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Introduction

In (pre-) historic times, tools were part of man's few private possessions. Primitive man depended on his tools to provide him with what was needed to survive. Nowadays, tools have evolved into an incredible range of products, supposedly designed to make our lives easier. In fact, the whole issue of survival seems very far away these days. The wealth known in western societies makes that the range of private tools the average person owns has grown to grand proportions and is still growing at an alarming rate. To support each man's growing personal library of products, natural resources are being used up at a very high pace. It is now common knowledge that we will soon meet the limits of what resources earth can supply. One of the movements that aim to prevent this from happening is the movement towards shared use. It is being argued that, in order to maintain our level of welfare without exhausting nature's resources, we need to re-invent our values of use and ownership. The forces that support this idea are numerous as are the reasons people have to contribute to it. While sharing might in the past have been a necessity for economic reasons, these days it's environmental awareness that has grown to a major stimulant. Fortunately, the concept of sharing things in daily life is not uncommon at all: Subjected to sharing have been, amongst others: books, agricultural equipment, means of transportation (cars, bicycles et cetera) and more recently, toys, music, electronic data and tools.

The following report is the result of a preliminary research into the concept of tool sharing in so called 'tool libraries' in Australia. Tool libraries exist all over the world in various concepts. Although volume, target audience, financial structure, purpose et cetera, vary strongly among them, these libraries all enable their patrons to use tools without actually owning them. This report focuses on the tool libraries of residential Australia. It tries to provide a clear status report on the practise of sharing in tool libraries in Australia. As the background of the researchers is Industrial Design (engineering), the practical focus is set on possibilities for (re) designing tools in a way that could help to optimise the practise of tool sharing.

In the first chapter, research questions are presented. The second chapter draws the current situation by mapping Australia's tool libraries and providing some backgrounds in the form of statistical data. Chapters three, four and five contain the results of three surveys and provide statistics on the opinions of both (potential) tool borrowers and professional tool hirers. This is followed by chapter six in which the research questions will be answered in the form of general conclusions.

Backgrounds

Before presenting the actual results, it might be useful to provide some of the backgrounds for this project. First, the researchers are introduced. Second, some related theories and institutions are introduced, which will provide the reader with a framework to place this research in. Several links to interesting related reading are provided in the footnotes.

Gerard Kool is a Postgraduate industrial design-engineering student at the Delft University of Technology, The Netherlands. As a masters' he chose innovation management. Throughout his education he has been particularly interested in sustainable development. By taking related courses and taking up the internship at the UNSW, of which this report is a result, he focuses on the role the industrial designer can play in the creation of a sustainable future.

Dr Mariano Ramirez jr joined the University of New South Wales in 2001 as a lecturer in Industrial Design. With a broad experience in the field of sustainable design, he has been supervisor of this project. Dr Ramirez will in the future coordinate further activities based on the preliminary research in this project.

Dr Cameron Tonkinwise, Executive Officer of the EcoDesign Foundation (EDF), has played an advisory role in this project. The EDF is an incorporated non-profit association that exists to accelerate the change toward more sustainable cultures and economies through design, research and education. EDF was founded in 1991 and is based in Sydney, Australia, though it works internationally with associations in the Americas, Asia, Europe and the United States.

Sustainments¹

"Sustainability is an abstract idea that is not yet clearly understood. Consequently many of the initiatives that are today called 'sustainable', are at best, only minimisations of ecological impact. Too much of what has been promoted as 'green' in the last decades has involved "sustaining the unsustainable", making fundamentally unsustainable activities moderately less ecologically impacting. Less worse is not necessarily better. Sustainments are mechanisms for betterment, because every sustainment involves a judgement about what is and is not worth sustaining. Sustainments are concrete initiatives that aim to promote and sustain change toward more sustainable ways of living and working. No sustainment is, by itself, 'sustainable'.

¹ A theory used by the EcoDesign Foundation, text taken from: www.changedesign.org

Rather, sustainments are contributions to the development of sustainability as a concept and a realised way of living and working. Sustainments design more sustainable lifestyles and work-practices.”

The *Sushouse* project²

The *SusHouse* project (strategies towards a sustainable household) is a European research project concerned with developing and evaluating scenarios for transitions to sustainable households. It was funded by the European Union and involves research institutes in five countries. The project ran from January 1998 to June 2000. Several of the scenarios written in the *SusHouse* project proved useful as inspiration in this research.

The Eternally Yours Foundation³

“The Eternally Yours Foundation has been active in the field of product lifetime extension since 1996. It wants to find ways to help products age with dignity in cases where this is relevant for the environment. The main reason is that current practice leads to slumbering dissatisfaction with our material world. Many people loathe our ‘throw-away society’ in which lack of quality is taken for granted. The result is an enormous waste and needless destruction of value.” The ideology of the Eternally Yours Foundation matches very well with the ideology supporting this research. The concept of tool libraries, opposes the ‘throw-away-society’ and aims at a sustainable use of long-life quality products; thus preventing needless consumption patterns.

Toy libraries⁴

“A toy library is a place where parents or carers can go to borrow a large variety of educational toys, puzzles and games on a regular basis. Toy libraries aim to support families and encourage them to spend time playing with their children. Quality toys are expensive and children quickly become bored with a toy once its play value has been exhausted. By providing new play materials every week or two, parents can save money and significantly contribute towards the development and education of their children.” Toy libraries have been run on a commercial basis since the 1970’s. It’s apparent that a lot of the challenges faced by toy libraries are similar to the ones tool libraries have to face.

² www.sushouse.tudelft.nl

³ Text taken from: www.eternally-yours.nl

⁴ <http://www.toylibraries.org.au>

1 Research Questions

Starting from zero has its advantages. The fact that the researchers' knowledge about tool libraries was indeed limited made the need for a broad approach apparent. The following research questions form the basis for this report. After presenting them in this chapter, the following chapters will be dedicated to finding the answers. Finally, in chapter 6, final conclusion will be presented.

1. How widespread is the practise of sharing tools in tool libraries in Australia?
2. What different types of tool libraries are there?
3. Which people currently use tool libraries?
4. How important is ownership?
5. How receptive are people to sharing in general and to tool sharing in a tool-library in particular?
6. What are the major practical problem areas in shared use of tools?
7. What would be the main areas of concern in a new to establish tool library?
8. Which tools should be re-designed to encourage the use of tool libraries?

2 Tool sharing in Australia: The general picture

2.1 Introduction

At the start of this research, it was not clear how established and accepted the concept of tool libraries was in Australia and in the rest of the world. The researchers' experience with sharing was limited to membership and use of book libraries, sharing with friends, family and neighbours, and patronage in a local toy library. The lack of hands-on experience with tool sharing schemes was reason enough to start with a blank sheet: The first step was to identify and classify tool-sharing activity in Australia. As resources were limited, the choice was made to cover as much territory as possible by using the Internet. Small-scale literature research would further build the body of knowledge on tool libraries to provide a general picture of tool sharing in Australia.

2.2 Internet research

Internet research was conducted via several search engines and via the sites of, amongst others, the Sydney Morning Herald⁵ and Choice magazine⁶. The efforts were directed towards Australian tool libraries, however, some information regarded tool libraries in foreign countries. Although the Internet yields relatively quick results, it does not always provide sufficient data as WebPages are often outdated or provide incomplete information. Some leads were limited to a reference only, often not yielding any further information. It is also important to emphasize that not all tool libraries in Australia might be present on the Internet, therefore the following list, containing all identified Australian tool libraries, is likely not to be conclusive.

Status	City	State
Club VeeDub Sydney Inc.	Parramatta	NSW
Citroen Car Club of NSW Inc.	Parramatta	NSW
The Bower Re-use & Repair Co-operative Ltd.	Marrickville	NSW
Latrobe University Union	Latrobe University	VIC
Swinburne University of Technology Student Union	Hawthorn	VIC

⁵ www.smh.com.au

⁶ www.choice.com.au

Triton Woodworkers Club	Holmesglen	VIC
South West Institute of TAFE	Warrnambool	VIC
Monash University Student Union tool library	Clayton	VIC
Milpara Housing Community Inc.	Korumburra	VIC
The Junction Community Centre	Ottoway	SA
Taperoo Family Centre	Taperoo	SA
Mitchell Park Neighbourhood Centre	Mitchell Park	SA
Modbury Tool Library	Campbelltown	SA
Wandana Community Centre	Gilles Plains	SA
Bagster Community House	Salisbury North	SA

Besides these 'hits', three more American tool libraries were found:

Takoma Park
Pacific Gas and Electric Company, California, USA
Berkeley Tool Lending Library, California, USA

The American tool libraries were ignored in this research.

2.2.1 Population density

From the information found on the Internet, a pattern started to emerge: Tool libraries, are found in the states New South Wales, Victoria and South Australia only. In New South Wales, the libraries are found in the Sydney area. The South Australian tool libraries are all situated in the Adelaide area. In Victoria, the libraries are found around Melbourne, but not all in the actual Melbourne suburbs. It is clear, however, that tool libraries generally exist in places where population is dense.

2.2.2 Target audience

In New South Wales, two of the three found libraries are part of a car club. Members of the club run these libraries for members of the club only. The tools in these libraries are mainly used to work on just one brand of car. For this reason, these libraries own common tools as well as tools especially fit for the one brand. The third tool library, the Bower, is actually located in a second hand shop. Patrons of the Bower can use the tools on the spot and free of charge. The Bower functions as an independent ideological organisation and is accessible for anyone. At the time of writing, the Bower was in the process of expanding the library into an independent facility. Appendix A contains the report of an interview with one of the Bower's managers.

In Victoria, a total of six libraries were found. Four of those are run at an educational institution. The libraries are run as a service for students and/or personnel at these institutions. At the time of writing, the status of the tool library at Swinburne University is uncertain as the service was reportedly terminated due to the high costs of liability insurance. The fifth tool library is part of a club of woodworkers using Triton equipment. This club runs a literature and video library on woodworking as well as a tool library of specific woodworking tools. The sixth tool library is run by the Milpara Housing

Community and allows public access to a large array of tools for jobs in and around the house.

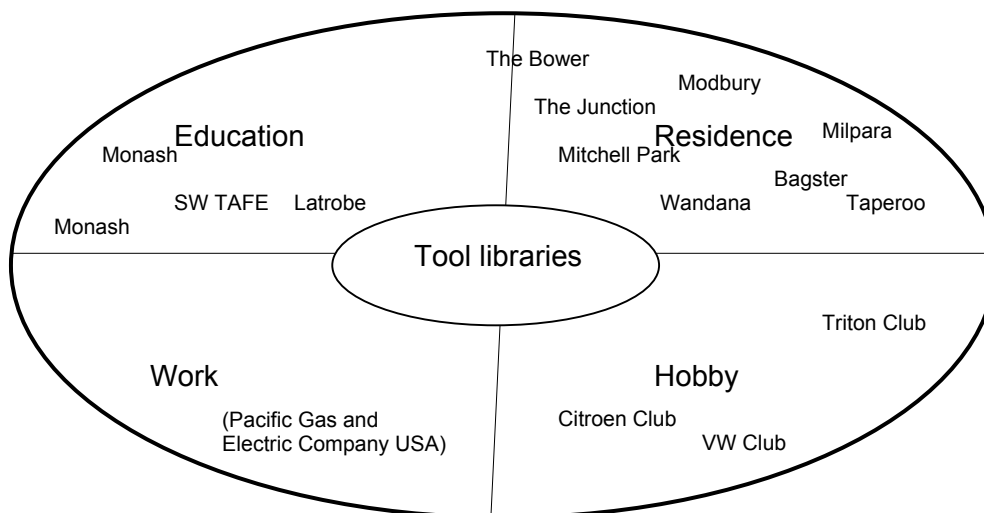
In South Australia, all six libraries found on the Internet are part of a neighbourhood-, family- or community centre. These libraries typically provide local residents with garden tools.

