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Department of Education, Science and Training

CULTURE RIPENED ARTISAN FARMHOUSE SOFT CHEESES

Virginia Reid
National ISS Institute Overseas Fellowship

Fellowship supported by the
Department of Education, Science and Training,
Commonwealth of Australia

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Acknowledgements

I would like to thank the following individuals and organisations who gave generously of their time and their expertise to assist, advice and guide me throughout the Fellowship program

1.1 Awarding body: ISS (International Specialised Skills) Institute.
I wish to thank Carolynne Bourne, AM, CEO of ISS Institute for providing the necessary motivation to put an application together when time seemed impossible to find.

Fellowship sponsor: DEST, (Department of Education, Science and Training.)
I would also like to express my gratitude towards - DEST for providing funding support for this particular 2005 ISS Institute National Overseas Fellowship program.

DEST supports the Australian Governments objectives in Education, training and science: provides national leadership; and works in partnership with the state and territory governments, industry, other agencies and the general community.

DEST is also responsible for coordinating research policy and promoting collaboration in research and innovation.

The Department has a vision of 'a better future for all Australians through learning, science and innovation '. Their vision is supported by an "Open for Business" philosophy – a commitment to fostering a culture of openness and partnership, both internally and with their external stakeholders. Effective people management is crucial to the achievement of their business. Their organizational capabilities of collaborate, understand, create, anticipate, influence and implement are supported by values of professionalism, leadership, diversity and fairness.

In addition I would like to acknowledge the support of TAFE NSW, Riverina Institute, Deniliquin Campus, and Outreach coordinator, Ian Bruce for his unwavering support and providing the time and additional funding to pursue associated activities.

TAFE NSW Riverina Institute

Ian Bruce - Outreach Coordinator,
Steve Forsyth - Head of Studies
Rosemary Campbell – Director, TAFE NSW Riverina Institute

1.2 About the Fellow:

Name Virginia Reid

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Qualifications:

- Applied Science Food studies, Adelaide University, Home Economics, 1979 – 1982
- Certificate 1V, Assessment & Workplace Training, Riverina Institute of TAFE, 2003.
- Bachelor of Vocational Education & Training, Charles Sturt University, 2004, majoring in Training in Organisations, Adult Learning
- Intensive practical Cheese making course, Melbourne University 2005, manufacturing of hard and soft cheeses.
- Farmhouse cheese making course, Melbourne University 2005
- Intensive Blue Vein Cheese making course, Regency Park , School of food and catering, Adelaide 2006
- 20 years of food manufacturing and processing experience.

Memberships:
Rice Growers Association
Australian Meat & Livestock
NSW Farmers
Grain Growers Association
Australian Specialist Cheese Makers Association

1.3 Individuals and organizations

Those involved in assisting, advising, identifying and verifying specialised skills and knowledge gaps and developing my application include;

Ian Bruce:
Outreach Coordinator for TAFE NSW Riverina Institute has challenged, assisted and continually supported my Fellowship application. Ian is committed to professional and personal development and meeting the training needs of industry, individuals and communities.
Ian.Bruce@tafensw.edu.au

Carole Willman:
Australia's leading home cheese maker has provided information to support and identify specialized skills and knowledge gaps as a farmhouse cheese maker. Her enthusiasm is contagious and there is no doubt she and her husband Neil provided the seed of inspiration to continue searching for further training.
carole@cheeselinks.com.au

Bruce McGorlick:
Of Lochleian Farmhouse Cheese, verified the identified training gaps in Australia. Bruce believes in the importance of developing a range of skills and experiences for Australian cheese makers to enhance the diversity and expansion of the specialty cheese market. He has previously independently traveled to France searching for these experiences and skills. Bruce believes there is a demand for a wide range of specialty cheeses and everything that can be done to support increasing knowledge and development of specialty cheeses is essential.
cheese@locheilan.com.au

David Gove: CEO of Deniliquin's Business Enterprise Centre and **James Burgess:**
CEO of Albury's Business Enterprise Centre have both been very supportive in the planning of a proposed Farmhouse Cheese facility. Both James and David offer a wealth of knowledge and encouragement in all areas of business and professional development.
dbec@dbec.net

Kylie Smyth:
Dairy Consultant, 2004 ISS Institute Overseas Fellow, supported my decision to go to France as a destination of traditionalist cheese makers. Kylie traveled to the UK and France for her Fellowship program. Kylie has been unconditionally supportive and agrees with the listed skills and knowledge gaps identified in my program.

Richard Cawsey:
of Denali Capital Managers, was particularly supportive of the research and development into artisan production of soft cheeses. Richard has considerable invested interest in tourism in the Southern Riverina. He believes by developing a facility to sell artisan cheeses from would be a great asset to the area. A deeper knowledge in the identified areas of production techniques and artisan and culture usage could only assist the success of the project. Richard strongly believes distinctive regional alternatives in food, wine and specialty produce are critical in developing a more rounded and attractive regional character.
office@denali.com.au

1.4 **Individuals and Organisations** involved in the overseas destinations.

Meryll and Norman Wodetzki:
Norman and Meryll have supported the Fellowship program by translating endless internet sites from French into English. Often destinations would not respond to English written emails but once translated have been very obliging. Factories, Fromageries, contacts, car hire and accommodation have all been established with Meryll's translations, patience and knowledge. I am extremely grateful.
meryllwod@aapt.net.au

Eric Spinnler:
Eric Spinnler is a Professor of Food Technology at the National Institute of Microbiology in Grignon, 35km west of Paris. He oversees and lectures in, fermentation technology, freeze drying, per – extraction for flavors, CINAC to test starters, cheese making in sterile and controlled environments, PCR – Capillary Electrophoresis, HPLC for sugar and acid analysis, GC-MS for flavors and GC – olfactometery. He provided essential science behind the usage of mesophilic and thermophilic culture usage.
Professor Spinnler has 20 years experience in the research and development of flavors through culture usage in cheese making. This is a highly specialised field and takes years of experimenting to gain results. Professor Spinnler was very generous with contacts and introductions in Paris and organizing factory contacts.
Spinnler@grignon.inra.fr

Bruno Giard:
Bruno and his wife Isabelle were conveners of the Rocamadour cheese festival in June. Bruno extended an invitation to partake in the judging

of the 17th Rocamadour goat's cheese festival. The festival was televised and supported by the local surrounding communities of Rocamadour.

The festival judge's cow, sheep and goat's milk cheeses all of which are culture ripened and artisan produced. Bruno introduced me to many local identities one of which being Madame Lacoste, the principle cheese maker of Rocamadour, now in her 80's. The festival goes over 2 days and has been an annual event for the past 17 years. The festival can be found on
http://www.rocamadour.com/fr/InfosPratiques/pages/fromage.htm

Bruno also provided hours of translation in many of the surrounding factories and organised an extensive tour of the Rocamadour Co-op with the principle cheese maker, Benoit.
He provided a translator while we were in Normandy for the factory tours as well as English speaking accommodation houses.
agistrad@wanadoo.fr

Kellee & Matthieu Megard:
Matthieu Megard, is the grandson of the founder of Chalon Megard, in Nantua, France and heads the export section of the company. Chalon Megard manufactures commercial cheese making equipment. Matthieu has many contacts in the French and international cheese making industry and provided me with three days of factory and manufacturers appointments to provide insight to equipment needs and the necessity of volume matching technology needs in the cheese industry.

Matthieu also provided translation for 4 hours with professor Mietton at the Poligny Institute on the Swiss French border. Without Matthieus assistance this appointment would not have been possible.
matmegard@aol.com

Tim Boydell:
Tim is the Director of sales and marketing of Angove's in Australia. He is passionate about the food and wine industry on a global scale and is very pleased to support the fellowship program, providing VIP tours at Champagne Nicolas Feuillatte, Champagne Mumm and Champagne Veuve Cliquot. The main focus is matching cheese, champagne and marketing.
tboydell@ozemail.com.au

2.0 THE FELLOWSHIP PROGRAM

2.1 Aim of the Fellowship

The main objective of traveling to France is the enrichment of my personnel and professional research and development into artisan cheese making.
I hoped to develop an understanding of the identified skills gaps and on returning, build on and adapt this knowledge to Australian conditions.
The contacts, networks, sights and experience will strengthen my knowledge base of artisan cheese making with a focus on value adding to regional produce.
The scope of the overseas study program will include individuals, companies, factories and businesses that I can draw knowledge from to fill the skills and knowledge gaps.
The knowledge has been obtained through observations, questioning, visuals and hands on informal practical applications. From the identified skills and knowledge gaps I have heavily researched and spoken to Australian contacts to gain information on the whereabouts of these contacts. I was fortunate to gain further contacts through members of the public. This occurred as a direct result of a media release on receiving the award.

Globally speaking, the French are the traditionalists in artisan cheese production. The purpose of the Fellowship was to go to France and study how cheese has become such an important commodity and the integration and importance of it, in their culture. Then bring this information back to Australia and adapt the production and processing technologies.

Specific areas of study included;
Microbiology
Professor Eric Spinnler:
Professor Spinnler lectures at the 'Institute National Agronomique' in Grigon. The purpose of the visit was to discuss culture usage and the science behind using mesophile and thermophile cultures in artisan soft cheese making.

Educational Institutions
Professor Bernard Mietton, from the Poligny Institute. Ecole Nationale a Industrie laitiere: 'The national school for industrial dairy'. The purpose of this visit was to see the training options, training facilities, course options and associated costs for formal training in France. The

institute is a show case for Chalon Megard industrial cheese making equipment. One to one tuition is available for cheese engineering. Language is a barrier, however gradually becoming easier with English as the chosen language for the EU.

Learning Centers

CIDIL, is the centre of documentation and learning, 42 chateaudun, 75314, Paris. This is also referred to as 'the house of milk', (Le maison au lait). This primarily contains learning resources for teachers.

Libraries Lavoister, is one of the technical bookshops in Paris, 11 Rue lavoisier in the 8th. Most books are around the $500 mark and higher. Any books translated are double in cost.

Frommargeries

- Marie-Anne Cantin:

Marie-Anne Cantin, inherited the know of an *affineur* from her father Christian Cantin, founder of the Cantin cheese house in Paris and initiator of the cheese house Guild in 1950. She is the appointed supplier of the Elysee Presidential Palace. In 1988, she founded the *Association pour le Respect des traditions Fromageres Francaises* and currently serves as its president.

Marie-Anne is a vigorous defender of unpasteurised cheese and supplier to Paris's best restaurants.

Other frommageries to be visited in Paris for include,

- Fromagerie Boursault,
- Fromagerie Androuet,
- Fromagerie La Fayette,
- Fromagerie Bartholmy
- Fromagerie Bon Marche

These are probably the most famous and sort after fromageries in Paris. Each fromagerie matures the cheese on site. From visiting these houses I should gain an appreciation of the packaging and marketing of French cheeses.

Equipment

- Alpma France :

Alpma France is one of the largest cheese packaging specialists and equipment manufacturers, with their head office situated in the Paris suburb of Clichy.

