Demystification of Research:
Getting bigger (and better) by thinking small.

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Abstract

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Contemporary organisational design theorists, researchers and authors have been advocating the virtues of getting bigger by thinking small (see for example Morgan 1997, p. 102 ff.) These small, interconnected, networked organisational forms flourish in Silicon Valley and are exemplified in the organisation of the World-Wide-Web. In a similar fashion Japanese success with continuous quality improvement has been founded in *kaizen* – the concept of getting better through small incremental steps. Again, this has been exemplified in the computer hardware and software development industries. The notion of "research in Polytechnics" remains mystified, largely as a result of applying external stereotyped interpretations of the word "research." It is reasoned in the current paper that a key to establishing a flourishing research environment in Polytechnics is the demystification of research. It is further reasoned that this requires a better understanding of the requirements under which degree teachers must engage in scholarly activity, and more fully understand the foundations of our contemporary definitions of "research." Secondly, in the context of Polytechnic resource and capability constraints, it is argued in the current paper that a strategy to move forward to increase both the quantity and quality of Polytechnic research is to think small. This requires a mindset willing to enable researchers to develop their ventures by smaller, interconnected, networked, incremental steps and to celebrate outputs at every step as small but accumulative victories.

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The contents of this paper are based on eight years participant-observation in direct connection with the theme of this conference: Research in a polytechnic – trying to develop strategies for improvement. For eight years I have been employed as either Research Leader or Research Coordinator at a Polytechnic, with a brief to facilitate the establishment and maintenance of research activity. I am a psychologist by qualifications and the underpinning of my approach lies in Personal Construct Psychology (Kelly 1955). In a nutshell Personal Construct Psychology holds that as individuals we spend a great deal of energy trying to make sense of our world. We do so largely by recognising patterns in the similarities and differences in events, phenomena, people and so on. On the basis of these patterns we each **construct** a unique model of the world, as it makes sense to us (in other words as we **construe** it).

As a Personal Construct practitioner, I have been trying to make sense of my world as a research co-ordinator and mentor. This paper represents some of my construal or sense making related to the theme of this conference and as a participant-observer in this particular arena. Hence this is not a paper extolling our successes. Indeed it is probably based on attempts to make sense of frustrations rather than of successes. The paper is based on the patterns and parallels that I see in my various roles within the Polytechnic sector, namely as both a research coordinator and also as lecturer in organisational behaviour and research methods. I think they are worth sharing, if nothing else.

In their book on field studies Andersen, Borum, Kristensen & Karnoe (1995, p. 18) state that they "conceive of the research process as a learning process." I concur with this view.

Additionally, in his keynote address at the 1999 Higher Education Research & Development Society of Australasia (HERDSA) conference, Ference Marton spoke of tertiary education institutions as "institutions of learning." Not institutions of teaching, not institutions of research, not institutions of administration, but institutions of learning. In this keynote address Marton basically provided a synopsis of his newly published book (Bowden & Marton 1998) and touched upon a number of aspects of life in tertiary education institutions. A similar notion was expressed in a recent speech by the year 2000 HERDSA visiting scholar, Charles Glassick from the Carnegie Foundation, in tracing the paradigm shift from teacher-centred learning to student-centred learning and more recently towards inquiry-based learning (Glassick, 2000).

In relation to research Marton (1999) reiterated Andersen et al. (1995) by claiming that the main value of research in tertiary institutions was its provision of learning. The main value of research is not as an administrative activity, nor to discover universal laws of nature, nor to provide new knowledge. Instead, its principle value

in institutions of higher education, according to Marton (1999) is the role it plays in learning. Marton asked, once an academic staff member has completed their highest intended qualification (whether masters or doctorate), where do they get their further academic learning from? His contention is that it comes from research.

Another member of the Carnegie Foundation, Rice (1990) states that during the academic revolution of tertiary education (around 1957 to 1974) the term "scholarship" was equated with "research," especially that at the cutting edge of a discipline. Further it was only considered significant when publishable in a refereed journal. Rice states that this is one narrow facet of the scholarly enterprise. It is just one way of knowing, and scholarship is narrowly defined when it is considered only as the discovery and creation of new knowledge in a disciplinary specialisation. Rice and colleagues contend that knowledge is utilised in a variety of ways, and these other forms of scholarship are just as significant and as needed as "pure research".