2.2.3 Categories of tool libraries

Several methods of categorising the wide variety of libraries were considered. The most successful division proved to be a division based on the reasons that the borrower has to be in the vicinity of the tool library. Four major categories that more or less fit all libraries are:

- | | |
|--------------|---|
| | People patronage a tool library: |
| 1. Education | at the place they study or take a course |
| 2. Residence | at the place they live |
| 3. Work | at the place at the place they work |
| 4. Hobby | at the place they practise their hobby/ hobbies |

It's obvious that the categories overlap to a certain extent. A hobby could for example be closely related to work or residence, just like course at the local community centre (residence) is a form of education as well. In general, however, the division is useful to get a grip on the variety that can be somewhat confusing at times. The categorisation is probably not complete yet. Another major category, of which its existence no evidence was found, could be 'Sport'.



2.3 Statistics⁷

2.3.1 Tool Libraries of New South Wales:

Volkswagen Car Club	Parramatta
Citroen Car Club	Parramatta
The Bower	Marrickville

Population

- In 2000, Sydney (the capital city statistical division (SD)) had an estimated resident population of 4,094,319.
- In 2000, 63.3% of NSW' population lived in Sydney (SD)
- Growth of the Sydney (SD) resident population over 1995-2000 was 1.3%.
- Growth of the NSW' resident population in 2000 was 1.04%.
- The 2001 census confirms Sydney children are growing up in the new suburbs being built in the southwest and northwest in increasing numbers.
- Of the Sydneysiders, 31% was born overseas (1996).
- Sydney grows faster than Australia (1.16%) as a whole, while NSW' stays behind.
- The median age of the Sydneysiders is 34, which is one year younger than the Australian median.
- In 2001, Sydney's indigenous population was 119,865

Labour

- The percentage change in hourly rates of pay from June 2000 – June 2001 was +3.8% in New South Wales.

Income and welfare

- The average weekly total earnings for all employees (full-time and part-time) in New South Wales was AU\$ 836.90 in May 2000.
- In the 1996 census it was found that in the Sydney metropolitan area there were 178,336 low-income households (AU\$ 300 per week or less), representing 17.7% of all households.
- Sydneysiders are paying 38% more than Melbournians and nearly twice as much as people in Hobart for buying a house in Sydney.

Housing

- In 1999 – 2000, the New South Wales' division of dwellings was the following:

Separate house	75.4%
Semi detached / row or terrace house / townhouse	9.6%
Flat / unit / apartment	14.4%
Total	2,406,000
- In 1999, of the 7,216,900 Australian households, 20.3% reported major structural problems in the physical condition of their dwellings, 43.4% expressed the need for interior repairs and 44.6% expressed the need for exterior repairs.

⁷ As derived from several publications of the Australian Bureau of Statistics

- As an indicator of dwelling size, in 1999 – 2000, half of all dwellings in Australia had three bedrooms, 24% had four or more bedrooms, and 20% had two bedrooms.

2.3.2 Tool Libraries of Victoria:

Latrobe	Latrobe University
Swinburne	Hawthorn
Triton Club	Holmesglen
South West TAFE	Warrnambool
Monash University	Clayton
Milpara	Korumburra

Housing

- In 2000, Melbourne (the capital city statistical division (SD)) had an estimated resident population of 3,438,765.
- In 2000, Victoria had a population of 4,765,900.
- In 2000, 72.1% of Victoria's population lived in Melbourne (SD)
- Growth of the Melbourne (SD) resident population over 1995 – 2000 was 1.3%.
- Growth of the Victoria resident population in 2000 was 1.24%.
- Melbourne and Victoria grow faster than Australia (1.16%) as a whole.

Labour

- The percentage change in hourly rates of pay from June 2000 – June 2001 was 3.6% in Victoria.

Income and welfare

- The average weekly total earnings for all employees (full-time and part-time) in Victoria was AU\$ 773.40 in May 2000.

Housing

- In 1999 – 2000, the Victorian division of dwellings was the following:

Separate house	81.7%
Semi detached / row or terrace house / townhouse	9.2%
Flat / unit / apartment	8.6%
Total	1,753,200
- In 1999, of the 7,216,900 Australian households, 20.3% reported major structural problems in the physical condition of their dwellings, 43.4% expressed the need for interior repairs and 44.6% expressed the need for exterior repairs.
- As an indicator of dwelling size, in 1999 – 2000, half of all dwellings in Australia had three bedrooms, 24% had four or more bedrooms, 20% had two bedrooms.

2.3.3 Tool Libraries of South Australia:

Ottoway	Ottoway	5013
Taperoo	Taperoo	5017
Mitchell Park	Mitchell Park	5043
Modbury	Campbelltown	5074
Wandana	Gilles Plains	5086
Bagster	Salisbury North	5108

Approximate distances between the libraries (km)

	Gilles Plains	Ottoway	Taperoo	Mitchell Park	Salisbury North	Campbell town
Gilles Plains	-	8	13	17	9	4
Ottoway		-	6	16	12	11
Taperoo			-	22	12	16
Mitchell Park				-	25	15
Salisbury North					-	13
Campbelltown						-

Population

- In 2000, Adelaide (the capital city statistical division (SD)) had an estimated resident population of 1,103,950.
- In 2000, South Australia had a population of 1,497,600.
- In 2000, 73.7% of South Australia's population lived in Adelaide (SD).
- Growth of the Adelaide (SD) resident population over 1995-2000 was 0.4%.
- Growth of the South Australian resident population in 2000 was 0.35%.

Labour

- The percentage change in hourly rates of pay from June 2000 – June 2001 was 3.2% in South Australia.

Income and welfare

- The average weekly total earnings for all employees (full-time and part-time) in South Australia was AU\$ 713.80 in May 2000.
- In the 1991 census it was found that in the Adelaide metropolitan area there were 142,955 low-income households (AU\$ 25,000 or less), representing almost 40% of all households.

Housing

- In 1999 – 2000, the South Australian division of dwellings was the following:

Separate house	77.5%
Semi detached / row or terrace house / townhouse	12.9%
Flat / unit / apartment	8.8%
Total	612.100
- In 1999, of the 7,216,900 Australian households, 20.3% reported major structural problems in the physical condition of their dwellings, 43.4% expressed the need for interior repairs and 44.6% expressed the need for exterior repairs.
- As an indicator of dwelling size, in 1999 – 2000, half of all dwellings in Australia had three bedrooms, 24% had four or more bedrooms, and 20% had two bedrooms.
- The five libraries in Adelaide are located in different geographical areas of the Adelaide metropolitan area (Far north: Bagster, far south: Mitchell Park, north-east: Gilles Plains, north-west: Taperoo and Ottoway).
- The northern half of the Adelaide metropolitan area is better served (four libraries) than the southern half (one library).
- All five libraries are located in areas which, in the 1991 census (ABS), were identified as 'low income areas'; i.e. areas where households of which the sum of the personal incomes is AU\$ 25,000 or less, represent more than 62% of all households.

2.4 Conclusions

Tool libraries were only found in three Australian states: New South Wales, Victoria and South Australia. These states together make up for ~64% of the Australian population and are the most densely populated Australian States. This might be interpreted as support to the statement that tool libraries, in order to be successful, need to be established in densely populated areas, where a large number of patrons is available. However, no tool libraries were found in the city-centres of Sydney, Melbourne and Adelaide. As a general statement: It seems that the suburbs of the big Australian cities have the most tool libraries.

Residence tool libraries are likely to be found in low-income areas. There is proving that the locations of Adelaide's tool libraries coincide with low-income areas.

Tool libraries can be categorised into at least four groups: Education, Residence, Hobby and Work. About half of the Australian libraries found, fit in the category Residence. This suggests that people most commonly patronage a tool library in relation to the place they live.

Tool libraries are relatively uncommon in Australia.

3 Forums

3.1 Introduction

The 'status report' provided in the last chapter was dominated by the conclusion that there was really not that much sharing activity in Australia; At least the information found on the Internet indicated so. As stated before, the concept of tool libraries was still considered a powerful sustainable strategy. In order for the concept to become reality on a scale that really makes a difference it was first necessary to assess people's willingness to go along with decoupling of use and ownership in a tool-sharing scheme. Only if the general consensus was positive, would it be interesting to investigate tool sharing strategies on both service and product level. To measure the public opinion on sharing in general and tool sharing in particular, several Internet forums were addressed to get a feel for what the participants in these forums think. Subsequently, two surveys were prepared, the first to address Australian residents and the second to address tool-hiring companies. This chapter presents the results of these activities and finally presents conclusions.

3.2 Forum results

A total of four forums⁸ were addressed with the following questions:

- "Are you involved in a tool-sharing scheme and are you satisfied with it?"
- "What are the advantages and disadvantages of tool sharing?"
- "Do you experience problems with (the design of) tools in general?"
- "What should manufacturers improve in order to make their tools better and make them better suitable for sharing?"

The forums yielded a staggering result of around seven hundred hits, the majority of which were gathered at the woodcentral forum. A selection of quotes, personal thoughts and personal experiences is taken up in appendix B. The respondents at

⁸ www.handyman.com/forum , www.woodcentral.com , www.diy.net , <http://forum.doityourself.com>

woodcentral.com refer to themselves as woodworkers. They are hobbyists or professionals in all areas of woodworking and naturally serious about the tools their jobs or hobbies depend on. The majority of the participants in this forum stated to be American. So while their opinions may have been a bit coloured by profession and perhaps nationality, their experiences still touched most facets of sharing. Some quotes:

- “The only way anything of mine is loaned is if I'm 100% sure the borrower will take better care of it than I would myself.”
- “You can borrow my wife, but leave my tools alone.”
- “When I do loan tools and other woodworking stuff like books, videos, or magazines, I keep a list of the borrower, the date, and what was borrowed.”
- “I figure that I have all the tools that they do and it would be of no use to me.” (About the local tool library)
- “I am willing to share tools that I don't care if I get back, but edge tools are off limits.”
- “The culture of the United States is very generous.. but only with cash or time. Very rarely possessions.”

The general attitude towards tool libraries is negative. In the circles of handymen, woodworkers and do it yourself-fans, tools are considered to be valuable personal objects. Generally, only the best quality will do and the tools are to be treated with care, especially by people who borrow them. It's quite striking that a large number of respondents report bad experiences with borrowing tools to friends, colleagues or relatives. The problems stated most frequently are:

- Damage to tools
- Tools getting lost
- Tools not being returned within a reasonable time span
- Tools being returned to the owner dirty or blunted
- Borrowers expecting the owner to bring and pick up the tools
- Borrowers being ignorant to the proper use of tools

A very important issue that keeps showing up in the replies is the relation between the borrower and the owner. Tool owners generally only borrow their tools to people that are close in their social network. While this seems to have a positive influence on the level of control the owner has on the use of the tools, it frequently seems to have a negative influence on the quality of the relationship between borrower and owner.

As the last quote implicates that culture is a very important issue in the acceptance of the tool library concept, it was decided to use the contacts gathered at the forums to run a preliminary survey. By doing this, responses from a (semi-) professional group of tool users would be gathered. These responses could be valuable in providing a sounding board for the responses from Australians, which were to be collected later on.

3.3 Survey 1: woodworkers

This web-based survey was sent to 37 participants in the Internet forums. As said, the respondents are all involved in different fields of woodworking. It was therefore expected that responses would reflect a 'professional' attitude. These results are regarded as the opinions of experts in tool use. The original questionnaire is included in appendix C.