- Servi Doryl Factory:

Manufacturers of cheese making moulds for both soft and hard cheeses, in the town of Langeais. A meeting has been arranged with

Severine Pierret, the companies only English speaking export sales person.

- Chalon Megard :

Chalon Megard are manufacturers of large scale commercial cheese making equipment in Nantua. I will be a guest of Chalon Megard at the Comte factory which is a show case of Chalon megard equipment.

Packaging

- Brodart : in Troyes

Brodart are packaging specialists for the food industry but specialise in cheese wrappings. I will be meeting with Jean Marc Schneider who will conduct the factory tour. He not only has the necessary engineering qualifications but also extensive cheese making knowledge for the importance of cheese maturation inside the wrapping. The factory also complies with HACCP legislation as all wrappings are for the food industry.

Factories

- Fromagerie Graindorge in Livarot, Normandy. Two hours have been set aside to meet Valerie Coeuret.

A factory which provides daily tours of washed rind and Camembert production. A translator has been provided for the tour.

- Fromagerie Berthaut:

Fromagerie Berthaut is in Epoisses. My contact is M Jean Berthaut, a contemporary and recommended by Professor Spinnler. This factory manufacturers washed rind soft cheeses.

- Champagne Mumm
- Champagne Veuve Clicquot
- Champagne Nicolas Feuillatte

I have been introduced to these three Champagne houses by the Director of sales and marketing of Angoves in Australia. The three designated contacts will provide a VIP tour plus degustation and match cheeses with champagne varities.

Festivals

- Rocamadour Cheese Festival:

This festival runs for a weekend. It will include 15 producers of goat's cheese, 15 producers of sheep cheese and 10 producers of cow's cheese. For this 17th annual festival 50 farm producers have been invited from 15 shires in the south of France.

It has two full days of judging of which, I have been included, with a formal dinner on Saturday evening to which I have been invited to. It will be very inspiring to be so closely involved in the two days.

2.2 Skills and Knowledge Gaps

The need for training providers to partner industry has become and will continue to develop into invaluable partnerships. My role as a part time hospitality teacher within the TAFE NSW Riverina Institute and part time manufacturer (with emphasis on value adding to regional produce), has placed me in a valuable position to support food specialists and producers to diversify into new products and markets.

To grow in this position, the need for professional research and development is obligatory. As a self employed food manufacturer for the past 20 years my knowledge base combined with training skills can provide effective opportunities to others in surrounding regional communities.

A leader in this field is necessary to link the partnerships and encourage experimentation, manufacturing, diversity and development.

1. The historical and regional understanding behind culture usage in artisan soft cheese making.

To date many Australian farmhouse cheese makers have manufactured cheese with mixed results. There is minimal support available which can be either inaccessible or costly.

The availability of artisan farmhouse produced cheeses is limited. Automated factories producing processed cheese, has seen the craft of cheese making diminish. With the introduction of farmers markets and community garden markets growing, so too, has the demand for value adding knowledge.

2. The science behind flavor development using mesophile and thermophilic cultures.

This is an area of research and development that has the opportunity to be further developed. If using mesophilic starter cultures for camembert style cheeses, flavors typical of these starters will develop. These generally use low setting temperatures. The same principle applies to thermophilic cultures but using higher setting temperatures. Combining the two and

experimenting with varying setting temperatures will produce varying flavors yet again.
In countries like France and Italy these processes have been developed over centuries, resulting in regions giving their name to varying style cheeses.

3. Environmental and hygiene factors affecting culture ripened soft cheeses during maturation.
Studying methods used in Europe centuries ago and today of how maturation occurred could be applicable to Australian farmhouse production.
Creating optimum environmental conditions for maturation within Australian regulations at minimum cost may be achieved with a more comprehensive understanding of techniques used in Europe.

4. Sensory appreciation of culture ripened cheeses.
There is a smorgasbord of flavors available in European countries which could be reproduced under Australian conditions with further scientific understanding of culture behavior.
How cultures behave under varying methods of maturation and wrapping techniques would provide a better understanding of perish ability.
How labor intensive these processes are and the appropriate advantages and disadvantages of automation during maturation and packing could be transferred to Australian farmhouse cheese makers.
Australian palates have never been more adventurous with sensory appreciation of varietal flavors.

5. Packaging and marketing of high quality artisan cheeses.
Observing European cheeses being packed and marketed for a global market in a sustainable and consistent manner would be advantages when choosing packaging and marketing options in Australia.
As soft cheeses are continually maturing they need to breath through the packaging. Choices of wrappers can alter maturation rates. To have a full understanding of this when exporting is vital for the Australian boutique industry.
Visual impressions of soft cheese packaging may determine a consumer's decision to purchase the product regardless of the flavor. To maximize customer range for small boutique businesses can be crucial to its viability.
To produce packaging that matches the quality of the artisan cheese and visa versa during all seasons will increase producer's market share.

6. Cheese making equipment for efficiency, legislative and milk volume requirements.
This is an area of limited knowledge. To start a small artisan cheese making business, purchasing new equipment in Australia is expensive and limited, unless custom made.

3.0 The Australian Context

Developing skills and knowledge in cultures for flavor development in soft cheese manufacturing would greatly benefit those value adding to raw milk through,

- Increased flavor choices to Australian consumers of soft cheese.

Culture experimentation is an option for increasing flavor choices to Australian consumers of soft cheese. Never have food manufacturers had such choice in food additives, flavor enhancers and preservatives to name a few. Rather than producing an "Australian" camembert that tastes relatively the same across the country, the challenge is to create cheeses to individual customer's tastes. This is the true form of artisan cheese production.

- Increased research and development on perishablity of specific culture ripened soft cheeses.

Packaging and maturation processes in Australia are largely controlled by legislative regulations. The European focus is quite different. They have fromageries like Australia has country bakeries. The fromagerie owner is called a "affineur" who buys very young artisan cheeses and matures them in store. This allows for individual tastes. There are only a handful of these outlets available to consumers at present in Australia. With growing skills and knowledge it will be interesting to witness the growth rate in this area.

Due to the efficiency of 24-hour supermarkets, consumers have been given a variety of cheeses which are available 24/7. These cheeses will taste, smell and look exactly the same at each purchase. I believe it is because of this demand by supermarkets for a constant product, that most cheese manufacturers produce processed cheese rather than artisan produced cheeses.

- Higher benchmarks for sophisticated flavor development of soft cheeses.

To lift the benchmark of sophisticated flavor development, in soft cheeses, is to be able to taste the cheese as it matures. This is a wonderful experience to know at what stage of maturation you like specific culture ripen cheeses to be.
Washed rind cheeses are an example of sophisticated flavored cheeses and they can be an acquired taste. For most, the sensation on the palate will give an "off " flavour at the end of its maturation period. To taste as the rind develops gives a greater understanding of the rate of flavour development in the cheese.

- Exposing the Australian boutique cheese industry globally and regionally within Australia.

With the support of the Fellowship, building networks and contacts in France will expose the Australian boutique industry as one of growth and interest. This overseas study program will seek to gain information in regard to the skills, knowledge and history of cheese making in France and be passed on to those in Southern NSW in industry, individuals, growers and communities through workshops, reports and seminars.

With a global information age, there is a new generation of smart consumers that with global buying opportunities can have cheese delivered at their doorstep. This will pressure global artisan producers to match these commercial strategies. The advantage of global buying is the chance for Australian artisan manufacturers to export equally excellent quality cheeses and be seen as a competitor.

- Increasing the knowledge base of those providing assistance to Farmhouse cheese manufacturing businesses with a focus on value adding.

- Assist others in the cheese making industry to understand the science, history and hygiene behind farmhouse cheese making with no obligations.

As an adult educator, resources and knowledge for teaching are constantly being sourced in order to inspire and enthuse learners. As a farmer I particularly understand the present change in the rural climate and the need for diversification of commodities. As costs to growers rise and prices decline, alternative sources of income are continually assessed.

Value adding to regional produce is an excellent source of additional income. With the growing rate of Farmers Markets it has never been so user friendly and the consumers demand is matching the growth and interest.

3.1 Peak Organisations. Key Representatives

Federal/National Level

- The Food Act
- Australian code of practice for dairy factories
- Australian specialist cheese association
- Artisan Australian cheese makers

State Level

- Dairy authority in NSW
- Riverina Institute of TAFENSW, training options
- Area Consultative Committee, funding for factory/industry facilitites for training

Local Level

- Murray Shire
- Milk supplier/further value adding opportunities
- Local newspaper