I believe that for the Polytechnic sector, this is the sort of message that should be heeded concerning the roles and purposes of research. The value of research in Polytechnics, as a required background for degree teaching, lies in its relationship with the learning of all those classed as stakeholders in the Polytechnic system. This includes the contribution to the learning of not only students, but also the staff and the community at large (when that research is applied, commissioned or in some other way contributes information or technology transfer beyond the Polytechnic's gates). The notions of scholarship that have emanated from the Carnegie Foundation should be heeded and embraced as the norm within the Polytechnic sector. See for example Rice (1990, cited above), Boyer (1990), Glassick, Huber & Maeroff (1997) and Glassick (2000) who have conceptualised research as four scholarships: the scholarship of discovery (pure research), the scholarship of integration (synthesis), the scholarship of application (applied research) and the scholarship of teaching (transfer of the knowledge gained).

Very briefly, Marton (1999) spoke of the desirable organisational form for institutes of tertiary education. Given that these are institutions of learning, he advocated that the most sensible form of organisation was that of the "learning organisation." This is a contemporary form of organisational design and mindset, recently popularised by authors such as Senge (1994) and Garrett (1994). A useful summary of the concept of learning organisation can be found in chapter 4 of Morgan (1997). Throughout the remainder of this paper I make reference to this chapter of Morgan (1997) without providing a review of it in full. However, for anyone interested in establishing within their institution a concurrent "learning organisation of research," a worthwhile start might be chapter 4 "Learning and Self-Organisation: Organisations as Brains."

Morgan (1997) discusses organisational forms in terms of metaphor, and at one point writes of the "holographic" form of organisation. Without going into detail, holographic organisation involves building the whole into the parts. One way to do this "rests in the design of organisational structures that can grow large while staying small" (Morgan 1997, p. 104). This concept of growing larger by thinking or remaining small is not new, and authors have been referring to loosely coupled, networks of smaller organisations for some years (for example Limerick & associates 1998). Morgan (1997, p. 104) provides the following examples:

> "Magna International, an auto parts manufacturer that has grown at a rapid rate from a single factory employing twenty people in the mid-1950s to a corporation with sales in excess of $4 billion in the mid 1990s. The Magna philosophy is encoded in a simple set of business principles and the rule that operating factories must remain on a small scale to avoid becoming impersonal. Thus once an enterprise reaches a size in the region of 200 people, the only way it can grow is by spinning off another unit. In this way Magna spawns clusters of organisations that, in turn, spawn further clusters… creating a highly diversified enterprise where each part in effect develops as an integrated whole."
>
> "As a second example, consider the information processing company that has achieved a spectacular rate of growth over the past ten years through a process of holographic reproduction. Within the context of a broadly defined vision of superior customer service it has formulated the broad operational rule that growth can occur only through the development of new service units. When a unit reaches an optimal size, yet wishes to serve a larger customer base, three people from the unit, typically a manager and two service specialists, break away and launch a new enterprise."

Morgan (1997) emphasises the notion of getting larger by thinking small elsewhere. The famous image for using small change to create large effects is that of "the 'butterfly effect' whereby a small change as insignificant as a butterfly flapping its wings in Peking can influence weather patterns in the Gulf of Mexico" (p. 265). The butterfly does not cause change, but the image Morgan is trying to convey is one where an apparently insignificant change triggers another, which in turn triggers another and so on, in an incremental fashion.

In the organisational context, these small, interconnected, networked forms flourish in the computer hardware and software industries and are exemplified in the World Wide Web. Arguably the largest organisation known to us, the World Wide Web, relies for its size and ability to rejuvenate, on very small units – namely millions of very small, interconnected desktop PCs. And within each PC, similar configurations of even smaller software and file units exist. The World Wide Web is literally an interconnected network of very small units that form one of the largest organisations imaginable.

Within the quality improvement arena, the Japanese achieved immense success founded upon the philosophy of *kaizen*. This is the philosophy of promoting continuous improvement by taking one step at a time. To reach the top of a mountain we must take many small steps. The concept of *kaizen* is again, epitomised in the computer industry, where hardware is rapidly made obsolete by new, small incremental improvements in processing speeds and storage capacity. The same on the software side of this industry, where version 1.0 is soon replaced with a subtly improved version 1.01, then 1.02 and so on.