Respondents' profiles

A total of 13 respondents filled out the survey. The following list profiles the respondents:

- Total of 13 respondents
- Gender: 12 male, 1 female
- Age: Mode and median category 45-54, ranges from 18 to over 65

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18 - 24	1	7.7	7.7	7.7
25 - 34	2	15.4	15.4	23.1
35 - 44	2	15.4	15.4	38.5
45 - 54	5	38.5	38.5	76.9
55 - 64	2	15.4	15.4	92.3
65 or over	1	7.7	7.7	100.0
Total	13	100.0	100.0	

- Family situation: 11 couples of which 9 with children (4 still at home), 2 singles
- Dwelling type: Of the 13 respondents, 12 answers to be living in a separate house
- Country: 12 respondents are from the USA, 1 from Austria

3.3.1 Current sharing profiles

How often?

Respondents were asked: In your daily life, how often do you share any of the following objects with people other than your family members? (Answers: 1. daily, 2. weekly, 3. monthly, 4. several times a year, 5. never). The following table shows part of the results:

	Daily	Weekly	Monthly	Several times a year	Never
Toys	18.2%	9.1%	9.1%	27.3%	36.4%
Handyman tools	7.7%	.0%	7.7%	46.2%	38.5%
Books	.0%	23.1%	7.7%	61.5%	7.7%
Cars	.0%	7.7%	.0%	38.5%	53.8%
Bicycles	.0%	.0%	.0%	20.0%	80.0%
Garden tools	.0%	7.7%	7.7%	38.5%	46.2%

	Mean	% 'Never'
Books	3.54	7.7
Toys	3.55	36.4
Handyman tools	4.08	38.5
Garden tools	4.23	46.2
Cars	4.38	53.8
Bicycles	4.80	80.0

Books are the most frequently shared items, bicycles the least. The woodworkers tend to share toys quite frequently as well. Garden tools and handyman tools are typically shared several times a year. In general, the woodworkers do not share their tools very often. One respondent on the other hand shares his/her handyman tools on a daily basis.

With whom?

The question was: With whom do you share the following objects most? (relatives, friends, flatmates, neighbours, community members (neighbourhood/ social/ religious), strangers).

	Relatives	Friends	Flat mates	Neighbours	Community members	Strangers
Toys shared with	1	5	0	2	0	1
Handyman tools shared with	4	2	0	0	3	0
Books shared with	6	5	0	0	1	1
Cars shared with	4	5	0	1	1	0
Bicycles shared with	2	1	0	1	0	0
Garden tools shared with	5	1	0	2	1	1

The respondents share most of their stuff with relatives and friends. Toys are also shared with neighbours. Two interesting observations can be made: The first one is

that three respondents share handyman tools with community members, the second is that toys and garden tools are being shared with strangers (each by one respondent).

Where?

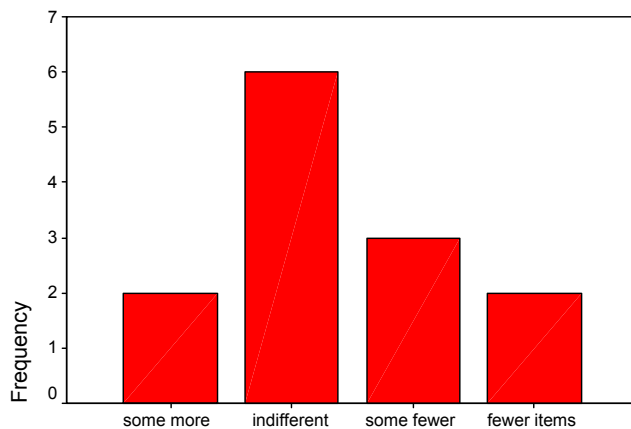
On the question "Through or from where does the sharing happen?", the respondents are congenial. The places they share are their home and work or study.

	Home as a basis for sharing	Work or study as a basis for sharing	Neighbourhood center as a basis for sharing	Clubhouse or motor pool as a basis for sharing	Library as a basis for sharing
no	0	9	13	13	13
yes	13	4	0	0	0

3.3.2 Sharing and satisfaction

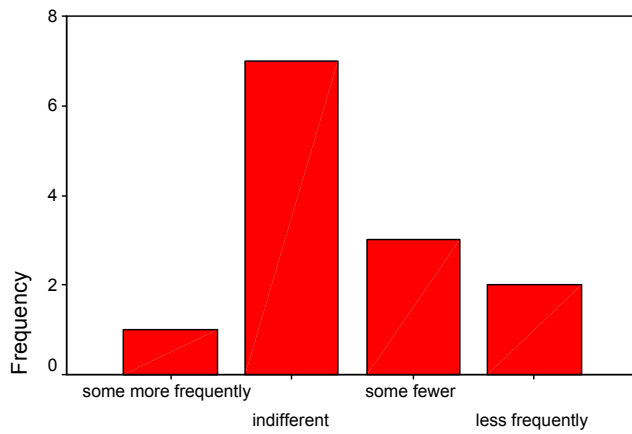
Considering volume of sharing

The respondents were asked to scale their satisfaction with the amount of items they share on a five-point scale from more items to fewer items. The majority of the respondents state indifferent or fewer. Only two respondents state they'd like to share some more items. It may be concluded that the respondents generally feel they are not sharing too little.



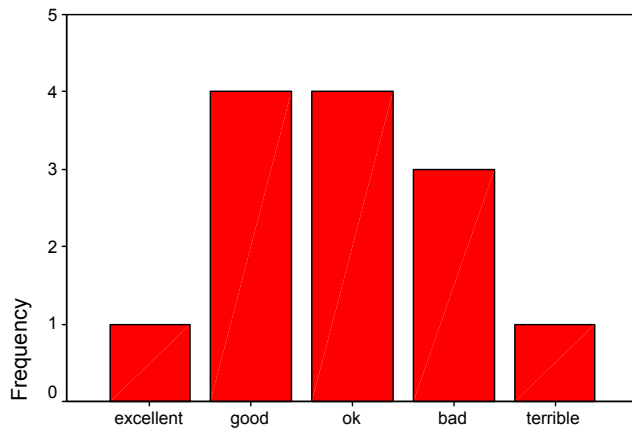
Considering frequency of sharing

Respondents were also asked to scale their satisfaction with the frequency with which they share on a five-point scale from 'like to share more frequently' to 'like to share less frequently'. The respondents all feel they should not share more frequently than they do currently.



Considering past sharing experiences

As a third measure of sharing satisfaction, respondents were asked to express their satisfaction with past sharing experiences. Again the answers could be given on a scale of five, ranging from 'excellent' to 'terrible'. It seems like the past experiences of the respondents are well distributed from excellent to terrible.



How important is ownership?

The question: Which of the following categories of items would you rather borrow than buy if you need them?, is generally answered negatively. Books and garden tools are exceptions however. The general conclusion here is that, in the case they need them, the respondents rather buy the named items than borrow them. When it comes to garden tools and books, respondents are somewhat less focussed on ownership.

I'd rather borrow →	Toys	Handyman tools	Books	Cars	Bicycles	Garden tools
Disagree	12	13	7	12	13	9
Agree	1	0	6	1	0	4

A second question: Which of the following categories of items, IF you owned them, would you rather not share?, was asked. Here the results are somewhat more

scattered. Respondents emphasize that they're willing to share toys, books, bicycles and garden tools. In the cases of toys and bicycles, it's interesting to note that the respondents value possession of these items highly, but have no problems with sharing them. Sharing is also well accepted for the garden tools. Ownership importance is balanced nine (rather buy) to four (rather borrow), while the majority of the respondents has no problem with sharing them. When looking for product categories that people don't really want to own and are willing to share, garden tools appear potentially successful. It's the opposite story for the handyman tools. The woodworkers want to own these tools and are not too eager to share them (three would share, against ten who wouldn't). In this question, Cars prove to be the category respondents' opinions differ the most on.

I would not share →	Toys	Handyman tools	Books	Cars	Bicycles	Garden tools
Disagree	13	3	11	8	13	11
Agree	0	10	2	5	0	2

It has to be emphasized that by disagreeing on the statement 'I would not share...', respondents do not state that they would share under all circumstances. Whether or not respondents would share might depend on duration of the sharing period, value of the tools, past experiences et cetera.

Which tools are considered most suitable for sharing?

The woodworkers are considered to be experts, to a certain extent, on tool handling. The question: Do you consider the following categories of tools suitable for sharing in a community?, was asked to tap into their knowledge. The table below shows the results:

	Not very suitable		Indifferent		Very suitable	
Garden tools	0	.0%	3	23.1%	10	76.9%
Carpentry tools	7	53.8%	2	15.4%	4	30.8%
Metalworking tools	7	53.8%	3	23.1%	3	23.1%
Masonry tools	1	7.7%	5	38.5%	7	53.8%
Decorating tools	6	50.0%	2	16.7%	4	33.3%
Plumbing tools	0	.0%	4	30.8%	9	69.2%
Electrical tools	3	23.1%	5	38.5%	5	38.5%
Protection tools	7	53.8%	1	7.7%	5	38.5%

Some general statements that can be justified by the data are:

- The respondents label garden tools, masonry tools and plumbing tools 'suitable'.
- Carpentry tools and metalworking tools are considered to be not very suitable by the majority of the respondents.

- The respondents' opinions seem to be divided into groups of adversaries and advocates on the other categories: decorating tools, electrical tools and protection tools.

	Garden tools	Carpentry tools	Metal-working tools	Masonry tools	Decorating tools	Plumbing tools	Electrical tools	Protection tools
N Valid	13	13	13	13	12	13	13	13
Missing	0	0	0	0	1	0	0	0
Mean	2.77	1.77	1.69	2.46	1.83	2.69	2.15	1.85
Median	3.00	1.00	1.00	3.00	1.50	3.00	2.00	1.00

3.3.3 Perception and expectations

Expected benefits

The respondents were presented five potential benefits to sharing of tools. They were asked to rate these benefits either 'not very important', 'indifferent', or 'very important'.

	Not very important		Indifferent		Very important	
Less storage capacity needed	6	50.0%	3	25.0%	3	25.0%
Access to a large array of tools	2	16.7%	3	25.0%	7	58.3%
Using tools to their full capacity	3	25.0%	4	33.3%	5	41.7%
Spending less money on tools	4	33.3%	4	33.3%	4	33.3%
Contributing to a sustainable future	3	25.0%	5	41.7%	4	33.3%

The woodworkers' ratings are spread quite uniformly for the last three benefits. There can be no conclusive statement on the representative opinion of the respondents on these questions. The first benefit, less storage capacity needed, is generally considered not very important. Storage space appears to be a lesser concern. To be able to access a large array of tools appeals to most of the woodworkers. This benefit could be labeled as the main benefit for the woodworkers.

Expected difficulties

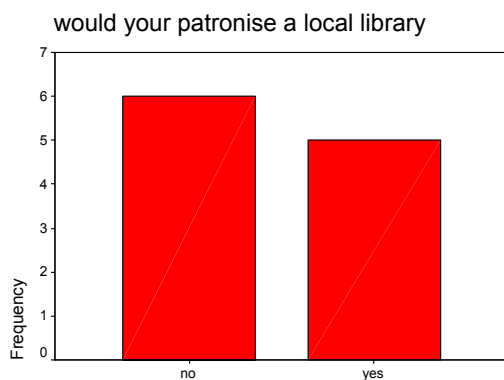
After being familiarised with the concept of tool libraries, the respondents were asked to express their concern about eight conceivable complications with tool libraries. The table below shows the results.