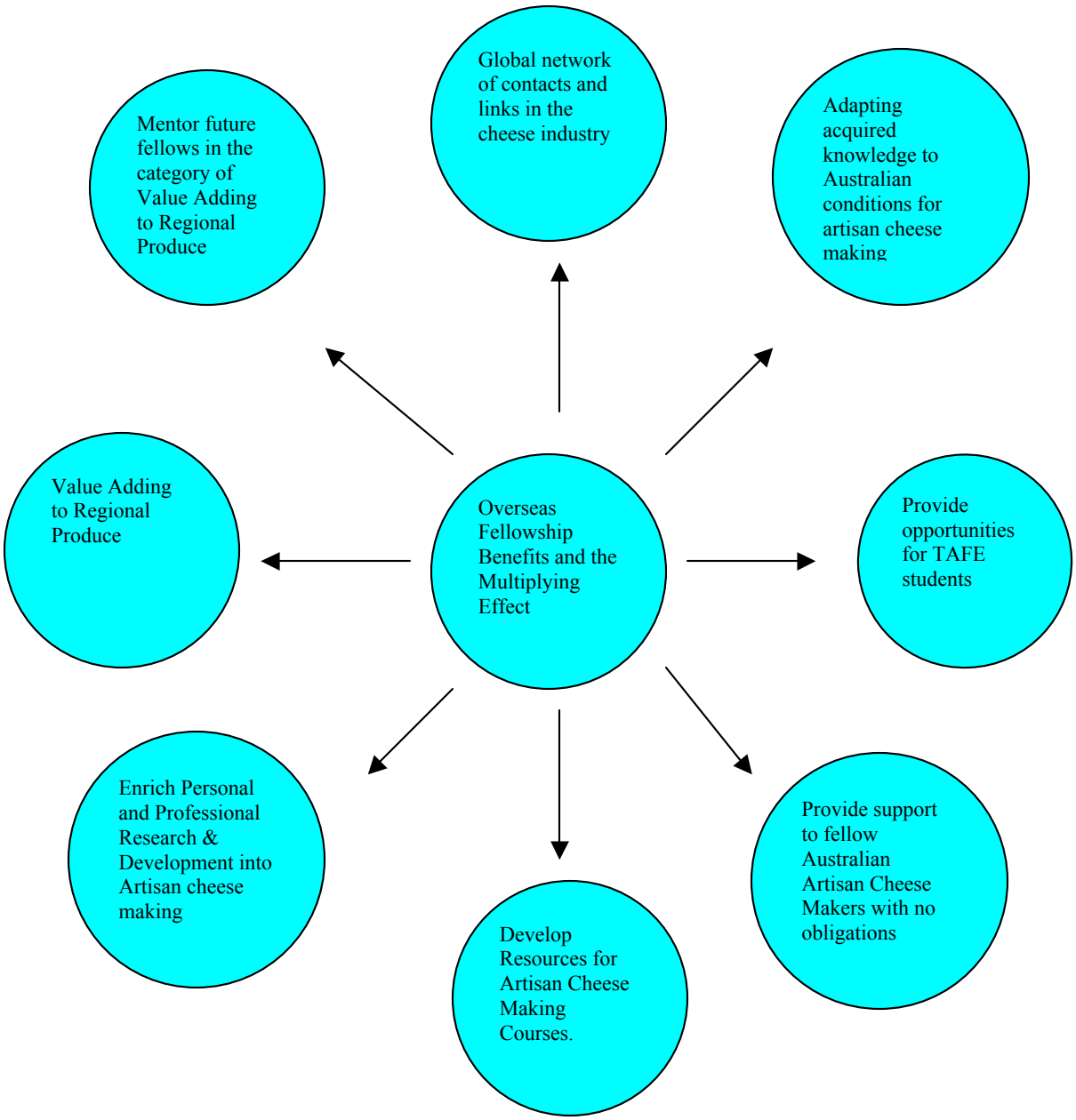


Diagram 1. Overseas Fellowship Skill Effect

4.0 International Context

The overseas program was purposefully designed to explore the identified skills and knowledge gaps. While gathering the necessary information and ideas, it will enable me to advise, instruct, promote, assist and continue research and development in artisan soft cheese production on returning to Australia.

Program Content; Destinations

During the course of the Fellowship Program, meetings, appointments and visits encompassed many establishments and individuals involved in cheese sales, production and promotion. I arrived in France unaware of the full depth of passion, tradition and culture that French people place on their food and cheese industry. Cheese is so highly regarded and supported by the French people, it was a pleasure and surprise to discover the varying quality and infinite varieties. Education starts in primary school so children continue to support and understand the dairy industries sophisticated benchmarks and artisan producers.

Additional appointments were included into the schedule on meeting with Professor Spinnler, which led to significant opportunities that were not known to me when planning the program in Australia.

The following site visits and meetings proved to be the most significant in providing information and inspiration.

Fromargeries

Fromargeries (cheese shops) can be found in Paris almost around every corner in all arrondessments (suburbs). The more affluent the location, the higher the price and quality. This goes in hand with the baker, butcher and supermarket. Processed foods are usually cheaper in the supermarket than the artisan alternatives, in either, cheese, bread and meat. However there is no comparison in quality. Fruit, vegetables and other staples are sold in street markets from Tuesday through to Saturday.

Marie-Anne Cantin:
12, Rue du Champs de Mars, 75007.

Marie-Anne Cantin is one of the most prestigious and expensive of fromargeries in Paris. The hand labor involved in running this shop is passionate. The shop sits over five limestone maturing caves approximately five times the shop floor space, in the heart of Paris.
These caves are used for cellaring or maturing cheeses, providing an ideal constant 100% humidity. The cave walls have been painted with mould shield, (similar to what bathroom walls are painted with) and sanitised by hand daily.
The cheeses are nearly double the cost of those in neighboring department stores. For example one Rocamadour goat cheese disk is 3.90 euros at Bon Marche and 6.70 euros at Marie-Anne Cantin. However the disks at Marie-Ann Cantin are matured on site and look moister and superior through quality control. This quality control can be achieved by turning the cheeses daily. This is needed as soft cheeses lose moisture daily and become sticky. Fresh specially grown straw or stubble mats, sewn together, are changed as bedding for the cheeses during maturation. As the mats are changed the shelves are sanitised as well. This not only meets legislative requirements but gives a superior presented product. This is all done by hand, daily.

Marie-Ann is passionate about French cheeses and impeccably show cases them. In addition, the business imports Gorgonzola and Parmigianino - Reggiano from Italy and Emmental from Switzerland.

Marie-Anne Cantin inherited the know of an "*affineur"* from her father Christian Cantin, founder of the Cantin cheese house in Paris and initiator of the cheese house Guild in 1950. She is the appointed supplier of the Elysee Presidential Palace. In 1988, she founded the *Association pour le Respect des traditions Fromageres Francaises* and currently serves as its president.

Marie-Anne is a vigorous defender of unpasteurised cheese and supplier to Paris's best restaurants.

Crystal; sales manager of Marie-Anne Cantin

Bon Marche: 22 Rue de Sevres
Bon Marche is called a family department store. On entering Bon Marche I took a photo and was nearly arrested. Only with very calm persuasive chat did the photo survive and myself. This was a very important lesson as the French from my experience are fiercely passionate about keeping it all in France.

The first floor has every conceivable variety of food from every nationality. It could be likened to David Jones food Hall but far more extensive, sophisticated, elaborate, expensive and mostly the raw product. For example the fish display has a water fountain constantly keeping the products moist with spray, while bedded on ice. Price wise, second to Marie-Anne Cantin.

The cheese section was enormous as expected, but with the noted exception of plastic. All packaging is either in poplar (veneer) boxes or plates round and square. The stickers with colour especially red, visually in a sea of white cheese are aesthetically the most pleasing and draw the eye. There were many cheeses growing offensive looking mould, but this doesn't seem to be a problem to the consumer.

The well known and popular goats cheese called "Banon" which is sold wrapped in vine leaves and raffia, (fromage de chevre au lait cru), meaning whole milk, goat's cheese was purchased. It was wrapped in waxed lined paper, no plastic bags all shoppers supply their own cloth bag.

The poplar wood veneer boxes printed in brown were popular, not many in navy which aesthetically would be appealing but on enquiring, I was told blue packaging generally means a low fat milk product and red, a full cream milk product.

Galleries La Fayette: 40 Boulevard Haussmann, 75009 Paris
This is an amazing area in Paris, dedicated to the discerning shopper. As a department store it is not unlike Bon Marche but on a larger scale. The building itself is breath taking, revolving around a magnificent centered stained glass dome. Every fashion house struts their latest release all competing for the customer/tourist dollar. The food hall was of a similar vein but so large I needed directions to get out. It is the first store displaying vegetables I had never seen before.

The food was only the *best* of everything. The Fromargerie was equally fabulous with prices to match. La Fayette packaged all cheese purchases under their own name in the form of a poplar veneer box. I purchased four raw milk A.O.C cheeses to warrant packaging and received a 30cm diameter pine box, lidded with 'La Fayette Gourmet' printed on the lid. There seemed no end to the cost of packaging, all beautifully presented. The superiority of packaging, marketing, music and new releases drew crowds that became a little suffocating. I certainly came away with more than the cheese.

The fromargerie in la Fayette stocked cheeses that were mainly A.O.C. The A.O.C. label sets a standard and this was in running with the theme of Galleries La Fayette. A.O.C. in French stands for *Appellation d'Origine Controlee*, translated means Controlled Denomination of Origin. These labels are only awarded to great cheeses-products that were particularly representative of a region, a history, and a specific brand of know- how. Thirty eight cheeses remarkable both for the virtues of their region and the traditional method of their manufacture, now bear an A.O.C. label. The Institute National des Appelations d'Origine (INAO) grants approval for the awarding of the A.O.C. label, which is held by the following cheeses.

Pressed uncooked cheeses:
Cantal, Laguiole, Morbier Fermier, Ossau-Iraty, Brebis des Pyrenees, Reblochon de Savoie, Saint Nectaire, Salers, Tomme d'Abondance.
Pressed scalded cheese:
Beaufort, Comte
Goat Cheeses:
Chabichou du Poitou, Chavignol, or Crottin de Chavignol, Pelardon def Cevennes, Picodon de L'Ardeche or Picodon de la Drome, Pouligny-

Saint-Pierre, Rocamadour, Sainte-Maure-de-Touraine, Selles-sur-Cher, Valencay. There is also a ewe's milk cheese, Brocciu.

Blue veined Cheeses:

Bleu d'Auvergne, Bleu de Gex or blue du Haut Jura or Bleu de Septmoncel, Bleu du Vercors-Sassenage, Bleu des Casses, fourme d'Ambert of Fourme de Montbrison, Roquefort.

Soft, bloomy-rind cheese:

Brie de meaux, Brie de Melun, Camembert de Normandie, chaource, Neufchatel.

Soft, washed- rind cheese:

L'Epoisses, Langres, Livarot, Maroilles, Mont d'Or or Vacherin du Haut Doubs, Munster or Munster-Gerome, Pont-L'Eveque.

Entrance to le Briand

Le Briand: Rue du Commerce, 75007, Paris.
When emerging from most metro lines you find either a large or small fromargerie along with a bread and pastry shop, butcher and other speciality shops. The stand alone mobile street stalls are second in quality.
Le Briand is in a family orientated arrondesment which directly reflects the stock on hand. This particular fromagerie stocked piles of a rectangular white gloss wrapped, pasteurized camembert style cheese called le Brique. It is quite large and half the price of a A.O.C. raw milk camembert. The stock is indicative of the consumer's price points. "Le Brique" sounds like brick in French and has a lovely melt in the mouth texture and buttery flavour, very similar to the Australian camembert style. This flavour is achieved through culture choice and combination.

La Brique; Packaging is very simple but very stylish.

There is a marked difference in hygiene levels in varying fromargeries. The more expensive the stock, the cleaner the shop. On purchasing two A.O.C. cheeses here, the very considerate shop keeper realised I was traveling and cry-vaced the boxed cheeses to prevent the lactic acid aroma. This was extremely effective and the only shop to offer this suggestion. Understandably this was one of the busiest fromageries visited.

Cryvaced soft cheeses

Androuet: 93 Rue Cambronne, Paris, 75015. 0147 83 32 05.
Of all the arrondesment fromargeries this was the busiest. Patrons queued down the footpath. It was awkward browsing as there was only one staff member and those behind you patiently waiting. The shop had an extensive wine range and the poplar veneer boxes were

The shop front just before closing

printed with Androuet, Maison Fondee en 1909 (the house of cheese since 1909).

Again I purchased enough to warrant the packaging, all beautifully presented but the shop was chaotic from cheese cuttings. The children are all encouraged to taste and choose. Of the children I witnessed, they were particularly eager to participate and purchase. Again no plastic, waxed lined paper for wrapping all printed in Androuet. This fromargerie stocked cheese slicers, knives, cheese boards, soups and jars of other condiments. Many of the others did as well but not to this extent.
There was an enormous amount of stock cleverly placed on a relatively small shop floor. After an hour of observing sales, the floor was covered in cheese crumbs, due to slicing for sales and tasting.