These images of organisational form and product development are not presented here to laud or glorify the world of business and management. Indeed there is a great deal about managerial practices that leave much to be desired. But that's another story and a separate interest of mine. The purpose of presenting these images is to point out

that there is a movement within organisational and managerial theory advocating that the way to get larger and better is by thinking smaller. I have used this set of examples only to show that in one arena this thinking has had some success, and then to invite you to consider the extent to which similar thinking might lead to the growth and improvement in research in Polytechnics.

Five years ago I was involved largely as a data gatherer (a small cog) in a piece of collaborative research with overseas colleagues. We conducted one-and-a-half hour interviews with 80 people. In hindsight, it was an extremely ambitious project. The logistics of transcribing the qualitative data, making sense of it all and collating it into some form of publication or report were immense. To date a publication has not been forthcoming and somewhere in this project my own completed analyses and writing of a paper seem to have been lost on someone's desk. The information is now out of date and publication would be an embarrassment. One assumes not only that problems of the data quantity created huge constraints, but also problems of managing a large team of collaborating analysts and writers.

It was from this experience that I reasoned that more might have been gained (for all parties involved – the researchers, the researched and the beneficiaries of the research output) if we had either interviewed fewer people to the same depth, or the same number in less depth. Perhaps even fewer people in less depth. Over the same period of time from the commencement of that project in 1995 to now we probably would have achieved more, not only in published outputs but also in terms of professional and ethical obligations to those who were studied. Andersen et al. (1995) tell similar stories of *tortuous journeys* and *30 month data analyses*.

These stories involve relatively experienced researchers. People completing PhDs or who have already completed PhDs. In the Polytechnic sector in New Zealand, we find ourselves with academic staff members lacking that level of experience and capability, nervous, doubtful that they can handle research projects of significance, yet feeling under pressure to do so.

Let me tell you about my eight years directly involved in research at a Polytechnic. In the early 1990's I worked in industry and while there, completed a PhD in organisational psychology. Hence I came from a discipline with a strong tradition in research. In 1992 I accepted a position as "research leader" attached to a new degree programme in a Polytechnic. I encountered the double burden of working with (a) an entire institution in transition from one where there had formerly been no tradition of research and (b) a vocationally/professionally oriented academic discipline that had also formerly lacked a tradition of research (accounting). In another paper (Hill, 1999) reference is made to the difficulty in trying to establish a research culture where academic disciplines do not "teach" research to their newcomers (their undergraduate students).

I thought I knew what research was. My years in psychology had mapped that out for me, and I had what I now realise was a stereotyped view of it. But I was to learn that it was not a stereotype shared by my colleagues, and it was not a stereotype suited to the academic environment in which I found myself. After a number of painful years trying to develop research, movement forward did not occur until, what the staff termed, "demystification of research." For many members of staff there was a

mystique surrounding research. Not only was there a lack of clear definition as to what constituted research there were also no clear expectations of what was required. Staff were continually being told that they were not doing enough research but remained confused (as did I) about what they were supposed to do.

Demystification of research occurred on two fronts. One was the idea of starting with small beginnings. The second involved a demonstration that the NZQA definition of research was in effect a disguised definition of "scholarly activity" (see Holland 1997 for an account of the NZQA definition of research) coupled with showing the origins of that definition in the UK Council for National Academic Awards (CNAA 1984).

My interpretation of the NZQA definition of Research highlights three crucial elements.

- It is not so much a definition of research, as a definition of *other scholarly activity* than one's normal teaching. In essence it has been labelled "research" for ease and to save printing space.
- NZQA does not regard activity mainly concerned with keeping abreast of new developments in your teaching subject areas as "research." I interpret that as meaning, reading and spending time in the library so as to up-date a lecture, developing new courses or rewriting existing courses, are therefore not "research" or "other academic inquiry." However, research and scholarship do contribute directly to the updating of lectures and new course development.
- The outcome of any research endeavour must be available for public appraisal in appropriate academic or other settings. In other words, printed outcome of research or inquiry (final report, fine artist's exegesis, etc.) must stand up to peer review. In-house presentation, publication, or circulation is deemed a minimum but sufficient level of peer review by some degree monitors.