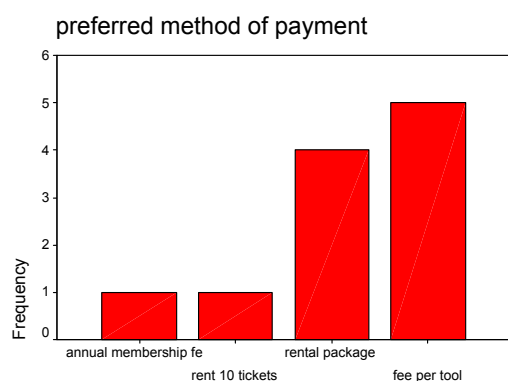
	No, not concerned	Yes, concerned
	Row Valid N %	Row Valid N %
Other patrons not returning tools	30.8%	69.2%
Missing parts	.0%	100.0%
Availability tools	38.5%	61.5%
Library doesn't have the tools	53.8%	46.2%
Tools too big	100.0%	.0%
Tools too complicated	100.0%	.0%
Hygiene	46.2%	53.8%
Locating tools in the library	92.3%	7.7%

The main areas of concern are: other patrons not returning tools at all, other patrons returning tools with missing parts, and the availability of tools at the time they are needed. Respondents are less concerned with the fact that a tool library might not have the tools or with hygiene issues. The presumed problems 'tool size', 'complicated tools' and 'locating tools' are not recognised.

Membership and contribution

The woodworkers are almost equally divided on the question whether they would patronise a local tool library or not. It must be stated that the possibility of choosing a 'maybe' was not offered in this survey. Among semi-professional tool users, the concept does not appeal strongly. Still, all respondents that answered this question gave their opinion on how to finance this library. The woodworkers prefer either a rental fee per tool or a rental package (for example, unlimited access to garden tools).





Additional responses

“Tools can be shared in a tool library, similar to the way books are shared in a book library. What problems with tool sharing in a tool library would you be concerned of?”

- 1 People don't respect tools they don't own.
- 2 Abused tools
- 3 Tool not in good repair
- 4 People abusing tools since they did not buy them
- 5 Tools might be returned damaged or in an unsafe wo
- 6 Who is going to sharpen and maintain them?
- 7 Misuse of tools resulting in poor tool performance
- 8 Tools would be unsuitable for accurate use, dull

“Do you have any comments considering sharing in general or the sharing of tools in particular?”

- 1 I don't think it would work well. It is a good theory, but the practical application has some flaws- people not caring for tools since they did not buy them using their own funds, serious craftsmen would more than likely have the tool or be more apt to buy the tools they need.
- 2 I would be most interested in yard maintenance machines and tools. ie: lawnmower, edger, line trimmer, power washers, etc.
- 3 More people like borrowing than loaning out, makes it less desirable to help others

“If you feel that something is missing in this survey, please type your remarks here”

- 1 Such a lending centre needs a full-time supervisor, able to do repairs as necessary

3.4 Conclusions

Forum

The participants in the forums are moderately negative in their judgement on the concept of tool libraries. This might be explained by the fact that the participants are, more than average, dependant on their tools. The major problem for these tool users seems to be that borrowers take bad care of the tools they borrow. It's the high standards of maintenance and high demand for quality tools that makes the participants critical on issues like maintenance and responsibility. Tool libraries are therefore bound to be not very successful when tools are shared between both expert and novice users. Tools can however be shared between experts only, thus assuring that the tools are well maintained by the users. Furthermore, the issue of customer instruction on tool use seems very important.

Current sharing profiles

The woodworkers that responded in the first survey typically share garden tools and handyman tools several times a year. The respondents do not share their tools very often. Instead, they share books. Relatives and friends are the groups with which the respondents share most frequently. Neighbours share in the use of toys. Sharing takes place within a small social network. The respondents generally share from their homes or from work/ study.

Sharing and satisfaction

In general, the respondents don't show any wish to get more heavily involved in sharing whatsoever. Respondents state they feel:

- They are not sharing too little.
- They should not share more frequently than they do currently.
- Past experiences of the respondents are well distributed from excellent to terrible.

The sense of ownership is strong with the respondents; they rather buy than borrow. When it comes to garden tools and books, respondents are somewhat less focussed on ownership. Respondents state that they're willing to share toys, books, bicycles and garden tools. In the cases of toys and bicycles, it's interesting to note that the respondents value possession of these items highly, but have no problems with sharing them. This relation does not show with other items however. When looking for product categories that people don't really want to own and are willing to share, garden tools appear potentially successful in the opinion of the respondents. It's the opposite story for the handyman tools. The woodworkers want to own these tools and are not too eager to share them. Successful sharing-tools would be the ones for gardening, masonry and plumbing. Carpentry tools and metalworking tools are considered to be not very suitable by the majority of the respondents.

Perception and expectations

To be able to access a large array of tools appeals to most of the woodworkers. This benefit could be labeled as the main benefit for the woodworkers. The potential

financial benefits valued surprisingly low. The main areas of concern are: other patrons not returning tools at all, other patrons returning tools with missing parts, and the availability of tools at the time they are needed.

The respondents are not particularly attracted to the concept of the tool library. About half of them would join one upon establishing. The woodworkers prefer either a rental fee per tool or a rental package (for example, unlimited access to garden tools).

Based on the results above: A future tool library would have the best chance to succeed when its collection is limited to garden tools and tools for masonry and plumbing. The target audience would be non-professional users, in small communities. Expected problem areas are the responsibility for maintenance and customer instruction. The convenience of sharing tools in this library puts financial considerations on a second level.

4 Australian Residents

4.1 Introduction

The conclusions presented in 3.4 are limited in their applicability on the Australian situation. First of all, the respondents in that survey were all American, and second, they were (semi-) professional users. The following question rose: How receptive to the concept of tool libraries are Australians that are known to have some experience with sharing? To get to know these people's opinion would be to share in their experience in Australia! In order to reach as many respondents as possible, the same survey as used in the first survey was sent by Email to all known tool libraries (see paragraph 2.2), to an extensive list of toy libraries and to community associations. In this Email, receivers were asked to forward the invitation to as many members/ patrons as possible. In this chapter, the results of this second survey are presented. Due to this setup, the respondents are very likely to be related to either a tool- or toy library or a community centre. The last paragraph lists conclusions about the success of tool libraries in Australia according to Australians.

4.2 Survey 2: Australian residents

Respondents' profiles

The survey yielded 12 responses in total. Respondents were asked to choose their state of origin before starting the survey. Replies came mainly from the South Eastern states of Australia, with responses from New South Wales, Victoria, Australian Capital Territory, Tasmania and South Australia. Half of the respondents live in Victoria. Since respondents were free to answer, it was possible for them not to answer all questions in the survey. For example: four respondents didn't state their weekly income. The remaining eight respondents have weekly incomes ranging from below \$300 per week to \$900 per week. The mean income of this group lies in the '\$300-\$500 per week' category. Of the ten respondents that stated their gender, seven were female. These same ten respondents have an average age between 35 and 44 years, and are all between 35 and 64 years old. The respondents typically (nine out of twelve) live in separate houses/ row or terrace houses or townhouses, all with their own yard. Respondents were asked to select from 6 options the living situation that best

described theirs. Of the eight respondents, five live as (one of) a couple with children at home.

4.2.1 Current sharing profiles

How often?

Respondents were asked: In your daily life, how often do you share any of the following objects with people other than your family members? The following table shows the results:

	Missing	Mean	% 'Never'
Books	2	3.50	0
Garden tools	0	3.50	16.7
Handyman tools	2	3.90	10
Cars	2	4.10	50
Toys	3	4.11	55.6
Bicycles	2	4.90	90

The results indicate that books, garden tools and handyman tools are among the most frequently shared objects. Bicycles and toys and cars are rarely shared.

Further remarks: Bicycles are considered private property, as they are practically never shared with people other than family members. Quite surprisingly, two respondents on a weekly basis share cars, while another 3 respondents share their cars several times a year. Garden tools are the only objects that are shared on a daily basis, by one respondent only.

With whom?

The question was: With whom do you share the following objects most? (relatives, friends, flatmates, neighbours, community members (neighbourhood/ social/ religious), strangers).

As toys and bicycles are shared by just four and three respondents respectively, these objects are not taken into analysis. Handyman tools and garden tools show similar patterns. They prove to be the most widely shared objects, as they are relatively evenly shared with relatives, friends, neighbours and community members. An interesting observation is that garden tools are shared with neighbours and community members more, while handyman tools are preferably shared with friends and relatives. This suggests that garden tools are shared with more distant relations than handyman tools are. Cars are shared mainly with friends and relatives, however, one respondent states to be sharing cars with community members. Books are primarily shared between friends. The respondents don't share with strangers and flatmates at all.

Share	Relatives	Friends	Flat mates	Neighbours	Community members	Strangers
Toys share with	1	1	0	0	2	0
Handyman tools with	3	4	0	1	2	0
Books share with	1	7	0	0	2	0
Cars share with	3	4	0	0	1	0
Bicycles share with	2	0	0	0	1	0
Garden tools share with	3	2	0	2	4	0

Where?

To get a measure of the respondents' sharing activities, they were asked through or from where the sharing took place. Most sharing takes place at home or in the neighbourhood centre. Libraries and workplaces are not very much used as a sharing base and clubhouses or motor pools are not used at all by the respondents.

	Home as a place for sharing	Work or study as places for sharing	Neighbourhood center as a place for sharing	Clubhouse or motor pool as a place for sharing	Library as a place for sharing
no	3	10	7	12	10
yes	9	2	5	0	2

4.2.2 Sharing and satisfaction

Considering volume of sharing

Respondents were asked to value the amount of items they share. The answer could be given on a five-point scale from 'like to share more items' to 'like to share fewer items'. Seven out of twelve respondents answered on the 'more side of the scale', while five respondents stated indifference by choosing the middle option. It might be concluded that respondents generally feel that they should not share less than they do currently.

Considering frequency of sharing

Respondents were also asked to scale their satisfaction with the frequency with which they share on a five-point scale from 'like to share more frequently' to 'like to share less frequently'. Here, seven respondents expressed indifference, one 'more frequently' and another four in between the former answers. Again, it might be concluded that respondents generally feel they should not take part in sharing activities less often than they do currently.

Considering past sharing experiences

As a third measure of sharing satisfaction, respondents were asked to express their satisfaction with past sharing experiences. Again the answers could be given on a scale of five, ranging from 'excellent' to 'terrible'. Out of the twelve respondents, four

selected the middle option ('ok' or indifferent), two selected excellent and the other six selected the option in between. It can be concluded that the respondents are all not dissatisfied with their past sharing experiences.

How important is ownership?

Sharing in general is closely linked to the sense of ownership that comes with buying an object. Since sharing of objects implicates that ownership has to be given up to a certain extent, two questions were asked to assess the importance of ownership for different categories of objects. The first question: Which of the following categories of items would you rather borrow than buy if you need them?

	Count	%
Toys	4	33.3
Handyman tools	10	83.3
Books	8	66.7
Cars	1	8.3
Bicycles	1	8.3
Garden tools	9	75.0

Handyman tools, garden tools and books are the objects that the respondents would rather borrow than buy if they had the choice. Cars and bicycles, and to a lesser extent toys, are apparently much more valued as personal objects.

To approach the issue of ownership from another angle, a second question was posed: Which of the following categories of items, IF you owned them, would you rather not share?

	Count	%
Toys	2	16.7
Handyman tools	3	25.0
Books	0	0
Cars	7	58.3
Bicycles	3	25.0
Garden tools	0	0

Respondents answer reasonably consistently as far as car sharing is concerned: Cars would not easily be shared. On all other categories however, respondents show a remarkable willingness to share. The conditions of the sharing are not taken into consideration, so it's only possible to state that respondents are not unwilling to share. This goes in particular for books and garden tools.

When compared with the answers to question one, some interesting relations become clear.

- One third of the respondents did not state they would rather borrow books than buy them. However, all respondents are not unwilling to share books. Books can be considered objects that people are glad to own and happy to share.