Poplar wood Camembert cheese boxes

Others: Around Paris and towns throughout France I visited tens of fromargeries, too numerous to name and some not even having a name as they were predominately a variety store. The above fromargeries, were by far the most outstanding in every aspect. In smaller towns throughout the west, south and east of France you may even come across what we would refer to as a "corner store" in Australia, stocking the owner's favorite A.O.C. cheeses and champagne! This was common in areas of noted origins. For example, the Normandy area.

Professor Henry Eric Spinnler:
I was initially given Professor Spinnler's email address from Carole Willman. Professor Spinnler is a Professor of Food Technology at the Institut National Agronomique Paris Grignon (INAPG). His address is Laboratoire de Genie et Microbiologie des Procedes Alimentaires, 78 850 Thiverval Grigon. Telephone: (33) 1 30 81 53 87, Fax, (33) 1 30 81 55 97. Email spinnler@grignon.inra.fr

The visit to Professor Spinnler was specifically for information regarding culture usage in farmhouse cheeses. I was met and driven to the Institute which is located 35km out of Paris. A meeting room was utilized for the discussion of culture usage for three hours.

As a guest, I was taken to the dinning area for lunch. The choice of food was amazing considering it was a student campus. There were items made on campus, e.g. yoghurt. Wine was included on the menu, with no obvious associated problems. The French certainly know how to feed themselves. However I noticed it was 20 euros for 4 courses (A$35.00). We then toured the Institute for the following two hours including the equipment and curriculum around the following industry based courses;

- Fermentation technology
- Freeze drying
- Per-extraction for flavours
- CINAC to test the starters
- Cheese making in sterile and controlled environments
- PCR - Capillary Electrophoresis (single strand conformation polymorphins)
- HPLC for sugar and acid analysis
- GC - MS for flavours
- GC – olfactometry

It was fascinating and slightly overwhelming as the students were either doing their masters or PHD's. At any given time there are only 10 students doing their masters and 10, PHD's. For 20 students there are three allocated Professors of Food Technology. The Institute allocates 150 places annually, all undertaking either masters or PHD's in varying areas of Agriculture.

In the meeting room, the main points of discussion concentrated on the science behind the process of cheese making. This is an essential part of cheese making as it enables you to trouble shoot and solve problems as they arise. Professor Spinnler felt small Specialist Australian cheese makers in general had the "know how" of cheese making but lacked the science knowledge as individual producers. Our main points of discussion included;

1. The availability of starter cultures, their characteristics and behavior.

2. Varieties of yeasts to use; suggestions being, Kiuyveromyces, Deboryomyces, Yarowia, Brev. Bacterium and Hafina olvei. The most commonly used yeast in Australia is Geo Candidum.

3. The main cause of bitterness in soft cheeses; the accumulation of peptides in cheeses is the major source of bitterness (Lemieux and Simard,1991) and mould ripened cheeses are not an exception. The very strong proteolytic activity of *Penicillium camemberti*, especially its acid protease, as compare to its ability to break down peptides, causes the accumulation of peptides (Molimard et al.,1994). It has been shown using a trained panel that the increase in peptid concentration was correlated to the bitter descriptor. On the other hand it has been shown that when *Geotrichum* is used in association with the *Penicillium*, the cheeses are significantly less bitter. The use of lactic acid bacteria with low or medium proteolytic activity may also prevent a formation of bitter peptides bringing about bitterness.

4. The reasons for hard textured soft cheeses; The three main factors involved in texture, include the pH, proteolysis and Lipolysis. The raise in PH is very important for the change in cheese texture. The increase in pH will provoke a resolubilisation of the caseins which will make a smooth texture of the product. A too low pH (pH<5.5) in the core gives a rough and hard texture.

The two main parameters permit a change in pH; 1.The transfer of lactate from the cheese core to the surface. This is determined by the rate of lactate uptake at the surface by the microflora and by the permeability of the curd. 2. The buffering capacity of the curd is mainly determined by the components, protein, phosphate and citrate in cheese. A low buffering capacity will favour deacidification process at the surface, a too high buffer capacity through a high content of phosphate in the curd will conversely hinder the deacidification.

Caseins become more hydrophilic as soon as they are over their pH and so they immobilise more water. A consequence is a change in texture from a rough dry texture at low pH to a softer and more creamy texture over a pH of 6.0. this is the reason why the texture changes usually quicker just under the rind, where the pH increases the quickest, than further into the core of the cheese. Vassal et al, (1986) showed a linear relationship between the pH and the firmness of the cheese. Spinnler *et al*. (2005)

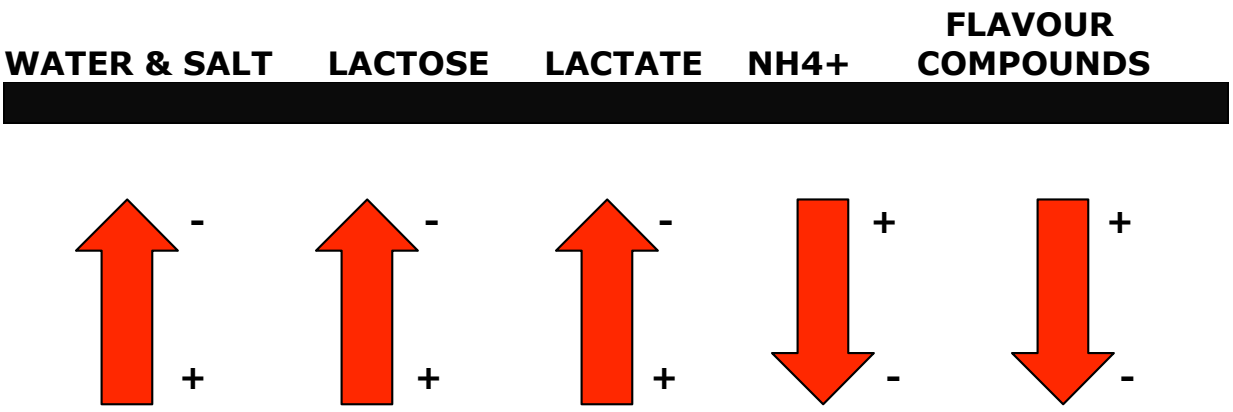


Diagram 2. Transfer of solutes inside a soft cheese, Leclercq Perlat et al, 2000.

Other points of discussion with Prof. Spinnler included;

- The production of surface mould-ripened soft cheeses
- The complex ripening pattern
- Raw milk production of soft cheeses
- Prematuration with lactic acid bacteria in order to get the correct mineral equilibrium
- Room temperature
- Curd handling
- Salting and the importance of drying the cheese
- Two phases of soft cheese ripening
- Basic chemistry, time/PH
- The use of mesophilic and thermophilic cultures
- Ashing

We discussed the recipes I was currently using and suggestions. To date I haven't been pre-maturing the milk. His suggestion was to visit Professor Bernard Mietton to discuss this and other recipe queries. Prof. Mietton lectures at ENIL de Poligny, Ecole Nationale d' Industrie Laitiere in the Jura Mountain region of France. He did make this suggestion during the planning phase of the study tour

so I was able to include it prior to closing for their summer holidays.

Professor Spinnler was asked for his philosophy on Farmhouse soft cheese production and he felt positive. He does feel there is potential for artisan culture ripened cheeses in both Australia and France. He feels the price point is the biggest problem. The greatest market for cultured cheese in terms of volume is 90% industrial in both countries. This is an important point before starting an artisan farmhouse soft cheese factory, as viability will be determined by volume. Then matching volume with technology indicates heavy capital investment.

In terms of value adding to regional produce, half way between domestic and commercial production is ideal, especially as cheese freights well. This partnered with training programs can then become an attractive proposition.

Professor Spinnler assisted in arranging the meeting with Alpma, one of France's leading manufacturers of industrial cheese making equipment. He also assisted with organising an interview with Valerie Coeuret at Fromargerie Graindorge in Livarot. Professor Spinnler had an extensive list of Australian cheese makers business cards and others associated with the cheese industry in Australia. One of these contacts is Chandy Hunter; Regional Development Victoria; Industry Specialist – Food group; chandyhunter@rdv.vic.gov.au. It is directly through Chandy I have become a member of the Australian Specialist Cheese Association (ASCA) and since received an invitation to attend a technical conference sponsored by both ASCA and Regional Development Victoria. These have all been invaluable contacts.

ALPMA FRANCE
13 Rue Morice
BP 150, 92113, Clichy
Tel.014 270 2800
Fax. 014 270 2986

Professor Spinnler arranged an appointment with Micheal Muller CEO of Alpma France, a packaging company, specialising in cheese making equipment and cheese packaging. Without an appointment, this visit would not have been possible.

ALPMA France was recommended by Professor Spinnler for guidance in choosing the correctly perforated papers for the ripening process of soft cheeses during maturation. In addition ALPMA specialise in the automation of wrapping and boxing of both hard and soft cheeses.

ALPMA was quite difficult to find in the suburbs of Paris. Once the interview had commenced I realised they dealt with only industrialised businesses rather than small farm productions. However, once I had established my needs with Monsieur Muller he held a telephone conference with his colleague in Germany to establish information on a unit they had just developed for small production lines. This was extremely beneficial as the unit is being trialed in Germany and none have reached Australian shores as yet. The unit consists of a cheese vat ranging from 100 litres to 500litres. The features of the vat include:

- Removable covers
- Straight floor; disc valve NW 65
- Hydraulic tilting device
- Indirect heating with copper heating coli
- Cooling with double jacket
- Temperature sensor PT !)) in the tank floor
- Stirring device, infinitely variable
- Large stirring blade for gentle stirring
- Robust gear motor
- Measuring rod for content
- Baffle board
- Tools for curd processing
- Safety devices, CE- Standard

Control System features include;

- Control panel made of stainless steel
- Lockable by special lock

- Main switch for electrical system
- Potentiometer for stirring speed
- Temperature indication
- Temperature-/Time Recorder

Filling Vat features include;

- Made of stainless steel AISI 304
- Drainage valve NW 40
- Filling "under whey" possible
- Mobile, 2 lockable wheels

Options, include;

- Reinforced filling vat for pressing cheese
- Additional equipment for soft cheese production
- Various mould for all cheese types
- Filling tunnel for filling cheese moulds without loss.

Monsieur Muller showed the DVD of the unit on the laptop sent via email from Germany. I was sold on the unit. It is precision German engineering at its best with a price tag to match. The beauty of the unit is its ability to meet all legislative needs; removes human contact with the product via automation; reduces the need for staff and maximises production by matching volume with technology. It is a complete piece of equipment for the professional production of soft, and semi hard cheese. It is designed for an owner operator.

Four hours was spent with Monsieur Muller discussing various options for production. ALPMA FRANCE do have a rep. in Victoria, Gordon Trethowen, who I have since received a quote from for various pieces of equipment.

I did have the understanding ALPMA had packaging options onsite at this address but they contract this to a company in Troyes, called Brodart. Troyes is 2 ½ hours east of Paris and the suburb of Clichy is on the west side of Paris, hence the dilemma of achieving a visit to Broadart.

