fund was achieved, and it reflects the potential for innovation and scientific development venture capital carries with it. On that basis alone, it is suggested that "we need more" seed funds.<sup>79</sup> The local industry certainly faces challenges, perhaps significant ones, and the path to success for both funds and start-ups is not an easy one. Nonetheless, the rewards to New Zealand's economy and to individual investors are there, and well-informed investors may well still reap those rewards going forward.

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<sup>79</sup> Interview with Professor Anthony Reeve

**APPENDIX 1: TIMELINE OF KEY EVENTS IN THE SEED FUND STORY**

As with several areas in the Seed Fund story, data is thin in places. The exact dates for many of these events are unknown, so all dates are approximate.

**1996 - 1997:** NeuronZ is incorporated.

**2000:** Seed Fund established and begins investing. Seed Fund invests in NeuronZ.

**2001:** Pacific Edge, based in Dunedin, is incorporated and the Seed Fund invests in it.

**2001:** Seed Fund invests in Esphion (then JSD Limited).

**2002:** Seed Fund invests in EndocrinZ (the company is likely to have been incorporated around this time).

**2004:** NeuronZ and EndocrinZ merge to form Neuren.

**2006:** Seed Fund distributes its shares in Pacific Edge in-specie to investors.

**2007:** Seed Fund distributes its shares in Neuren in-specie to investors.

**2007:** Seed Fund has no investments with current or future value.

**2008:** Esphion acquired by Allot Technologies Ltd.

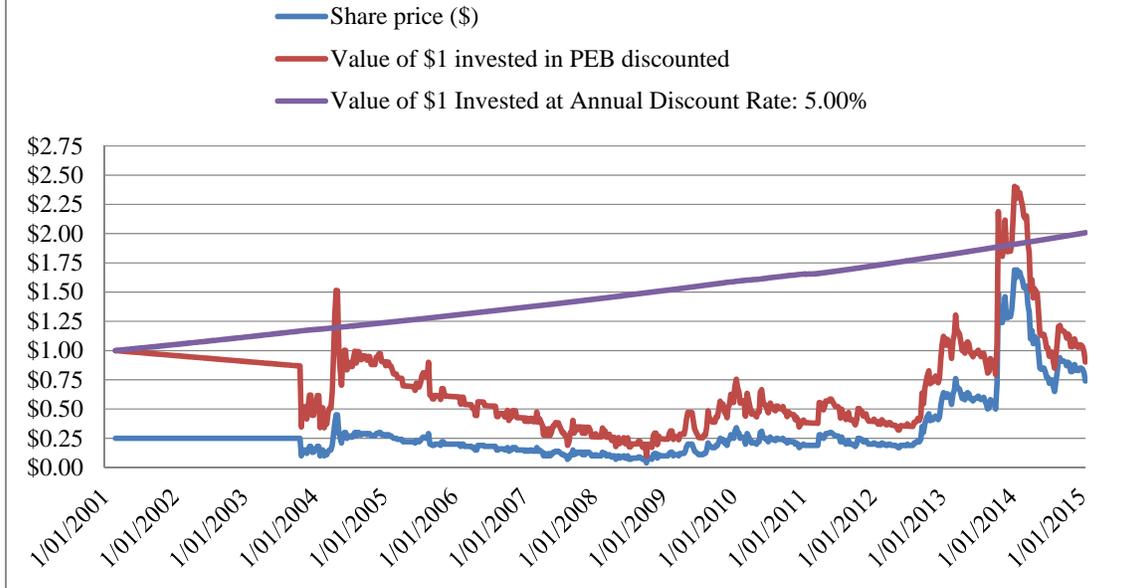
**2013:** Pacific Edge begins marketing Cxbladder, its first commercial product.

**2014:** Seed Fund formally wound up and remaining funds distributed to investors.

**2014:** Neuren receives Orphan Drug status for NNZ-2256 in Fragile X Syndrome.

**2015:** Neuren receives Orphan Drug status for NNZ-2256 in Rett Syndrome.

## Appendix 2: Performance of Pacific Edge Investment



## Appendix 3: Performance of Neuren Investment