- The respondents rather own toys themselves (66% in question 1), but they are not unwilling to share them with others (83.3% in question 2).
- The respondents indicate that they'd rather own bicycles than borrow them. At the same time only 25% states unwilling to share their bicycles. A similar situation as with the toys seems to exist: respondents prefer to own their bicycles but are generally not unwilling to share them.
- Of the respondents, 75% would rather borrow garden tools than own them. At the same time, 100% are not unwilling to share garden tools. In general, the respondents feel no need to own garden tools if they can borrow them and they would have no problems with sharing these tools.
- Handyman tools take in a special position. Further investigation of individual responses shows that the two respondents who did not select handyman tools in question one, both did select handyman tools in question 2. In other words, these respondents value ownership of handyman tools and won't share them (lightly) with others. One of the respondents would rather borrow handyman tools, but would not share the tools he does own. The other nine respondents prefer borrowing of the tools and are not unwilling to share the handyman tools they own. As far as handyman tools are concerned, two opposites seem to exist: pro-sharing and anti-sharing.

Which tools are considered most suitable for sharing?

To get a feel for respondents' opinions on the suitability of different categories of tools, the respondents were asked to rate several categories either not very suitable, indifferent or very suitable. The table below shows the results.

	Not very suitable		Indifferent		Very suitable	
	Count	Row Valid N %	Count	Row Valid N %	Count	Row Valid N %
Garden tools	3	27.3%	0	.0%	8	72.7%
Carpentry tools	2	18.2%	3	27.3%	6	54.5%
Metalworking tools	2	18.2%	5	45.5%	4	36.4%
Masonry tools	1	9.1%	3	27.3%	7	63.6%
Decorating tools	0	.0%	6	60.0%	4	40.0%
Plumbing tools	1	9.1%	3	27.3%	7	63.6%
Electrical tools	3	27.3%	4	36.4%	4	36.4%
Protection tools	3	27.3%	2	18.2%	6	54.5%

Some general statements that can be justified by the data are:

- All categories of tools have more advocates than adversaries on their suitability for sharing in a community.
- Garden, masonry, decorating and plumbing tools are generally considered suitable for sharing in a community.
- Opinions vary on protection, metalworking and electrical tools; carpentry tools are met with varying reactions as well.

	Garden tools	Carpentry tools	Metal working tools	Masonry tools	Decorating tools	Plumbing tools	Electrical tools	Protection tools
N Valid	11	11	11	11	10	11	11	11
Missing	1	1	1	1	2	1	1	1
Mean	2.45	2.36	2.18	2.55	2.40	2.55	2.09	2.27
Median	3.00	3.00	2.00	3.00	2.00	3.00	2.00	3.00

4.2.3 Perception and expectations

Expected benefits

The success of tool sharing schemes depends heavily on the willingness of (potential) patrons to participate. Just like there are drawbacks, there are some obvious benefits to sharing of tools. To assess the appreciation respondents show for different benefits, they were asked to value these benefits on a three-point scale (not very important, indifferent, very important).

	Not very important		Indifferent		Very important	
	Count	Row Valid N %	Count	Row Valid N %	Count	Row Valid N %
Less storage capacity needed	0	.0%	4	36.4%	7	63.6%
Access to a large array of tools	0	.0%	0	.0%	11	100.0%
Using tools to their full capacity	1	9.1%	3	27.3%	7	63.6%
Spending less money on tools	0	.0%	1	9.1%	10	90.9%
Contributing to a sustainable future	0	.0%	4	36.4%	7	63.6%

As might be expected, all benefits are generally valued important. The label 'indifferent' should be interpreted as follows: Respondents choose indifferent do acknowledge the benefit; however, they don't feel this benefit might persuade them to participate in a tool-sharing scheme. With this taken into consideration, the benefits of 'access to a large array of tools' and 'spending less money on tools' clearly stand out and can be identified as main benefits of a tool library. The other benefits are recognised as being important, however they are not valued with the same determination.

Expected difficulties

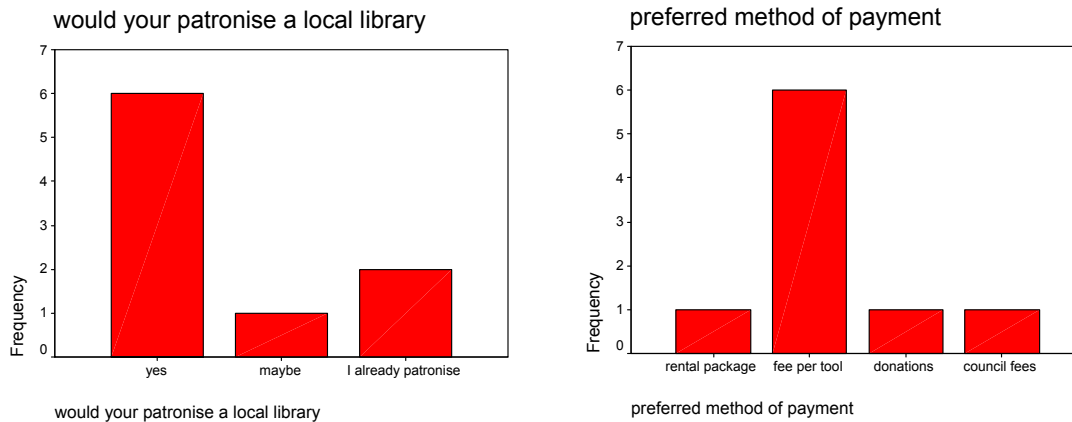
After being familiarised with the concept of tool libraries, the respondents were asked to express their concern about eight conceivable complications with tool libraries. The next table shows the results.

	No, not concerned		Yes, concerned	
Other patrons not returning tools	2	20.0%	8	80.0%
Missing parts	0	.0%	10	100.0%
Availability tools	4	40.0%	6	60.0%
Library doesn't have the tools	7	70.0%	3	30.0%
Tools too big	8	80.0%	2	20.0%
Tools too complicated	8	80.0%	2	20.0%
Hygiene	5	50.0%	5	50.0%
Locating tools in the library	8	80.0%	2	20.0%

Respondents are concerned most with patrons of the imaginary tool library not returning the tools they borrowed, or returning them with missing parts. They feel reasonably confident that the library would have the necessary tools in its collection, thus expressing a similar expectation at the same time. Locating the tools in the library is not conceived as a problem. Over all, the respondents expect discomforts to spring from patrons' behaviour, rather than from shortcomings on the part of the library and its management itself. An interesting notion is that problems with the hygiene of the tools are only anticipated by half of the respondents.

Membership and contribution

The attitude of the respondents towards a future local tool library is positive. Six out of nine respondents state they would patronise it, one respondent states 'maybe', while the last two already patronise a tool library. When asked how the library should be paid for, the majority of the respondents indicate a preference for a rental fee per tool.



Additional responses

One of the respondents shared his experiences. The tool library he patronised was recently closed because of the financial risks concerning liability in case of misuse.

4.3 Conclusions

Current sharing profiles

The most frequently shared categories of objects are books and garden tools, followed by the somewhat less shared category of handyman tools. The respondents don't share bicycles, toys and cars very often. Sharing is done mainly with friends, relatives and neighbours: with people that are relatively close in ones social network. Garden tools and Handyman tools are shared with the most groups, wherein the latter are somewhat restricted to friends and relatives only.

Sharing occurs mainly from home or from neighbourhood centres.

Sharing profiles and satisfaction

There seems to be a good basis for tool sharing considering current sharing profiles and satisfaction with sharing in general. Respondents state they feel:

- They should not share fewer products
- They should not share less frequently than they do currently
- Not dissatisfied with past experiences.

These results ground that respondents are positive towards the concept of sharing. The sense of ownership is apparent with cars and bicycles. Respondents rather own these items themselves, however they are reasonably willing to share their property with others. It's the other way around with books and garden tools. Respondents are happy to share those items, and at the same time don't feel the need to necessarily own them. The situation is somewhat more complicated for the handyman tools. Two groups of respondents seem to exist, the first possessive about tools, the second

willing to share. Respondents expect most success with sharing of garden-, masonry-, decorating- and plumbing tools.

Perception and expectations

Respondents value the possible financial benefits and the accessibility of a large tool collection highly. Problems are expected on the side of the patrons (not returning the tools, losing parts et cetera), rather than on the side of the imaginary tool libraries' management.

The attitude of respondents towards a future tool library is positive. The majority of the respondents choose a rental fee per tool as the best way to pay for the services of the tool library.

5 Tool hiring companies

5.1 Introduction

Why are tool libraries not as common as, for example, book libraries? What are the major problems with sharing of tools? How to best deal with multiple users? The commercial tool hiring industry has already tackled most of the problems a tool library would encounter. Companies like Kennards and Coates have made it their specialty to rent out all possible equipment for both the residential and the professional (industrial) market. And they seem to be successful as well. It became clear that the experience of tool hiring companies could be very useful in relation to future tool libraries. Therefore a third survey (see appendix D) was created and sent out to a total of over 300 branches of tool hiring companies. This chapter presents the results of this survey. The last paragraph lists conclusions.

5.2 Survey 3: Tool hiring companies

5.2.1 Business profiles

Distribution

Invitations to participate in this survey were sent to all Australian branches of Kennards Hire, Coates Hire, Active Hire and Mitre 10. A total of 12 branches responded. The responding branches were part of Kennards Hire (7x), Coates Hire (3x) and Active Hire (2x). The respondents were asked to state the postcode of their branch. The 12 branches are spread quite uniformly over New South Wales (4x), Queensland (3x), Victoria (4x) and Western Australia (1x).

Service

The respondents were asked to indicate which collateral services they offer in their branches, by selecting from a list of pre-selected 'common' services. All branches provide advise on safe use of the rented equipment, provide user guides with further instructions and all branches can arrange for the equipment to be delivered. In addition to these services, eight out of eleven responding companies said they provide on the job assistance, after hours hiring service and after hours' emergency help. Only one respondent provides customer liability insurance.

	No		Yes	
	Count	Row Valid N %	Count	Row Valid N %
Advise customer on safe use	0	.0%	11	100.0%
Provide user guides	0	.0%	11	100.0%
Provide on the job assistance	3	27.3%	8	72.7%
Provide delivery of hired tools	0	.0%	11	100.0%
Provide after hours hiring service	3	27.3%	8	72.7%
Provide after hours emergency help	3	27.3%	8	72.7%
Provide customer liability insurance	10	90.9%	1	9.1%

Percentage residential customers

The respondents were asked to fill out the survey aiming at residential customers only. To assess the percentage of customers that can be labelled 'residential', respondents were asked to estimate within 20% ranges. In all companies, the percentage of residential customers does not exceed 60% of the total number of customers. The mean percentage of residential customers is 30%. The respondents were instructed to answer all questions regarding residential customers only.