ALPMA's website specifically states they are "specialists" in cheese packaging which I alerted Monsieur Muller's attention to. After consideration he arranged for a driver to deliver me to Montparnasse in Paris to catch the train to Troyes. On arriving in Troyes I was met by a senior representative of Brodart, Jean-Marc Schneider, and traveled a further 60 km to the factory site. Totalling 390km from Paris.

BRODART; It was becoming quite a day by this stage as the appointment in Clichy was at 9.00am. I arrived at Brodart at 4.00pm. It was my first visit to a HACCP certified factory, producing only packaging for the food industry.

Entering Brodart

Their production reaches 40 million m2 of wrapping annually. The factory runs 24 hours, 6 days a week. Jean-Marc gave me an intensive tour of the plant which was indeed a privilege. I came away with wrappings from almost every A.O.C. cheese produced in France to experiment with back in Australia.

Most of the soft cheese wrappings are OPP, polypropylene and paraffin coated either single or double sided then aluminum on the outer. The machinery in the factory included; a 7-coloured roller printer approx. 4 meters high. The bromide rollers were stainless steel, with each colour being printed individually. This was mainly used for covering food items displayed on trays.

The perforating machine, used for perforating cheese papers, had a roller, coated in copper hair, and resembling stiff carpet. The paper is pushed onto the roller to perforate it. There is a different machine for each degree of spacing's between the perforations. This allows different amounts of oxygen and moisture to be transferred through the wrapping determining the ripening speed of the cheese.

Myself and Jean-Marc Schenider

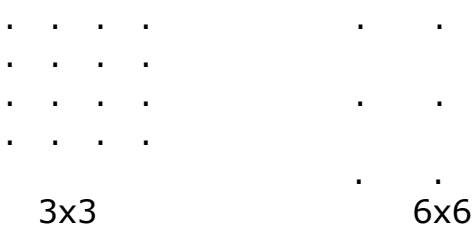
If a client desires a cello wrapping over a perforated or paraffin coated paper there is a machine that gives out two lines of glue either side to join the papers together.

The machine that coats the paper in melted paraffin, then freezes the paper to set the wax. The chemical smell in the plant was very heady and quite over whelming. Mostly resembling nail polish.

Jean-Marc could not have been more helpful. As specialists in a global field Jean-Marc not only had the engineering skills but an extensive knowledge base in cheese making. Dealing with such a variety of cheese companies the perforations and paper combinations are critical to the ripening and the final result of the soft cheese. Brodart have a saying, "*The cheese is only as good as its wrapping".*

Enquires were made from Jean-Marc as to the suppliers of poplar veneer boxes were in France. Lamarc, is the company name situated out of Geneva in the Jura mountains. Again over the speakerphone a discussion of samples and tariffs with Alexia, Claire Lamarc's secretary was implemented. There is an agent in Australia for Lamarc, Florence Motte, who I have spoken to and is also a rep. for Servi Doyl, a French company producing soft and hard cheese moulds. This introduction to Lamarc was very much appreciated. Jean-Marc also suggested I visit Professor Mietton at the Poligny Institute in the Jura mountains, as he is one of Frances most respected teachers of soft cheese manufacturing.

There were many more machines in the factory too numerous and complex to explain in brief. The factory tour finished around 7.00pm and on returning to the train station he called into the local market to demonstrate why certain packaging was working and some not. This was fascinating as he could tell at what rate each cheese was maturing by looking at the packaging. Which ones were able to mature and those that weren't. He explained that the 6x6 and 10x7 perforations were designed for a rennet set curd and the 3x3 perforated paper is designed for a lactic curd.



This an example of how the perforated paper looks. These perforations allow the cheese to breath while maturing.

For the French, blue wrapping or print usually indicates skinny or low fat cheese. There were a couple of exceptions out of approx.100 varieties but definitely the general rule. Something to remember when exporting cheese to France! A skinny Camembert was purchased and the sensory evaluation was very disappointing. It was De Rustic, made in Normandy with a blue and white checked wrapper inside the wooden box. Other very successful purchases included, Isigny, Camembert Affine au Calvados (hole in the middle of the wooden lid), Abbaye ste-merc and Moulin de Carel, all from Normandy and A.O.C. Delicious! As two of these were washed rind and pungent in odour, the affineur cryvaced them, again for traveling.

On Jean-Marc's recommendation, the following day was spent in several technical bookshops. This proved disappointing as none were in English. He gave me the directions to Gilbert Joseph book shops, of which there are four at St. Micheal in Paris. Gilbert Joseph can also be referred to as Jebear bookstores.

Entrance to Fromargerie Graindorge

Fromargerie Graindorge

Fromargerie Graindorge is in the town of Livarot, 190km from Paris and 25km from Pont L'Eveque. The appointment was made with Valerie Coeuret the company's only English speaking representative. She came in from her holidays to meet which was greatly appreciated. This appointment was arranged from Australia via the internet, however Professor Spinnler called to reconfirm. The appointment and notified others of the visit in French who wouldn't have known otherwise.

This was an advantage as they allowed the visit outside public hours. It also had the advantage of not sharing viewing windows, usually 3-4 deep when tourist buses arrive.

Fromargerie Graindorge produces Coulommiers, Livarot, Pont L'Eveque and Camembert de Normandie all with raw milk. These are all A.O.C. cheeses. Percentage wise the factory produces approx. 80% pasteurised and 20% raw. The raw milk cheese is slightly more expensive due to the number of laboratory analyses done.

Livarot and Pont L'Eveque are also produced with pasteurized milk. They are packaged in both round and square boxes with a petite livarot in a mini box. The stickers are the same design but the blue colouring indicates raw milk and the red indicates pasteurized milk. This colour coding is only indicative of Fromargerie Graindorges packaging.

The towns of Livarot and Pont L'Eveque are both in the heart of the Pays d'Auge. This has a 30-km radius which is the boundary for milk production supplied to the factory of Fromargerie Graindorge. This all sits inside the Normandy region.

Normandy Camembert is seeped in tradition, paralleling with Calvado, duck, apples and cream. The people of Normandy traditionally are healthy eaters who appreciate good cooking. Most family celebrations and reunions are marked with leisurely meals for which the French are so famous. Normandy is known for its traditional recipes and specialties based on the wonderful flavour of local produce.

Local specialties – Normandy tradition says one should eat duck in Rouen, tripe in Caen and La Ferte-Mace, leg of lamb from the salt meadows of Mont-St-Micheal bay and an omelette in the Mont-St-Micheal; one should also taste Dieppe sole, Duclair duckling, Auge Valley chicken, garnished with tiny onions, Vire Chitterlings, Black Pudding from Mortagne-au-Perche and white pudding from auranches. The range of seafood includes shrimps and cockles from Honfleur, mussels from Villerville and Isigny, lobsters from La Hague and Barfleur and oysters, Atlantic crabs, spider crabs etc. Any seafood may be accompanied by rye bread, slightly salted butter and a glass of dry cider. The many different varities of fish are often served with a sauce

of some sort. Local pastries and cakes are all made with butter such as apple turn overs (chaussons aux pommes), biscuits (gallettes), shortbread (sables) and buns (brioche). There are the Calvados-flavored cream chocolates from Caen and Putanges as well as caramels (chiques) and boiled sweets (berlingots) from Caen and Rouen sugar apples.

Cream, is the mainstay of the Normandy kitchen: Ivory in colour, velvety in texture and mellow in taste, it goes well with eggs and fish as with chicken, white meat, vegetables and even game. This delicious cream is at its best in the so-called Normandy sauce (sauce Normandy), which else where is nothing but plain white sauce, but in Normandy both looks and tastes quite different.

Cheese; if cream is the queen of Normandy cooking, cheese is the king of all fare. Pont L'Eveque has reigned since the 13C; Livarot is quoted in texts of the same period; the world renowned Camembert first appeared early in the 19C.
To be really creamy soft, a Pont L'Eveque should be made on farm in the Pays d'Auge when the milk is still warm from the cow. Livarot, whose strong odour alarms the uninitiated, is now made in factories all over France, Only Normandy Camembert is authentic.
The Normandy cheese board also includes fresh cheeses from the pays de Bray – the Bondons, demi-sel or double cream – whose repute is more recent but nonetheless firmly established. The patite Suisse was originally a local product, like the Neufchatel, in its various forms, (traditionally heart shaped) which is also a much appreciated farm-house cheese. Neufchatel cheese can be eaten within only 12 days of being made, although a mature Neufchatel takes up to three months.

The production of raw milk cheese requires constant milk analysis which is costly. The company analyses for e-coli, salmonella and listeria. Salmonella is rarely found. This analyzing ensures premium quality milk. Everyday according to the analysis the laboratory decide whether they will use the milk for raw milk cheese production or pasteurized milk cheese production. If the milk fails in quality standards for raw milk cheese production the producer will need to wait one month before submitting another sample for analysis.

The Listeria is purely from human hygiene and sanitizing procedures. Sometimes it can even be from their water. The producers in the Pays d'Auge region due to high rainfall can have the cows eating fermented pastures altering the milk quality. Bonus payments are given for milk when producers supplement this fermented feed with grass. The

region is very small and feed is restricted. Approx. 80% of Normandy cows and 20% Holstein cows are used for production at Fromargerie Graindorge. Overall they have 150 individual milk producers.

A discussion was held with Valerie about culture usage for the factory and problems associated with cultures. She said the company never varies their recipes. For example Pont l'Eveque has three recipes – Pont l'Eveque raw milk, Pont L'Eveque pasteurised milk and Pont L'Eveque de la Perelle. They change the starters for ripening the cultures depending on the weather and the seasons. They know how to change them when the atmospheric conditions alter along with the microbiology of the environment. They also watch the speed of growth for the geotricum and change the temperature accordingly.

In 2-3 years Valerie predicts the A.O.C. Pays d'Auge area will be expanded. Today Livarot is approx. 30 km in diameter for milk producers. This has become too restrictive for the quantity of milk the factory requires to expand. Until the diameter of the region expands the factory cannot expand under the A.O.C. rulings. It is estimated it will be increased to a 50km diameter to allow more producers to supply milk to the factory. With this business plan in place, Fromargerie Graindorge want to build another plant and produce just raw milk Camembert's. The present factory will remain and produce only pasteurised milk Camembert's. This should be in place by 2010.

Inside this business plan is the inclusion of recruiting farm hands to work at the new plant so they are more accountable for the e-coli and listeria counts in the milk. They can work more accurately with the company's requirements. This will ultimately improve the quality of the milk and raw milk camembert's. At present there are only three producers providing raw milk. Valerie said the legislative requirements and regulations are becoming tighter daily.

Tastings at Graindorge

For the factory tour, Valerie suggested arrival at 7.30am to view the processing production. The public hours were from 10.00am-4.00pm.

Up to 4 double decker buses can be present at one time. Five hours were spent, spell bound and this tour could not be more highly recommended. The entire production is under glass and through a maze of informative rooms you are guided via a set of headphones through the production of Normandy Camembert.