An account of the NZQA definition of research was presented at a similar conference to this one by Professor Peter Holland (1997). An extract from Holland's paper has been replicated in Appendix A.

The NZQA definition of research looks suspiciously similar to material found in a Report produced in 1984 by the British Council for National Academic Awards (CNAA). The Report addresses the scholarly requirements of those teaching in degrees in the UK. One of the opening paragraphs in the CNAA Report states:

"Council interprets the term 'research' to cover a broad range of intellectual and scholarly activity, including the acquisition, dissemination and application of knowledge, skill and techniques. The main categories of work encompassed by this Report are *fundamental and applied research, consultancy, professional practice, scholarship, creative work and related activities*…. ***Unless the context explicitly indicates otherwise, all of the above listed activities are subsumed for the remainder of this Report by the phrase 'research and other comparable activities' or, more usually, for brevity, simply by the word 'research'***."

The italic and bold emphasis has **not** been added by the current author. To re-emphasise however, the final sentence of this extract states that the word "research" is used for brevity sake. It refers to a broad range of scholarly activities.

Somewhere between CNAA policy, its translation into the NZQA definition, and its interpretation by Academic Staff Members, this intention seems to have been lost. It is my belief that research becomes mystified for Polytechnic staff, because we tend to think in terms of only part of the NZQA definition. A major step in demystifying research would include fully recognising, understanding and adopting the entire spirit of the NZQA definition, and hence emphasis on scholarly activities or scholarly inquiry ahead of empirical stereotypes of scientific research. This is supported by the members of the Carnegie Foundation cited above (Boyer 1990, Rice 1990, & Glassick et al. 1997).

When it is stated that "degrees shall be taught mainly by people engaged in research," what is meant is that degree teaching shall occur within a background of scholarly inquiry activities, other than those we would consider part of someone's normal teaching duties. A great many things that academic staff do, constitute that form of scholarly inquiry, and satisfy the full blown criteria of the NZQA definition.

However, for purposes of accreditation and statements of research capability there are some additional requirements – and they are basically twofold. To count (ie. to win brownie points), one must be prepared to put their work up for public appraisal among appropriate peers and there must be a "hard-copy" output (something tangible).

In my eight years of involvement in research at Polytechnics, we seem to have been through a number of cycles of demystification and re-mystification of research. It began with my own stereotype from 1970's and 1980's psychology that research was the objective empirical testing of theory. I had to learn and adapt my notion of research in the face of academic disciplines for which such a definition does not suit, and in the face of the so-called "paradigm crisis." Re-mystification seemed to occur with degree monitors applying the same stereotyped notion of research, operating out of the modern paradigm rather than the more post-modern paradigm. Although they represented NZQA as monitors, they sometimes seemed not to fully comprehend the spirit of the NZQA definition. Research seems to be re-mystified every time we engage new staff at managerial level, especially if they have come from a university environment. Some of the mystification seems, to me, to also be bound in staff members who have recently completed masters theses and who conceptualise research only in terms of projects of that proportion.

I argue in this paper, that "thinking big" actually holds us back from moving forward. I argue that "thinking small" provides a strategy for moving on. I stated earlier that to reach the top of a mountain we must first, take each small step one at a time until we arrive there. But perhaps our view of what is achievable is spoilt by contemporary technology. A helicopter can get you to the top of the mountain without taking all those small steps. But then again, not all of us can afford a helicopter. Perhaps we have a tendency to compare ourselves to those research institutions that can, metaphorically speaking, afford a helicopter.

Polytechnics are not resourced for research in the same way that universities and crown research institutes are. Polytechnics do not carry the same capability for research, in terms of both human capability and resource capability such as time, money, space and equipment. It seems to me that in the Polytechnic environment, where there are relative constraints in terms of workloads, and available finance, a

small steps approach would be conducive to getting research activity started and flourishing.

Consider the completion of a masters thesis. At a retrospective glance it might be construed as a single large project. Yet in actual process a masters thesis is a synthesis of a diversity of smaller interlinked components. One of these components is the literature review. But even that is an interlinking of different parts. There will be that literature which is reviewed for theoretical or conceptual purposes. There will be that which is reviewed to describe the historical background to the circumstance. There is also the literature that is reviewed to report the various methodological techniques used to study the same phenomenon or event in the past.