		Frequency	Percent
Valid	0 - 20%	4	33.3
	20 - 40%	3	25.0
	40 - 60%	4	33.3
	Total	11	91.7
Missing	-1	1	8.3
Total		12	100.0

5.2.2 Daily business

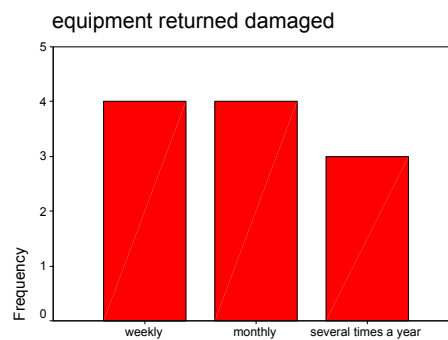
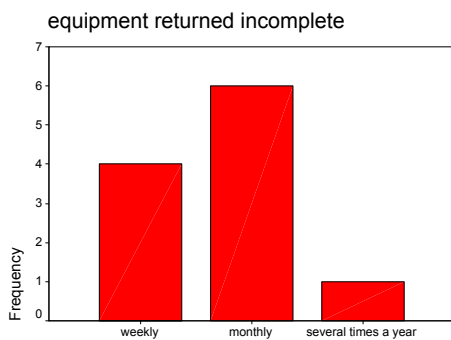
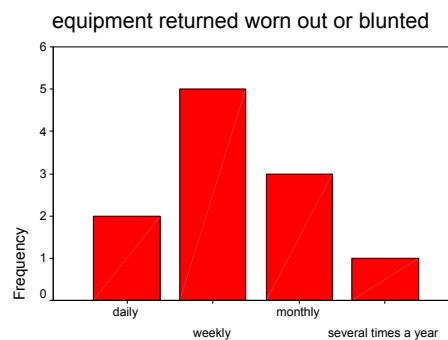
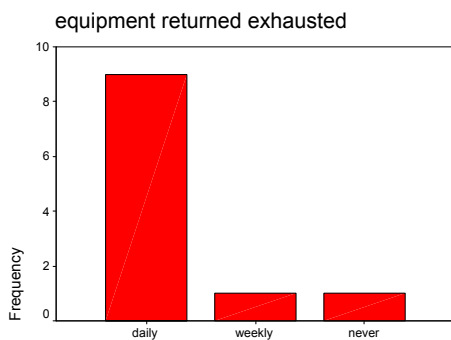
Oriented on residential customers, the respondents were presented a number of conditions in which customers can return their rented equipment. The respondents were asked to rate the frequency with which these conditions are encountered. The different conditions were:

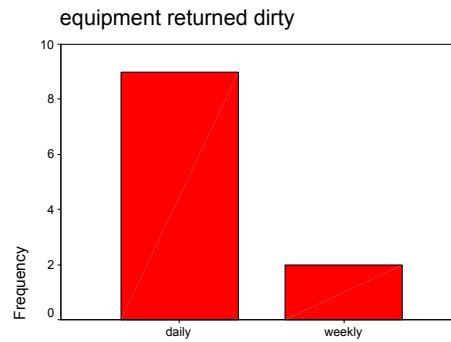
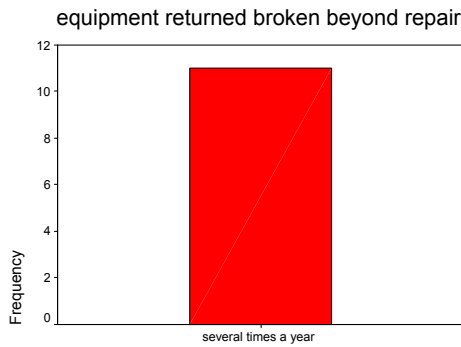
- Exhausted (equipment needs refuelling/recharging/refilling)
- Worn out or blunted (cutting edges/ blades need sharpening)
- Incomplete (equipment needs some parts replenished)
- Damaged (equipment needs some parts repaired/replaced)
- Broken beyond repair (full replacement of the equipment is required)

- Dirty (equipment needs cleaning/washing)

For this research, conditions that occur on a frequent basis are most interesting to assess. Conditions encountered on a daily basis are exhausted equipment and dirty equipment. On a weekly to monthly basis, the respondents receive worn out or blunted equipment, equipment with missing parts and damaged equipment. The respondents however, rate this last condition with a large spread. Finally, it only happens several times a year that equipment is returned damaged beyond repair.

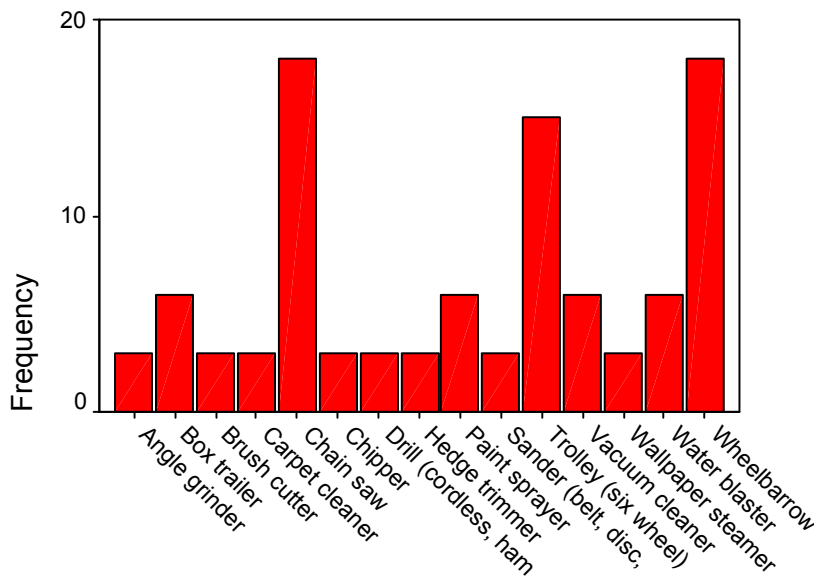
	Daily	Weekly	Monthly	Several times a year	Never
Exhausted	81.8%	9.1%	.0%	.0%	9.1%
Worn out or blunted	18.2%	45.5%	27.3%	9.1%	.0%
Incomplete	.0%	36.4%	54.5%	9.1%	.0%
Damaged	.0%	36.4%	36.4%	27.3%	.0%
Broken beyond repair	.0%	.0%	.0%	100.0%	.0%
Dirty	81.8%	18.2%	.0%	.0%	.0%





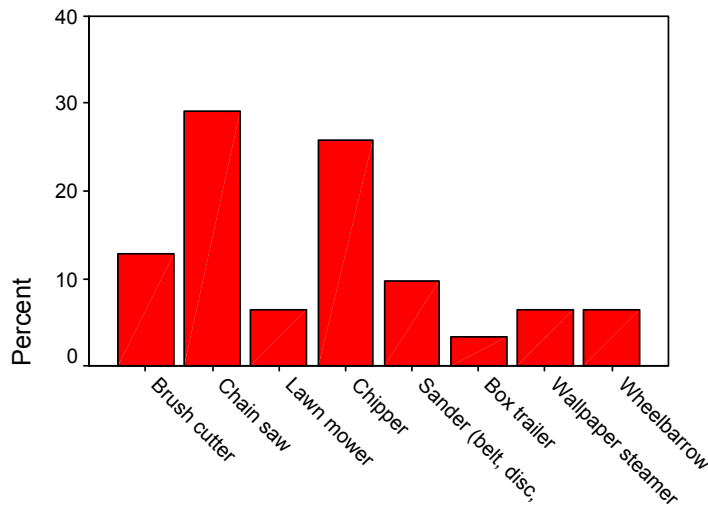
Customer demand

On the question: “Which of the following are your three most popularly rented products?”, respondents were allowed to select three products from a list of twenty-three. Clearly the items that are rated as “the most popularly rented equipment” are the Chainsaw, the Wheelbarrow and the (six wheeled) Trolley.



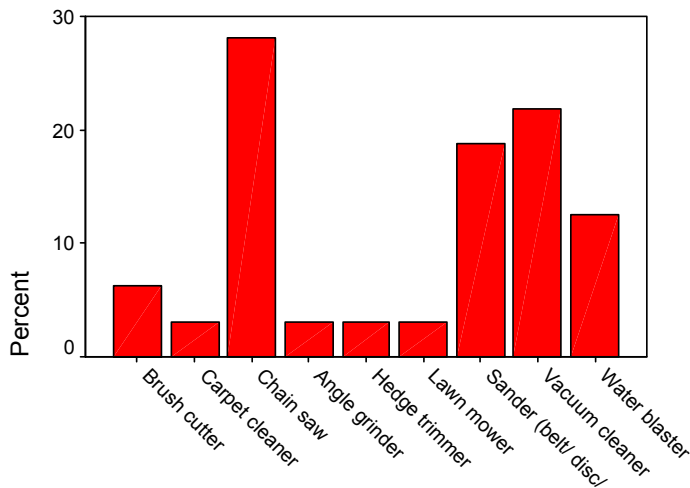
Cleaning

The respondents were asked to point out those items that require the most time cleaning. Not surprisingly, garden tools require most cleaning time. Most time is spent on the cleaning of two products: the chain saw and the chipper. These two products were selected nine and eight times out of thirty-one, making up for 54,8% of the answers.



Missing parts

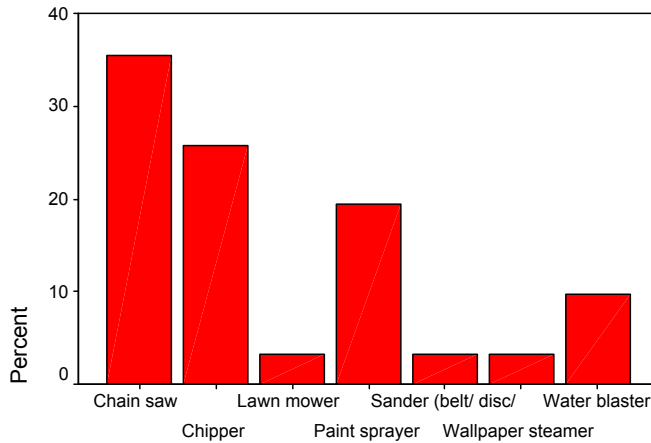
Another anticipated problem with tool hiring lies in the possibility that customers return the rented products incomplete. At some stage of the rental period, parts may have gone missing, posing a potential problem for the hirer. The tool hiring companies were asked to indicate the products with which this occurs most frequently. The most problematic product proves to be the chainsaw. The other products that are pointed out are the vacuum cleaner, the sander and the water blaster. Together, these four products make up for 81,3 % of all (32) valid responses.



General problems

The respondents were finally asked to point out those items that customers encounter the most problems with in general. With this question, the aim is to indicate those products that, in the minds of rental companies' employees, generate the most problems. The answers show that the respondents did not find it very hard to answer this question. The chainsaw and the chipper are pointed out as the most 'problem delivering' items, closely followed by the sander. These three products make up for

80,7% of all (31) valid responses. The water blaster accounts for an additional 9,7% of the responses.



5.2.3 Companies' performance

While the previous questions were more or less directed towards the customer's behaviour and point of view, the respondents were asked to value their own performance as well. The level of the customers' knowledge about the rented equipment is assumed to have a direct influence on the quality of interaction between the customer and the equipment. This interaction could, in a worst-case scenario, result in damaged equipment and injuries. The respondents were therefore asked: "How would you rate the time and effort that you invest in the instruction of customers on the safe use of equipment?". The tool hiring companies express confidence in the effectiveness of their own instruction activities: Ten out of twelve responses indicate these activities to be 'just right' or better. It's quite troublesome however, to find two respondents indicating that their companies do not instruct customers to a satisfactory level.

		Frequency	Valid Percent
Valid	Not enough to be assured of proper use	1	8.3
	.	1	8.3
	Just right	3	25.0
	.	3	25.0
	More than strictly necessary	4	33.3
	Total	12	100.0

Activities like advising customers, answering complaints et cetera, consume a company's resources. The level of investment in these activities is related to the overall quality of the hiring service. From this point of view, the respondents were asked to

answer the following question: "How do you feel about the amount of resources used for the following support activities?". Presented with four activities, the respondents are unanimously satisfied about the resources consumed by answering customers' complaints. Customer support by telephone and/or Email does not consume too many resources; 25% of the respondents state it could actually use a bit more. A relatively large percentage (41.7%) indicates that some more resources could be spent on user guides. It is from of this point not clear which resources could, or should be assigned to the user guides. In general, a considerable percentage of the respondents indicate that some more resources could be spent on the education of the customers, wether this is through actual instruction and advise, or through complementary user guides.