Prior to the head set, you enter a video room. Here you are won over by the farmers in the video explaining their passion for herd genetics and the evolution of the Normandy cow. The farmers of the Normandy region are deeply passionate about herds belonging to regions. The Normandy breed of cattle in the heart of Pays d'Auge is a tradition. It is right as it's synonymous with the soil. What they feel is charming, is the vista of Normandy cow under an apple tree in lush pasture. They feel it is something to preserve. The Normandy cow is described as quite, in fact a little too quite and slow to move in the milking parlor.

The Normandy cow produces less milk than the Holstein but it's richer. A richer milk produces a superior cheese (so the marketing strategy states). Not only is the milk good but also the meat. The calves born on the farm are grown out and marketed under Normandy beef. When you find cows grazing in amongst the apple trees that is very typical of the Normandy region. This tradition is not just a question of folk lore; Livarot and Pont L'Eveque are two A.O.C. cheeses. One of the criteria of the A.O.C. label is the breed of the cattle.

Normandy Cows

The farmers are constantly improving the genetics of their herd. Every year when they plan their season they select each bull individually for each cow. They work in association with an insemination centre, which allows a large choice of varietal bulls. They select which bull corresponds the best to the cow they want to inseminate. So to improve its stance or an udder or to improve its pelvis, if it is not deep enough to get a good calving or the speed of milking and reduce the cell count. They may not get results immediately but little by little they increase their size and

obtain better udders. It is a science and something the farmer's love, so they spend a lot of time studying the correlations.

Each cow produces approx. 7000 litres a year. This is not as much as other breeds but it is not the quantity producers are keen on, it's the quality. The cows give as much milk as they can, they are not forced. The farmers prefer them to be healthy and not stressed. They do not try to get more than 7000 litres per year as the cows become more fragile and more susceptible to stress.

The cows eat pasture for 9 months of the year giving specific character to the milk. Cows graze grass and only grass from March to October. They stay in stalls from the beginning of December to March. What the farmers try to give them during winter is a balance but will never be as good as the grass of the Normandy meadows. The farmers obviously prefer to see them in the fields where there are fewer problems. The farmers have a contract between themselves and Fromargerie Graindorge. They follow the charter of good dairy practice, noting all drugs used so there is true accountability from the beginning to the end of the food chain.

The farmers are very pleased that their milk is used for the production of Livarot and Pont L'Eveque; it is a very good image for their region. What is clear to the farmers is that they need Fromargerie Graindorge as much as Fromargerie Graindorge needs them. They feel a very valued link in the chain. The farmers feel they have ownership of the cheeses produced by the factory and are immensely proud of it. This is the marketing story behind Fromargerie Graindorge

The farmers feel 51% of French consumers do not trust what they eat. They feel their role as farmers is to show them that they work with their hearts as well as with their heads. Of course they think about what they do and what kind of consequences it can have on the quality of the food. Its more than their work it is their passion, they do not count the hours, even the nightly ones for calving, it's emotional. They cannot say they talk to the cows but they certainly feel they understand each other.

When the driver delivers to Fromargerie Graindorge, he gives a milk sample from each farm for analysis in the laboratory. The analysis is a way of controlling the milk quality and the traceability. Before sending it to the production line, the milk is prepared. It is skimmed to reduce the fat quantity. The factory uses micro filtration depending on the type of cheese required. They add yeast and lactic ferments which are

grown in Fromargerie Graindorge's dairy. Skimmed milk is only used for raw cheeses. Pasteurized milk cheeses use whole milk. The milk is then stored in vats for 15 hours where it ferments slowly allowing maturation to occur. The yeasts grow, acidifying the milk making coagulation easier. Just before they make the cheese they test it to see if it's ready to the specifications.

It is now at the critical stage of cheese making. The milk is heated and the rennet is added – in approx. half an hour the milk becomes solid. It is then cut into small cubes of 5cm. The cubes are turned and separated gently several times to encourage the whey to leave the cubes. This is a totally automated process at Graindorge. Every stage is timed to be rotated, cut and mixed. One hundred litre tubs travel along a conveyer belt. Each tub has an identical procedure through automation so there are no variables. The curds when ready, have the whey siphoned off and poured onto moulds, depending on the type of cheese being made, either Livarot or Pont L'Eveque. The trays of moulds are turned frequently during the next few hours to aid the draining. Again this is automated. The cheeses are left to drain for two days at a higher temperature. Salting is done to assist the draining and to add flavor. To finish, the cheeses are left to ripen for several weeks before being packaged and delivered to the consumer/retailer.

The packaging is used to protect the cheese. During the 19th Century commercial production and development of transport encouraged the creation of new packaging for distribution of the product. In about 1890 the first cheese boxes were made in the Jura mountains. Instead of paper for Livarot, boxes made from poplar wood began specifically for Camembert. Today the cheese packaging corresponds to different criteria like production, respiration, appearance or originality. Before putting the cheeses into boxes they need to be wrapped in perforated clear or paraffin coated paper to enable the continuing of maturating. This allows the cheese to breath. The boxes correspond to the traditional shapes of the cheeses. For example a pasteurized Pont L'Eveque is always square.

Viewing the maturation room

After about four weeks of ripening the Livarot, in keeping with it's tradition is bound by five strips of paper or traditional reeds, giving the effect of five strips which is why it is called the Cornel. The reeds are collected in September. They are dried and torn into thin strips. Today this is still done by hand. The reeds maintain the circular shape of the cheese.

SERVI DORYL

Servi Doryl are manufactures of cheese moulds. Servi used to manufacture moulds for soft cheeses and Doryl manufactured moulds for hard cheeses. They are mould specialists only. They have since merged and operate as one.

The factory is situated in the industrial zone of Langaeis to the west of Tours. It was quite hard to find. Z1 Sud in French stands for Industry Zone in the south. The appointment was with Severine Pierret at 9.30am and set up via the internet. Severine is the commercial export sales assistant and the only person who spoke English. Phillip was also brought into the meeting and managed to communicate. He was great with prices and found a goat cheese mould that could be modified to meet the needs of a 54ml diameter Camembert mould. The company's multi moulds in block form were very good quality all from poly propolene. The moulds have toggles on the side to allow welding rather than welding directly mould to mould and distorting the shape. Servi Doryl custom make to clients design and needs.

Severine gave a tour of the factory and the shed down the back FULL of samples. It was cheese mould heaven. There were many experimental moulds that had been produced which were interesting and the reasons why some worked and others didn't. Severine was generous with a blue cheese mould at no cost. It is a fabulous sample, fully perforated. It was accompanied with a letter to customs to ensure no duty would be charged by customs.

The latest equipment on the development table for Servi Doryl were aluminum draining trays. They have been designed specifically for automation. There is no doubt the modern cheese maker in France has a dry floor. This has reduced staff costs and eliminated wastage with volume matching technology. These trays are very heavy and there is a spacing of at least 3cm between the trays so the whey doesn't go on the under tray of cheese. For the Farmhouse Artisan cheese producer, Servi Doryl manufacture a manual moulding line. The main characteristics include three systems of manual or semi automatic

tipping before moulding for small and medium – sized cheese dairies. Coagulation vats can be made to vary from 80 litres to 250 litres.

Servi Doryl 100 litre tubs for soft cheese production.

Manual Moulding Line: after the coagulation and synereis (carried out in vats placed on the frame of the platform), the vats are tipped up manually pouring the curd and whey through a groove (3 varities) to the distribution frames.

Manual moulding tip system: after the coagulation and syneresis, the vats are moved manually to the tip system (either directly by displacement on the floor for the vats equipped with rollers or by a trolley for the vats which are not equipped with rollers). The tipping up is operated thanks to cables driven by a hydraulic pump with manual order.

Semi automatic moulding tip up system: after the coagulation and syneresis, the vats are moved to the tip up system (on the same principle as the manual tip up system). The tipping up of the vat is operated semi automatically by a set of electric back geared motors activated by an impulse of the operator.

Semi automatic moulding tip up system

Application:
Pouring/moulding of the mixture curd/whey contained in coagulation vats.

Construction: machines made in stainless steel
Accessories: straight moulding groove, tubular moulding groove (semi automatic version) and the flexible moulding groove for fragile curds. The vats can be made 100 or 50 litres in size. The multi mould, given as a sample 7x8 54 mm (mini camembert size) needs 40 litres per mould.

Servi Doryl have recently made up a line of these vats to go to Switzerland; 6 x 100 litre vats for 15-20,000 euros. The new design double sided draining trays are 120-150 euros.

Semi manual tipping system

Servi Doryl have also designed a tip up system which pours curd and whey through a tubular groove into the filling frames. The concept allows a gentle moulding in the filling frames in one movement. This way, the tubes of curd are not altered, neither by the angles of the groove nor by a front shock on the filling frame. The tip system is specially developed for the vats of 150, 185, 220, 500 and 550 litres.

Application: Tipping up before moulding of the mixture curd/whey contained in the coagulation vats.
Construction: Machine made in stainless steel. It is composed of

- A fixed frame, set up on adjustable feet and supporting plates
- A swiveling frame supporting the vat to be tipped up
- An up and down system driven by two jacks
- A tip up system set in action thanks to a connecting rod and back geared motor, with variable speed and programmable according to the output to be poured. I saw this system in place at Fromargerie Graindorge.

<u>Moulds and Block moulds for soft cheeses, lactic curds and pressed cheeses.</u> With 30 years experience in the plastic field, Servi Doryl is acknowledged as the specialists of cheese moulds and block moulds, in poly propylene. With or without bottom, with or without perforation or micro perforation, they propose a wide range for soft cheese, lactic curds, presses cheese and specialties (cow, goat and sheep).

Multi moulds for blue cheese

Polyproppylene, main ingredient for mould manufacturing.

Rocamadour Cheese Festival

Arrived in Rocamadour via the town of Limoge. Bruno and Isabelle Giard, were the guides through the weekend cheese festival plus introduce and translate our way through local cheese factories and producers and other food related attractions in the town. Rocamadour has given it's name to goat's cheese, sweet walnut cake, truffles, mushrooms, duck and goose liver (foie gras), preserved duck (confit), farm lamb and the wines of Cahors. They are all well-known specialties. Rocamadour is the second most visited town in France, having approx. 12,000 visitors a day in summer. The roads are medievial and buses can only fit one at a time.

Lunch in the shade for patrons of the Festival

Bruno and Isabelle own and operate a bed and breakfast called *Le Grange*, just opposite the train station, a direct line from Paris.
The local producers in the area operate from similar farmhouse buildings. The cheese is produced on the lower floor with a residence on the upper floor. As a farmhouse production in

Australia this would work particularly well for viewing the cheese maturing through glass panels in the floor. Entry is through a ramp of dirt to the first floor, where sales and tastings could take place.

The festival I came to participate in, is referred to as *Fete des Fromages* (Pentecost). The festival ran over the weekend beginning with local 10 year olds (as it was the 10th anniversary of the festival) from the Primary School, judging goat's cheese. These children volunteered to judge and were supervised by the technician of the Rocamadour goats cheese Co-operative. The children took their positions very seriously and were provided with pages of sensory evaluation sheets to accurately score each disk of goat's cheese. Bruno and Isabelle's son Benoit was one of the volunteers so we were able to be very closely involved with Bruno translating the proceedings.