This concept has been well illustrated in Krathwohl (1989) who shows that research is a series of interlinked arguments, each with their own set of interlinked arguments (see Figure 1). Even then, that piece of synthesised linked research taken from inception to production of a final report (for example the masters thesis), is often just one small incremental evolutionary step in a series of research endeavours that we might call a scholar's research career.

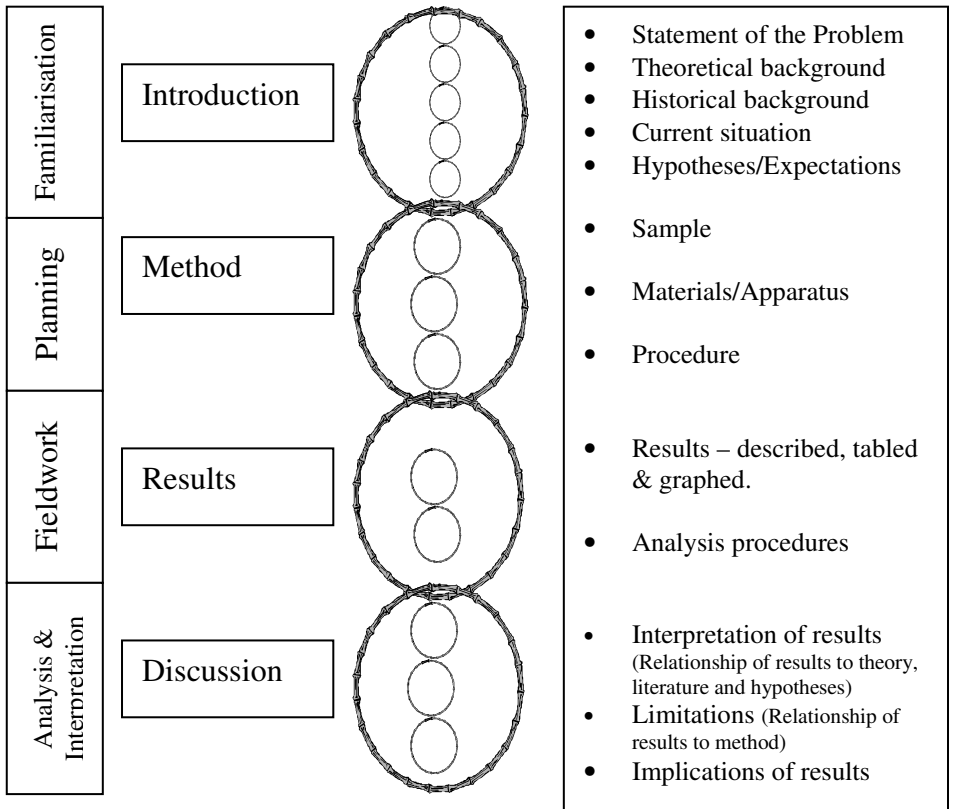

Figure 1. Research as a chain of logical steps, manifested in the format of final report. Based on and adapted from Krathwohl (1989).

By thinking smaller, we're not "dumbing down" research. We are being realistic about the way researchers think and actually approach their work. It means acknowledging these smaller component parts, allowing each to be investigated as a discreet entity, and within the constraining context of the Polytechnic environment, celebrating the completion of each step as a small victory. I am not a Skinnerian behaviourist psychologist, so my apologies for using the Skinnerian metaphor, by saying that in this manner we shape and chain research activity and quality by reinforcement of successively more appropriate approximations of our final goal.

In essence, I'm saying that for a masters thesis, PhD or piece of commissioned social research, we have a conceptualisation of adequate sample sizes and depth of investigation. In these cases we might conceive of hundreds of respondents in our sample and a questionnaire of 5 or 6 pages. In the Polytechnic environment that becomes an enormous project, and like a masters thesis might take two or more years to complete. Indeed, it might take longer and the data might be outdated and obsolete by the time its finally analysed and written up. There is an ethical and professional obligation to those who supplied information to the research, to see it to fulfilment in a timely fashion.