	Too much	Just right	Could use a bit more	N/A
The amount of resources consumed by instructing and advising customers	8.3%	58.3%	33.3%	.0%
The amount of resources consumed by investing in complementary user guides	8.3%	50.0%	41.7%	.0%
The amount of resources consumed by answering customers' complaints	.0%	100.0%	.0%	.0%
The amount of resources consumed by supporting customers by tel./email	.0%	75.0%	25.0%	.0%

As a last investigation into the companies' performance, the respondents were presented with six situations that are likely to occur sooner or later. They were asked to state the frequency with which these situations occur in their branches. The main interesting notion to be made is that the answers show a considerable spread. Apparently, the occurrence of the situations varies between companies. No further conclusions are drawn.

	Daily	Weekly	Monthly	Several times a year	Never
Equipment is not available because it's being serviced	16.7%	33.3%	16.7%	25.0%	8.3%
Equipment is only available with another branch	16.7%	41.7%	16.7%	25.0%	.0%
The company does not have the equipment at all	9.1%	27.3%	18.2%	45.5%	.0%
Staff can not answer detailed questions	9.1%	27.3%	9.1%	54.5%	.0%

Equipment is too big/ heavy for the customer	8.3%	25.0%	50.0%	16.7%	.0%
Equipment is too complicated for the customer	.0%	25.0%	33.3%	41.7%	.0%

5.3 Conclusions

The companies that participated in this survey have considerable experience with residential tool hiring customers. As a direct result, it is likely that their opinions and experiences reflect to a high extent, the situations that are/ will be experienced in (non-commercial) tool libraries.

It is the companies' experience that exhausted and dirty equipment are part of the daily business. Customers often pay considerable amounts of money for the hiring service, and presumably expect cleaning, refilling et cetera, are part of the deal. Less frequently encountered, but still important in the tool hiring business is maintenance of worn out or blunted equipment. Bringing the tools back in good condition is required on a weekly to monthly basis. Hirers also tend to lose parts of the equipment surprisingly frequently. As this potentially poses a great financial risk, it is something to pay special attention to.

The items that are rated as 'the most popularly rented equipment' are the Chainsaw, the Wheelbarrow and the (six wheeled) Trolley. The wheelbarrow and the trolley are relatively non-problematic. The chainsaw, however, needs the most time in cleaning, is indicated as problematic for its parts gone missing and is indicated as the most problem delivering item in general! Other products that need special attention are the chipper (for cleaning and general problems), the sander (for missing parts and general problems), the vacuum cleaner and the water blaster (both for missing parts).

The respondents indicate customer instruction as a very important activity. While most companies think their investments in customer instruction satisfactory stimulates safe customer-tool interaction, the general consensus is that some more resources could be spent on customer instruction. No specific conclusions are tied to this, however the importance of good customer instruction has become apparent in the respondents' answers.

6 General conclusions

The eight research questions that were presented in chapter one will be answered as good as is possible on the basis of the research results.

1. How widespread is the practise of sharing tools in tool libraries in Australia?
Tool libraries are not widespread in Australia. New South Wales, Victoria and South Australia are the only states where tool libraries were found. In those states a total of fifteen tool libraries were identified. The distribution of these libraries is typically limited to suburbs and university campuses. The existence of tool libraries seems to be closely linked with the medium to high population density, that is characteristic for suburban areas, and with the low to medium average income of the population.

2. What different types of tool libraries are there?
A successful categorisation of the identified tool libraries divides them into four categories, according to patrons' reasons to be in the vicinity of the tool library. Although this categorisation is not conclusive, the four valid categories are: Education, Residence, Hobby and Work. The fact that half of the Australian libraries are found in residential areas, supports the statement that the most common relation patrons have with their tool library is the fact that they live in its neighbourhood.

3. Which people currently use tool libraries?
Unfortunately, too little patrons of tool libraries were among the respondents to answer this question. However, all results imply that the target audience of existing tool libraries consists of people with relatively low incomes.

4. How important is ownership?
The importance of ownership depends heavily on, among others:
The frequency with which the products are used
Books are a good example of products that are available for sharing for most of their lifespan.
The financial value of the products
Objects of high financial value, such as cars, are not easily shared. Their value implicates status, but also risks. Ownership is generally important for objects of high financial value.
The importance of the products in one's life and the availability of alternatives
Professional users of handyman tools are not very likely to share their expensive tools. The activities (job, hobby) supported by the tools are highly valued; therefore the tools

are valued likewise. In contrast, tools that are of low value in terms of the importance of their supportive function are more easily shared. It is with these products that respondents prefer borrowing above ownership.

In terms of ownership, the most interesting category is garden tools: Respondents are not particularly keen on owning these. At the same time, the respondents appear willing to share them.

5. How receptive are people to sharing in general and to tool sharing in a tool-library in particular?

The general attitude towards sharing is positive. People see sharing as an attractive alternative to ownership, provided that it concerns particular categories of products. People feel they should not share less and past sharing experiences have been mostly good. People are receptive to the concept of tool libraries. They especially value the benefits of potentially lower expenses on tools and the availability of a large number of different tools. It is expected that new tool libraries can count on a considerable number of patrons.

6. What are the major practical problem areas in shared use of tools?

The single biggest problem in shared use of tools is the responsibility for the tools. Frequently returning themes in the research results are responsibility for cleaning and maintenance, the fear for irresponsible use and its negative results, and the financial consequences of irresponsible use. The input from professional hiring companies shows a particular concern for the instruction of customers in proper use. Major problem areas are the customer's level of experience and the legal consequences when things go wrong.

7. What would be the main areas of concern in a new to establish tool library?

- Customer instruction: How to guarantee that the user is capable of using the tools?
- Maintenance: How to design the tools and how to organise a tool library in such a way that maintenance, repairs and cleaning are well taken care of?
- Missing parts: How to make sure parts don't go missing?
- Liability insurance: How to tackle the huge financial risks liability claims?

8. Which tools should be re-designed to encourage the use of tool libraries?

The tool category that is identified as the potentially most successful is the category of garden tools. In this category, chainsaws and chippers are popular by demand with professional tool hiring companies, and are therefore likely to join future patrons' wishes. Other potentially successful categories are masonry tools, plumbing tools and decorating tools. Popular products are sanders, water blasters vacuum cleaners and six wheeled trolleys. As significant problems exist with (the design of) these products, re-design should be considered.

Appendix A: The Bower

The Bower Re-use & Repair Co-operative Ltd.

Visited: 22 May 2003

Spoke to: Lucy

Does the Bower only sell products? Or are products used at the centre as well?

No, members can use products on the spot. Members pay an annual membership fee of AU\$ 11,- which allows them to basically walk in and use the tools available. These tools are kept in special workshop-like areas and are somewhat separated from the store. The prices in the shop are cut by 20% for member, if they spend 8 hours of work on for example repairs, cleaning, administration etc. The Bower has approximately 250 paying members in her database. Only 52 of them are considered to be active members.

Currently The Bower is in the process of application for a \$ 5000 fund to set up a tool-sharing library. No new tools are to be acquired, instead the money will be used to set up the system (database etc.) and communicate it to Marrickville residents.

Does the Bower hire out tools at all?

As yet, tools are not hired to customers or members. In the past, tools have been lent to members, but experience tells that there are some general problems involved with that; Some of them are: Tools not being returned at all, tools being returned with missing parts, tools being returned damaged etc.

How does The Bower differ from a second-hand shop?

Not very much, actually, The Bower sells only second-hand items. These items vary from cutlery to fridges, from TV's to cabinets, virtually anything suitable for a second life. The items in use are being picked up three days a week from individuals, council collection depots and from the streets around the time of collection in a council. Amazingly people throw out a lot of stuff that The Bower sells for a good price.

How many buying customers does The Bower get per week?

This is a difficult question to answer. People walk in and out the whole day. Some of them buy, some of them don't. A rough estimate is that hundreds of people come in every week. Not all of them are considered customers.

How big is your service area? / From where do the customers come?

Generally the customers and in particular the members live in the Marrickville city area. The Bower is quite well known in the area, mainly by word of mouth. The centre also benefits from the reputation of the nearby Reverse Garbage Co-Op, which has been based on the same lot for almost 25 years now.

What sort of people comes to the bower?

The people that use the tools are generally pensioners. Furthermore, The Bower is involved in projects in which convicts of minor crimes provide community services as a compensation for other penalties.

How is The Bower run? / Who is in charge?

The board of directors of The Bower seats 9 people. The daily tasks are for a large part carried out by Lucy and Warren, sharing 5 days each a fortnight, and three other part time employees. These five together run the store, facilitate the pickups and repair and re-create what's brought into the centre.

How many re-use centres are there?

There are many second-hand shops / re-use centres in the Marrickville area and probably too in the other councils. The Reverse Garbage facility next door seems to work in another niche of the recycling market, selling industrial leftovers in bigger quantities (and at lower prices).

Is there competition going on between them?

There is no real competition between the different centres and Co-Ops.

Do you keep contacts with other comparable institutions?

No

Do you serve only the Marrickville council area?

Generally speaking: yes.

How is The Bower funded?

The Bower was first set up with funds provided by the NSW environmental protection agency. Soon after completion The Bower became independent and today she still lives on the sales of second-hand items and the membership fees.

Appendix B: Forum Results

Quotes

“Hand tools tend to be very personal and individual.”

“I learnt this selfishness...” (About not lending anything out)

“The only way anything of mine is loaned is if I'm 100% sure the borrower will take better care of it than I would myself.”

“I pay lots of attention to whom I lend out a tool.”

“The culture of the United States is very generous.. but only with cash or time. Very rarely possessions.”

“Tools are some of the most user unfriendly devices in the modern world.”

“...Even many people that make their living with tools treat them like garbage. Part of this is the availability of very low cost power tools.”

“I think loaning tools is like loaning money - quickest way to lose a friend.”

“Touch my tools, and I will break your fingers.”

“You can borrow my wife, but leave my tools alone.”

“I figure that I have all the tools that they do and it would be of no use to me.” (About the local tool library)

(...All the tools are abused) “I wish this wasn't the case. I would love to have access to good tools as needed. I just cannot imagine they would stay good long.”

“The benefits gained in advice and assistance in remodifications far outweigh the loss due to damage to one tool that I might encounter.”

“As an artist I would never let anyone borrow one of my brushes. It's way too personal and it just wouldn't seem the same after someone used it. My tools are similar.”

“I am willing to share tools that I don't care if I get back, but edge tools are off limits.”

“These are folks who I know from experience or from observation of their work habits will take care of the tools and are versed in their use.”

“When I do loan tools and other woodworking stuff like books, videos, or magazines, I keep a list of the borrower, the date, and what was borrowed.”

“...The owner is the one that has to maintain it.”

“...Given how much work it was to borrow his plane, I bought some of my own.”

“We allow employees to borrow tools from here at work...”

“Maybe we're unusual, but the guys in my co-op shop share our tools – and our supplies as well. In a cooperative arrangement the operative rule is to be cooperative. While this sometimes leads to “issues” the advantages far outweigh the problems.

...This arrangement allows us to keep working... it takes a certain understanding that tools are not sacred objects. They're expendables...”

“In fact I like (love?) my tools in most cases more than I like most people.”
“I bought my wife and kids their own tools and tool boxes.”

Respondents indicate (interpretations)

Tools you hire are likely to be in bad shape.

Americans prefer ownership to sharing.

People as a rule only pay care to their own things. There seems to be a trend supporting this rule.

People do not care for things they don't own themselves.

Loaning to the general public would NOT work; the relationship between loaner and borrower would be missing.

Use of your own tools would not be the same after someone else has used them.

The sort of tool matters a lot. Tools with a cutting edge for example are not suitable for sharing.