Mouldy cheese of every description.

The local television station was present filming, plus the Lord Mayor of Rocamadour. She was extremely passionate about the spiritual side of Rocamadour and spoke very good English. I asked her if Rocamadour had a sister city and yes, Quebec. In addition the town has a strong association with Brittany

Most stall holders had expandable refrigerated trailers which once unpacked they unfolded being able to produce professional displays, as above.

and the sea. She explained when the sailors of Brittany are in a storm they pray to the black virgin in Rocamadour for a safe passage. If they are to survive they are to return something to Rocamadour.

The bronze bell in the local church, apparently rang on it's own in the 12th century, thus making it the home of a miracle. The pilgrimages through Rocamadour from Spain are the focal point of the spiritual values of the people and they hold it very dear.

When the children started tasting, three tables were set, each with six children and six goat cheeses by different producers. Six sheets of tasting notes were stapled together for scoring and comment. They were also given a large green apple, two litre bottle of Evian water, a paring knife, cup and plastic plate, all for cleansing the palate.

The first disk of cheese is always the hardest as there isn't anything to measure it against so they are encouraged to go back to the scoring of the first cheese at the end. What was difficult in this case was the first cheese was probably the winner. It was very creamy and this is unusual for a goats cheese. The technician explained that goats cheese is not meant to have a acidic bite to it. That bite which is often associated with goats cheese, is *pseudomonas* which comes from the soil and cannot be got rid of through sanitation. The bacteria grow in the moisture on top of the cheese and is a problem in France.

Watching the children engage in this tasting and judging event was like viewing their soul. Eating is a way of life for them. They are educated to appreciate an excellent quality cheese. They all look at the aspect of the cheese. They are allowed to discuss matters with each other but not the notation they give the cheese. They feel it, squeeze it and smell it initially. They tend to suck the cheese first then cut it in half to see if it had fully matured. They know immediately if it is too salty. One boy said straight away he needed to drink it was *tres tres tres sal* (too salty). They consider this not a good sign.

One of the many trophies
Produced from local timbers.

Each cheese is scored out of 20. You need to receive 19 for gold, 17 for silver and 15 for a bronze. If the marks aren't received no

trophy is given. The Fete de Fromage is run by volunteers and organized by the cheese makers association.

Each A.O.C. Rocamadour goats cheese must be 35g minimum. When moulding takes place it weighs around 48g and with maturation it loses weight. The cheese must not be acidic. Some consumers in Australia think this is a must. As previously mentioned bacterial growth in the moisture on top of the cheese is usually the cause of acid development. It is very difficult to eliminate as it causes a film on all cheese making equipment. Just recently the technician was saying an A.O.C. factory had to discard several tones of cheese because of this problem.

As the children taste, their initial reaction to the taste tells the result. While observing them I couldn't get over how much they ate just to taste it. Most of the kids on completion would have consumed 3-4 disks of goats cheese. They certainly have acquired palates. The passion we lack as educators in Australia is something to really think about. Education is a vital link to reach the sophisticated bench marks the French have for what they consume. Watching these children appreciate and more importantly understand the skills of an Artisan was an absolute pleasure.

The Lacoste's signage for farm gate sales.

Factory of the Lacoste Family:

Bruno drove and translated for the day while visiting this beautifully situated property just out of Rocamadour. A stone beehive tower in each corner of the property, originally to fend off intruders. The hives are rounded with original shingle rooves. We met Mrs. Lacoste who has been the principle goats cheese manufacturer with her late husband since 1970. They started with four goats and her 60 year old son today milks 150 morning and evening, 7 days a week and has done for 35 years. He has never had a holiday. Bruno was invaluable

as an interpreter and only through his friendship with Mr Lacoste was I fortunate enough to be shown through the entire factory, situated in the basement of their three story stone home.

Myself and Mr Lacoste

On entry shoes were covered with disposable blue plastic covers. All milk used in this factory is raw milk, not pastuerised. In all their years of production they have never had listeria or salmonella. The factory was full of blue back flies and mould. At a glance it seemed clean but farmyard style. I feel the listeria and salmonella obviously have too much competition to take hold of the product. This is not unusual in provincial France. There were no fly screens on any of the windows. Mr lacoste's hands were so raw from working both in the field and factory he had splits in the sides of his fingers exposing raw flesh. He didn't wear gloves either.

The most delightful aspect of this very famous farm in the Rocamadour area is that the goats run in the paddocks all day until 5.30pm and are shed at night. This undoubtedly gives superior milk to goats shed constantly. There will be less in milk quantity to shed goats 24/7 but better quality. The goats are usually pregnant during the winter.

Mr Lacoste moulding cheese

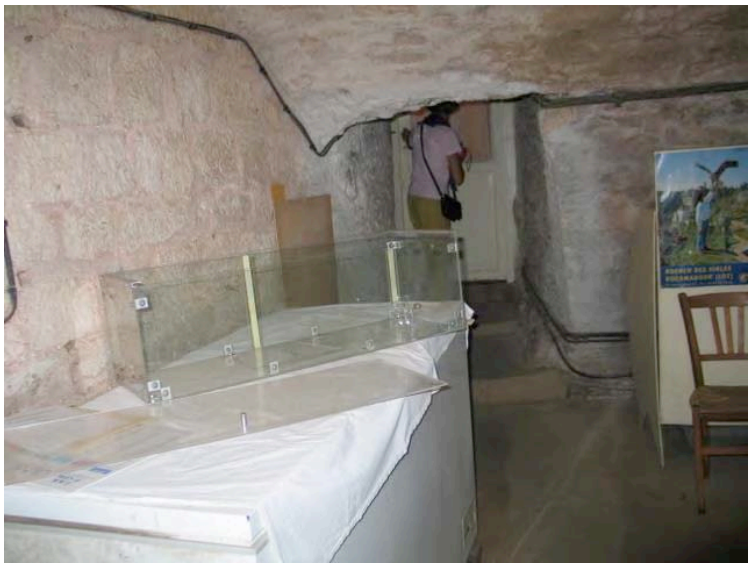
The goats will walk in on their own both morning and evening. The breed of goat he runs is "Sannes" white goat. The other breed allowed to be used in the Rocamadour A.O.C guidelines is the "Poictier" brown goat.

The Rocamadour goats cheese producers have the same attitude and passion to their herd as Normandy cow milk producers. With two milking's a day, the milk comes into the production room which is quite small and the rennet is added without any heating of the milk. Then 2% of whey from the previous batch is added for geotrichen, to help form the mould. No cultures are added. At Lacoste farm they make a batch from the morning milk and a batch from the evening milk. 6.30 in the morning and 6.00pm in the evening are the milking times, approx. 240 litres per day and then it declines during the summer.

After the milk has had the whey added which is 2% of the litreage the rennet is added, (7ml for 50 litres). After the curd has formed it is cut and wheyed off. It is left to drip in cloth bags. When it has drained sufficiently, salt is added .6% per kilo, less than 1%. A webbed mat is put on a stainless steel bench top and the metal mould placed on top. It looks like the consistency of very thick cottage cheese.

Lactic curd draining into tubs

From 1 litre of milk, 3 x 35g discs of cheese are produced. When they don't have a lot of customers in the winter months the production of milk is not pushed. The shelf life of the discs is 10 days, any longer the cheese would be considered too hard. For the 10 days, the cheese is kept at 15 degrees and 98 – 100% humidity. Other producers leave their cheese around 12 degrees, but Mr Lacoste insists to get the creamy texture 15 degrees is needed. Those leaving them at 12 degrees sell outside the Rocamadour area. Mr lacoste matures on site for a minimum of 6 days. The factory does monthly analysis on both the cheese and the milk for Listeria and other harmful bacteria. In other factories this is done daily. After 6 days of maturation a paper A.O.C. Rocamadour disk is placed on top of each cheese. They are not wrapped and the paper seems to stick from the moisture on top of the cheese.



The only room available to the public for sales. The walls are raw stone.

The last room of the factory tour resembled a cave, with raw limestone rock exposed. This is the sales room. Mr Lacoste produces 120,000 x 35g discs per annum. This requires himself, his 80 year old mother and a farmhand to work 7 days a week all year round. In summer they bring in another farmhand just for the season. As a producer he receives approx 50 euro cents per disk giving an income of 60,000 euro dollars between 3 staff members. Cellar door sales amount to 20% of his total sales. Mr Lacoste is one of the few producers who doesn't sell to the cooperative. His remaining sales he delivers to local restaurants personally. He doesn't dispatch any cheese outside the Rocamadour area. Years ago he tried exporting but the paper work proved unsustainable being a raw milk cheese.

La Borie d' Imbert:

This is a very unique goats cheese producing company that employs the mentally disabled. The principle cheese maker is in his late thirties. He desperately wanted a job in Australia, but only interested in producing raw goats milk cheese. This company houses the goats 24/7. The stench was over powering. Very difficult to breath when looking at the animals. Being shed, they will produce more milk but if the smell has anything to do with the milk……Again the flies were very busy. They also have an extensive vegetable patch for the disabled to tend.

Shedded goats

This factory was full of life, it had a real pulse. They employed a lot of young men in their 20-30's all involved and all very passionate about cheese production. For visual education the factory was stunning. As a visitor you can view the live goats in the shed, where they are milked and as you walk down a long corridor you have signage above the viewing window of what happens at each stage of production. Bus loads of tourists arrive to see this. It is a similar set up to the Fromargerie Graindorge Village in Normandy. They only have a few products but each one is exceptional. They make a baby disc approx. 2cm in diameter that have been rolled in pepper, herbs and other various combinations of coatings. These can be boxed and covered with glad wrap. Beautifully presented and bite sized for nibbles and aperitifs. They also had large goats cheese rounds, quite thick, approx 7cm x 15cm round. This is very large for goats cheese.

Bite sized goats disks rolled in herbs

"The more I smell, the more she loves me"

Goats cheese drying

Viewing production

Draining curds in large scale bags.

Foie Gras Factory:

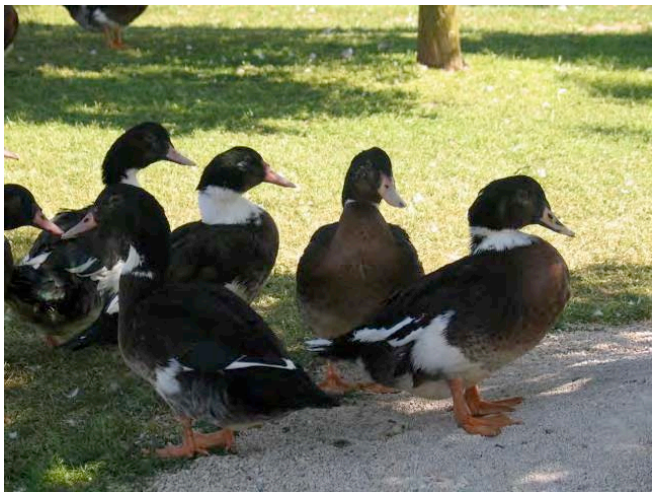
Again Bruno organised and introduced the proprietor of another very famous factory in France situated in Rocamadour called "Ferme des Campagnes". Every year in France 23 million ducks and 800,000 geese are fattened for their liver and meat. It is a very old process. In antiquity, the Greeks, Egyptians and Romans fattened up geese with mashed figs. The French name "foire" derives from the latin "ficatum" (fig) giving fegato in Italian and higado in Spanish. The morphology of duck allowed force-feeding and during the process, the duck does not suffer and is free of breathing.