I'm suggesting in practical terms, that we might be able to achieve outputs and enhance our research capabilities by doing smaller, discrete projects that might, at a later date, be synthesised into something larger. Rather than 300 respondents and a three-page survey, it might be better to survey and report the results of samples of just 50 respondents. If we were to do this on six successive occasions, we would eventually reach the 300 target. Or alternatively, we might survey all 300 but only on a one-page survey. Having written that up, continue with the second page of the survey, then the third and so on. It is my contention that to complete these smaller manageable projects may ultimately take the same length of time, or marginally longer, had we tried to bite off a large ambitious project.

Also taking this argument to the practical level I have been inviting researchers to consider the following model. Start small and accumulate.

> "*If you are a novice, instead of sweating about finding a worthwhile research topic, just think in terms of the development of your own scholarship and growth. Locate and read a book, in your area of study, that interests you. Write a 1,000 word book review and name this as your "research & scholarship" output for semester 1 next year. For semester 2, repeat the exercise. Locate and read another book, in the same area of study. Write a second 1,000 word book review, as your targeted research output for that semester.*
>
> *"The year has ended and you have two outputs - two book reviews. This might seem lightweight to you and may not be published in a creditable place - but they are outputs all the same (then again they might be publishable somewhere). The main point is that you have embarked upon a systematic, theme-based reading programme, and have written up what you read. You now have two key pieces of literature review.*

"For the year following, you might extend your reading into more specific areas addressed by the two books. Your output goal for the end of Semester 1 might be to have formulated a research question. That is a simple question, ending with a question mark and hence more than just a general topic area. You need the research question to focus your further literature search and review. Your targeted output for end of semester 2, in that year, might be to produce a brief "literature review" and perhaps extend this to be more comprehensive literature review one semester later.

"At this stage you have not really embarked upon a data-collection or field-work type of research project. But you have started. You have embarked upon an area of study. You have enhanced your reading, and can begin to draw this into the stories you tell in the classroom. You have established a foundation. You might not get into data collection - your research might be of a reading and reporting type (as might be the case if you are a historian or student of literature).

"My prediction is, that if you carry out this procedure, a worthwhile topic will emerge. Don't force it to emerge. But by reading and reviewing, you raise the opportunity for it to emerge, while at the same becoming something of an "expert" in an area of study. Research is a creative act. It is also a project management process. Some of our media and fine arts colleagues may tell you that creativity sometimes deserts you. Sometimes you cannot force that creativity to return - you just have to wait for it. Sometimes inspiration and mood are lacking. During that period of time, you probably need to keep your self in trim, and do those things that enhance the opportunities.

"So, start reading that book..... (or its equivalent)...."

In our own Faculty another step towards demystification resulted from producing the grid shown in Figure 2. This grid was created in response to a request from management for a tool to measure research output. My agenda in creating the grid, however, was to use it as a tool to show academic staff members the full range of outputs deemed acceptable, and to demonstrate that many of them have humble beginnings. On one occasion display of this grid and a brainstorming session as to what sorts of activity might fit in each cell, lead to staff in one department starting to murmur aloud “I can do that” or “I can do at least that…” and also generated their use of the term “demystification of research.” Although that department has now gone into a holding pattern of research activity (largely due to their energies being diverted towards concerns about EFTS generation and departmental market research) at that time, we saw research and scholarship suddenly bloom.

In another department this grid was displayed on a whiteboard and degree teachers were invited to come forward and write their name in those cells of the grid that they believed they could achieve. That particular department has, this year, surged forth into prolific scholarly output and enthusiasm.

An additional point, in conclusion. Many different agenda come to play in relation to Research in Polytechnics. There is an administrative agenda. There is a Ministry of Education agenda. There is a Polytechnic management agenda. There is often a

funding and accounting agenda. And of course, there are also the agenda of the researchers. To enable a "growth and development by thinking smaller" strategy, some Polytechnics may need a mindset change, away from some of those agenda, and to better appreciate the agenda of the researchers. It requires a mindset willing to allow and support researchers to develop their ventures in terms of smaller, interconnected, networked, incremental steps and additionally to celebrate outputs at every step, as small but accumulative victories.