The owner, in the end, is the one who takes care of maintenance.

Sharing can be a convenient practice during work, it allows you to postpone buying tools/ material to a time that suits you better and doesn't interfere with the job.

Tools are expendables.

Tool sharing works as long as the tools stay in the same place.

Safety training is required.

In rentals, cash- or credit card deposits work well, perhaps this would go for tool libraries as well.

The big problem is cost effectiveness, particularly concerning maintenance and insurance.

Tools variety follows variety in customers' wishes; could a tool library really cater for all these wishes?

Personal experiences, derived from the forums

I find it easier to loan electrical tools rather than hand tools.

Many people abuse tools, just for the fun of it.

Loan out tools and don't expect to get them back in one piece.

I only loan out tools if I have more than one of them.

I loan out my category 'B' tools, not my category 'A' tools.

I rather go over there and do the job myself than loan my tools.

The benefits in advice and assistance, gained from sharing, far outweighs the loss of the occasional tool.

Turners loan amongst each other, often to try out the other guys' new machine.

I share the tools that I don't care of getting them back.

I keep a list of everything I loan out. It works.

We allow employees to borrow tools from here at work. If something is missing or broken, they have to replace it.

In our co-op shop, we share both tools and supplies and we find it convenient.

People coming for tools at an inconvenient time and expecting you to help with transport too!

Model aircraft clubs.

Companies' tool room / equipment closet.

Appendix C: Survey 2: Australian residents

Welcome respondent!

Thank you for participating in our tool sharing survey! This survey is being held as part of a research project at the University of New South Wales. Your feedback is of great value to us. Your answers will be used to get a clear picture of the current situation in community sharing. With the results, we will be able to advise on existing and new ways of sharing. We'll also be able to advise manufacturers of tools on how to make their products better for you.

Survey title: Tool sharing

Page 1: Sharing In general

1. In your daily life, how often do you share any of the following objects with people other than your family members? (PLEASE SELECT ALL APPROPRIATE BOXES)

	Daily	Weekly	Monthly	Several times a year	Never
Toys					
Handyman tools					
Books					
Cars					
Bicycles					
Garden tools					

2. With whom do you share the following objects most? (PLEASE SELECT ALL APPROPRIATE BOXES)

	Relatives	Friends	Flatmates	Neighbours	Community members (neighbourhood/ social/ religious)	Strangers
Toys						
Handyman tools						
Books						
Cars						
Bicycles						

Garden tools						
--------------	--	--	--	--	--	--

3. Through or from where does the sharing happen? (PLEASE SELECT ALL THAT APPLY)

- Home
- My work/ study
- The neighbourhood centre
- The clubhouse/ motor pool
- The library
- Other...Please Specify

Page 2: In general, how satisfied are you with the way you share

4. I would like to share (PLEASE SELECT ONE)

More items

fewer items

--	--	--	--	--

5. I would like to share (PLEASE SELECT ONE)

More frequently

less frequently

--	--	--	--	--

6. My past experiences with sharing have been (PLEASE SELECT ONE)

Excellent

Terrible

--	--	--	--	--

7. Which of the following categories of items would you rather borrow than buy if you need them? (PLEASE SELECT ALL THAT APPLY)

- Toys
- Handyman tools
- Books
- Cars
- Bicycles
- Garden tools

8. Which of the following categories of items, IF you owned them, would you rather not share? (PLEASE SELECT ALL THAT APPLY)

- Toys
- Handyman tools
- Books
- Cars
- Bicycles
- Garden tools

Page 3:

9. Do you consider the following categories of tools suitable for sharing in a community? (PLEASE SELECT ONE PER CATEGORY): 1 *Very suitable*, 2 *Indifferent*, 3 *Very suitable*

- Garden tools (for example: lawn mower, hedge trimmer)
- Carpentry tools (for example: hammer, saw, chisel set)
- Metalworking tools (for example: drills, cutters)
- Masonry tools (for example: trowels, brick tongs, mix tub)
- Decorating tools (for example: brushes, paper-table)
- Plumbing tools (for example: wrench, hacksaw)
- Electrical tools (for example: voltage tester, pliers, wire stripper)
- Tools for protection (for example: safety goggles, helmet)

10. To what extent do the following benefits of sharing tools appeal to you? (PLEASE SELECT ONE PER CATEGORY)

	Not very important	Indifferent	Very important
I would need less storage space in my own house if my group shares tools.			
I would have access to a large array of tools.			
I would, together with the other group members, be using tools to their full capacity.			
I would spend less money on tools.			
I would contribute to a more sustainable future			

11. Tools can be shared in a tool library, similar to the way books are shared in a book library. What problems with tool sharing in a tool library would you be concerned of? (PLEASE SELECT ALL THAT APPLY)

- Other people might not return the tools
- Other people might return the tools with incomplete parts (for example missing drills in a drill set)
- Tools might not be available when I need them
- The tool library does not have the tools I need
- Tools in the tool library are too big/ heavy for me to use
- Tools in the tool library are too complicated for me to use
- Hygiene: Tools could be returned dirty by other users
- It could be difficult to locate tools in a library (due to inefficient storage systems for instance)
- Other, Please Specify _____

12. If a tool library were established in your community, would you patronise it?
- No
 - Yes
13. Which of the following methods of payment for use of tools from this tool library would you prefer? (PLEASE SELECT ONE)
- Annual membership fee
 - Rent 10 tickets (good for 10 times use of, say, a lawn mower)
 - Rental packages (for example, unlimited access to garden tools)
 - Rental fee per tool
 - Donations
 - Funding through council fees
14. Do you have any comments considering sharing in general or the sharing of tools in particular (PLEASE WRITE YOUR REMARKS IN THE BOX BELOW)

Page 4

Respondents

15. In which age category do you fit? (Roll down box)
- Under 18
 - 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65 or over
16. What is your gender? (Roll down box)
- Female
 - Male
17. Which description fits your living situation best?
- (Un) married couple with children at home
 - (Un) married couple with children not at home
 - (Un) married couple without children
 - Single, living alone
 - Single, living with family
 - Single, living with friends
17. In which category would your dwelling fit? (PLEASE SELECT ONE)
- Separate house/ Row or terrace house/ Townhouse (with own yard)
 - Flat/ Unit/ Apartment (without own yard)

18. In which category does your weekly income (AU\$) fit? (Roll down box)
- < - 300
 - 300 – 500
 - 500 – 700
 - 700 – 900
 - 900 – 1100
 - 1100 - >
19. What is your Postal code?
20. Could we contact you in the future for further research on this topic? Please type your e-mail address in the box below. (NOT COMPULSORY! Your email address will NOT be used for purposes other than this research!)

Thank you very much!

Appendix D: Survey 3: Tool hiring companies

Tool hiring by residential customers

Thank you for participating in this survey. This survey is being held as part of a research project at the University of New South Wales. The project aims at a deeper understanding of the interaction between users and the equipment they temporarily obtain from companies like yours. The research is limited to hiring by residential customers. Your feedback is of great value to us and will help us to formulate design strategies towards an improved interaction between the borrower and the equipment, leading to greater satisfaction.

1. Please type your company details in the boxes below.

- Company Name
- Branch
- Postcode

2. Which of the following 'collateral' services do you provide? (SELECT ALL THAT APPLY)

- Advise customer on safe use
- Provide user guides
- On-the-job assistance
- Deliver hired tools
- After-hours hiring service
- After-hours emergency help
- Customer liability insurance
- Other, Please Specify

3. Please estimate the percentage of your customers that can be categorized as 'residential' (those who borrow tools for maintaining their own home or garden, as contrasted from commercial or industrial customers).

- 0 – 20%
- 20 – 40%
- 40 – 60%
- 60 – 80%
- 80 – 100%

4. Which of the following are your three most popularly rented products? (PLEASE SELECT THREE)

1. Angle grinder
2. Box trailer
3. Brush cutter
4. Carpet cleaner
5. Chain saw
6. Chipper
7. Circular saw (handheld)
8. Drill (cordless, hammer)
9. Garden roller
10. Hedge trimmer
11. Hot air gun/ paint burner
12. Jack
13. Jigsaw (electric handheld)
14. Ladder
15. Lawn edger
16. Lawn mower
17. Paint sprayer
18. Sander (belt, disc, orbital)
19. Trolley (six wheel)
20. Vacuum cleaner
21. Wallpaper steamer
22. Water blaster
23. Wheelbarrow

PAGE 2

5. How frequently do you encounter customers returning rented equipment in the following conditions? (PLEASE SELECT ONE ANSWER PER CONDITION)

(Daily, Weekly, Monthly, Several times a year, Never)

- Exhausted (equipment needs refuelling/recharging/refilling)
- Worn out or blunted (cutting edges/ blades need sharpening)
- Incomplete (equipment needs some parts replenished)
- Damaged (equipment needs some parts repaired/replaced)
- Broken beyond repair (full replacement of the equipment is required)
- Dirty (equipment needs cleaning/washing)

6. In terms of the time and effort that you spend on cleaning the equipment after it's returned, which three products cause you the most problems? (PLEASE SELECT THREE)

1. Brush cutter
2. Chain saw
3. Circular saw
4. Drill (cordless, hammer)
5. Garden roller

6. Hedge trimmer
7. Jigsaw (electric handheld)
8. Lawn edger
9. Lawn mower
10. Chipper
11. Sander (belt, disc, orbital)
12. Box trailer
13. Wallpaper steamer
14. Water blaster
15. Wheelbarrow

7. Which equipment is returned incomplete most frequently? (PLEASE SELECT THREE)

1. Brush cutter
2. Carpet cleaner
3. Chain saw
4. Circular saw
5. Drill (cordless/ hammer)
6. Garden roller
7. Angle grinder
8. Hedge trimmer
9. Hot air gun/ paint burner
10. Jigsaw (electric handheld)
11. Lawn edger
12. Lawn mower
13. Sander (belt/ disc/ orbital)
14. Vacuum cleaner
15. Water blaster

PAGE 3

8. With which three products do CUSTOMERS encounter the most problems in general? (PLEASE SELECT THREE)

1. Angle grinder
2. Box trailer
3. Brush cutter
4. Carpet cleaner
5. Chain saw
6. Chipper
7. Circular saw (handheld)
8. Drill (cordless, hammer)
9. Garden roller
10. Hedge trimmer
11. Hot air gun/ paint burner
12. Jack
13. Jigsaw (electric handheld)
14. Ladder

15. Lawn edger
16. Lawn mower
17. Paint sprayer
18. Sander (belt, disc, orbital)
19. Trolley (six wheel)
20. Vacuum cleaner
21. Wallpaper steamer
22. Water blaster
23. Wheelbarrow

9. Are there any OTHER problems you encounter with the equipment that is returned by customers? (PLEASE TYPE YOUR REMARKS IN THE BOX BELOW)

10. How would you rate the time and effort that you invest in the instruction of customers on the safe use of equipment?

- Not enough to be assured of proper use
- -
- Just right
- -
- More than strictly necessary
- N/A

11. How do you feel about the amount of resources used for the following support activities? (PLEASE SELECT ONE ANSWER PER ACTIVITY)

(Too much, just right, could use a bit more, not applicable)

- Instructing and advising customers
- Investing in complementary user guides
- Answering customers' complaints
- Supporting customers by telephone/ Email

12. With which frequency do the following situations occur? (PLEASE SELECT ONE PER SITUATION)

(Daily, weekly, monthly, several times a year, never)

- Desired equipment is not available because it's being serviced
- Desired equipment is only available with another branch
- Your company does not have the desired equipment in its collection at all
- Staff cannot answer highly detailed questions (too technical details, etc.)
- Equipment is too big/ heavy for the customer
- Equipment is too complicated for the customer

Thank you for participating!