	Minor works: Little kudos, minimal review		Moderate works	Moderate review		Major works: Signif. peer review
International						Eg. International J.of…..
Asia Pacific					Eg. Ch. Of book requiring only editor's acceptance	
Australasian				Eg. Presentation at Australasian conference		
National			Eg. Book review in J. of New Zealand Society of…			
Regional		Eg. Regional proposal approved & research in progress				
Local (in-house)	Eg. Presentation of proposal to colloquium of colleagues					
	Research in beginning stages	Proposals accepted & research in progress	Revised editions, book review, newspaper article	Conference presentation, exhibition or performance	Non-refereed publication	Fully refereed publication

Figure 2. Grid of potential research and scholarly outputs.

In final conclusion, this paper has been titled "Demystification of Research: Getting bigger (and better) by thinking small." This has not been a paper in which I report our successes. Instead it's a paper founded in frustrations. In dealing with these frustrations, however, I believe in eight years as a participant-observer of research in Polytechnics, there has crystallised a useful strategy for moving ahead. First, demystification of the term "research." The word carries connotations that cloud issues and draw forth differing agenda, often with incompatible aims. Second, think smaller, in terms of what can be done by busy, hard working, under-resourced people,

rather than being in dreamland (what a colleague of mine calls "moon-shot" thinking). In 1999 the faculty of which I am a member carried out a survey of academic staff. Among other things we asked them what were the main obstacles to the development of research in the faculty. An interesting response that came from three or four people was a belief that institutional delusions of grandeur about research, were among the major constraints.

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Appendix A

An extract from a paper presented by Otago University Professor Peter Holland at the 1997 "Research and the New Tomorrow" Conference.

"In its report to the New Zealand Qualifications Authority, the Tertiary Action Group (TAG 1996, 24) attempted something more comprehensive when it recommended adoption of the following definition as the research requirement for postgraduate students:

> *"Research, which may include scholarship, is an intellectually controlled investigation which leads to advances in knowledge through the discovery and codification of new information or the development of further understanding about existing information and practice. It is a creative, cumulative and independent activity conducted by people with knowledge of the theories, methods and information of the principal field of inquiry and its cognate area(s). Research typically involves either investigation of an experimental or critical nature, or artistic endeavour of the type exemplified by musical composition. The results of research must be open to scrutiny and formal evaluation by others in the field of inquiry and this may be achieved through publication in peer-reviewed books and serials, or through public presentation. Research is often characterised by the identification of fruitful new topics for investigation and unexpected uses for its findings.*
> *(TAG 1996, 24)*

"Later in the TAG report a more inclusive definition of research is advanced. It draws on the statement published in 1991-92 by the Council for National Academic Awards and recognises

> *"...that for some subjects or disciplines, a broad interpretation of what constitutes research is necessary. All research activities are conducted in accordance with required ethical standards and are open to peer and public scrutiny.*

"The following kinds of research may be distinguished although they are not mutually exclusive:

> *"a) Basic or fundamental research: experimental or theoretical work undertaken primarily to acquire new knowledge without any particular application or use in view.*
>
> *"b) Strategic research: work which is intended to generate new knowledge in an area which has not yet advanced sufficiently to enable specific applications to be identified.*
>
> *"c) Applied research: work which develops or tests existing knowledge and is primarily directed towards either specific practical objectives or towards the evaluation of policies or practices. Work which involves the routine application of established techniques on routine problems is unlikely to constitute research.*
>
> *"d) Scholarship: work which is intended to expand the boundaries of knowledge and understanding within and across disciplines by the analysis, synthesis and interpretation of ideas and information, making use of a rigorous methodology.*
>
> *"e) Creative work: the invention and generation of ideas, hypotheses, images, performances or artefacts, including design, in any field of knowledge leading to the development of new knowledge, understanding or expertise.*

"Activities which may be equivalent to research, if they meet one or more of the definitions (a to e) outlined above, include:

"f) Consultancy, which involves the deployment of existing knowledge and the application of analytical and investigative skills to the resolution of problems presented by a client, usually in an industrial, commercial or professional context; and

"g) Professional practice, some of which overlaps with consultancy when conducted at an advanced level. In certain subject areas and professions, the theorisation and effectiveness of professional practice are advanced by academic staff who practise and participate in it.

"The Qualifications Authority does not regard activity mainly concerned with keeping abreast of new developments in subjects as 'research' ....

"The outcome of any research endeavour must be available for public appraisal in appropriate academic or other settings.
(TAG 1996, 40)"