Decorative street sign

The more appropriated race of duck is the "Mulard". Ducks are reared in fields untill around 4 months of age in the period of May to September.
During this period a duck eats 200/250g of food per day and its weight is 4/4.500kg. To be force-fed the ducks are caged in a duck shed. This building is well cleaned and ventilated. The ducks will stay here for 2 weeks to be force-fed. This process consists of making them eat, twice a day, 300/400g of maize. The food goes through the esophagus to the crop with a special machine that looks like a funnel. The digestion is made by the gizzard.

Immobility + force-feeding = fattening

After 2 weeks the average weight of a duck is around 6kg. The liver is representing 10% of this weight: 600g. So in 14 days the duck has been fed 13kg of maize. Strict rules of health and safety are applied to the process of preserved food from slaughter to sales. The factories extending their sales to exportation have to follow European regulation. Ducks are anaesthetized and then bled when slaughtered.


Mulard ducks

They are dipped in very hot water to enable easy plucking and down and feathers are burned. The ducks are then carefully cut open. The first operation is to take out the precious fat liver. This liver is cleared of vein and gall bladder. Livers and carcass are stored in a cold room for 24–48 hours. The ducks are boned and cut into different pieces: legs, wings, fillets etc. Duck fat is used to cook the pieces before being preserved. Foie Gras and cheese in France are as famous as each other.

Department of Agriculture; Grammat:

For interest, the local department of Agriculture was sourced for information on A.O.C requirements for producers in France. The website, www.aocrocamadour.fr was given, which provides the gateway for boundaries where you can and can't manufacture particular cheeses. The French are fascinated that Camembert can be made in Australia when it is obviously not within the boundaries of Normandy.

Goats Cheese Cooperative of Rocamadour:

The co-operative uses milk from 4 producers only. They are mixed and produce a constant product with the addition of freeze dried cultures. These cheeses are marketed under the co-operatives name. An appointment was made with Catherine, heading marketing, exporting, communication and commercial production of the Cooperatives cheese. Benoit was the principle cheese maker and a graduate from the Poligny Institute and very proud of it. Benoit provided a personalised tour of the factory.

Packing room at the co-operative

He described his factory as only little, which it is in relation to others visited. The cooperative process approx. 1,000,000 litres of milk per year. In addition to the four producers that supply the co-op, they have 12 more producers that manufacture cheese on farm then market and package their product through the co-op. Each of these producers have their own label with photo identification. This sounds

confusing but when witnessing the receiving of these cheeses and the efficiency and order of packaging, it is a very effective way for the grower to manage this side of their business.

The co-op is 10 years old and they only manufacture with raw milk. When the milk arrives they take it from 4 degrees to 21 degrees Celsius in a vat. They use commercial starter cultures, yeast and a mould. These are supplied by an American company. The PH is 6.6 when you add the starter culture and 4.4 when the cheese is finished. The farmers that produce their own cheese use the whey from the day before as starter culture, approx. 2% of the volume.

The biggest difference between using the whey and commercial starter culture is the whey production produces a creamier cheese by day 6. The starter culture will eventually do the same but by day 10, not before. Same result but takes longer. The consumer at the farm gate is a lot easier to please and provide quality maturation for, than wholesaling where the producer hopes the product is adequately looked after to ensure correct and safe maturation.

When rennet is added to the milk it is in the ratio of 20mml to 1000 litres. This ratio is different if you use whey for lactic starter culture as to commercial starter culture. When comparing this to Mr Lacoste's it is quite different. Once the curds have formed it goes into large bags and squeezed. Mr Lacoste lets his drip. The larger quantities need extra pressure. The whey is stored for pigs. The bags are made from polyester, produced by a company in the North of France. The solid curd is then placed in a mixer and salt is added, 88g to 100kg of curd. It is then moulded. The different shapes of the cheese will alter the final flavour outcome during maturation.

The cheese making room has 50% humidity and around 30 C degrees. For the first day, once moulded, the cheese goes into 15 degrees C with 90% humidity until it is dry. The second stage approx. 6 days it is moved to 12 C and 95% humidity.

Walnut paper leaf shape

Benoit found a perfect walnut leaf which he had moulds and stickers manufactured to match. This shape has become the companies trade mark. Benoit uses fresh walnut leaves to wrap the cheese. The leaves are collected in autumn, put in vinegar and water to preserve and sterilize. Then, when ready to use, add hot water to the leaf to make it pliable to tightly wrap the cheese. To keep the parcel intact, tie over with raffia for fabulous presentation. Sometimes they put a spray of fruit alcohol onto the cheese before they wrap it, not liqueur.

The famous *Bannon* A.O.C. goats cheese is wrapped in chestnut leaves and then in raffia. When packaging the Rocamadour cheeses, you have one type of packaging for supermarkets and one for *affineurs.* After the 6 days the cheese goes into 4 degrees C and the best before date will be 30 days from packaging.

When cleaning the production area, they use acid for 5 days then alternate with alkaline for 5 days. Never mix the two together as they will gas off. If this rotation isn't put in place a film eventually covers the equipment and is very difficult to remove.

Copper linned Chalon Megard Vats

Comte Cooperative Factory:

An appointment was made via the internet with Matt Megard, from the equipment producing company Chalon Megard, in the township of Nantua near the Swiss border. Matt orgainised several tours, the first being the Comte factory to

demonstrate the modern cheese maker of France. The factory is a show case of Chalon Megard cheese making equipment of which Matt's grandfather was the founder. The factory is only little by general factory standards and built 10 years ago. The French government provided Fifty percent of the capital needed. This is the main reason for such high tech equipment for a relatively small production. The copper jacketed vats are beautiful to look at, although Matt says there is no scientific reason for copper over stainless steel, only marketing and tradition.

The price of milk in France on 8/06/06 was 58 euro cents per litre, on the same day in Australia it is 38 Australian cents. With the current exchange it is nearly triple in France. The cooperative pays the producer 58 euro cents and then the producer gets additional subsidies from the government.

This factory has only one cheese maker who works 7 days a week. He is very highly regarded and is seen as a professional not a laborer. He starts work at 4.00am and finishes approx. 12 noon. He sleeps until mid afternoon and returns to finish off. The factory has 4 copper jacketed vats in total. By legislative law (A.O.C), each vat can only be used once a day. Comte can only be produced from milk by the MONTBELIARDE cow. As Comte is a hard pressed cheese it is cooked @ 55 degrees for an hour so the room temp is very warm and steamy. The cutters shred the curd into tiny pieces. When the vats are wheyed off it is done with a siphon but it's critical to be done in less than 5 minutes so the difference is not too great between the top and bottom of the vat.

The vats are vacuumed into 6 stainless steel tanks with the micro perforated moulds placed underneath. The volume of milk equals the technology of the vats and tanks to ensure exact duplication of weight and size for each Comte and eliminates waste. The whey is released into a trough under the moulds and piped out to be collected for pig feed or the production of milk powder. These tanks and whey off procedure ensures no holes or bubbles in the final product. No colouring is added to the milk however in winter the Comte is white and in spring to summer it becomes quite yellow. The calcium chloride etc is adjusted daily according to the milk analysis. The milk is not skimmed or pasteurised.

Perforated moulds receiving curds from the overhead tanks. The whey drains into the trough from where it is siphoned into holding tanks for pick up. The whey from this particular factory is used for the production of whey powder.

440 litres of raw milk makes 1 x 40kg Comte mould. One vat holds 2,700 litres which = 6 x 40kg Comtes. There are 4 vats, so each day one man produces 24 x 40kg Comtes. The factory does adjust production to sales. After the moulds have been wheyed off, they sit in the production room for 10 hours for acidification. They are hydraulically pressed for 6 hours and then sit for 4 hours. There is a trolley designed for sliding the moulds out from under the tanks into the press, then to the maturing rooms. As you can appreciate handling 40kg cheeses all day would not be sustainable. This trolley is designed to go up and down as well. Matt Megards grandfather specifically designed the vacuum system which the family is very proud of. Matt's grandfather was an engineer, not cheese maker. This machine was in use by 1973. It is the speed of curd and whey distribution from the vat to the mould through 6 tanks which makes the design so unique. This automation of the factory allows one cheese

Matt Megard alongside the hydrolic press.

maker to produce 7 days a week single-handed.

Maturing room and the paddle used for daily salting of the Comte.

Overhead tanks used to distribute the curds evenly between the six moulds.

From the press the Comte goes to the maturing room. The first day, a fine water and salt mix is rubbed over the wheel of cheese. This continues for the next two days and then day three a courser salt and water mix is used. These huge wheels of cheese are cold, heavy and wet so the salting of Comte is not a pleasant job. The salting continues weekly from then.

The wheels are placed on pine boards in the maturation room. Microbiologists have done extensive research and development into surfaces best suited to cheeses when maturing. The research showed that plastic boards get tiny scratches which become contaminated. Stainless steel causes the cheese to stick to the surface. Pine board at least 1 to 2 inches thick have been found to have a balanced ecosystem which compliments the cheese. The boards are taken apart and washed only with hot water so the little worlds of natural bacteria are not destroyed. Because it is so balanced the microbes work very well for Comte. Minimum shelf by A.O.C. requirements for Comte is four months, before it can be sold.

It is not a huge advantage to buy Comte at three years of age as to 12 months maturation as it dries out and doesn't age particularly well due to the high butter fat content. After a month at the factory the Comte wheels can be bought by affineurs who continue the salting and maturation for the regulatory further three months before it can be

sold. Comte gets very strong on the tongue as it gets older and this is not a desirable trait.

Matt Megards translation at the Comte factory was invaluable. Lunch was further provided by Chalon Megard in the township of Nantua. Matt kindly then drove and arranged an appointment with Professor Bernard Mietton, senior lecturer at Poligny Institute. The journey was an hour and half from Nantua and at the expense of Chalon Megard. Matt's reasoning for the visit was a potential student.

Poligny Institute: Enilbio, BP49, 39801 Poligny Cedex

Professor Mietton immediately became the teacher and insisted on the purchase of a list of technical books. He prioritised those he felt were essential to understanding the science behind cheese making. He made sure I learnt two very important things immediately. First being, Camembert is not camembert unless it is made in Normandy. Secondly, Camembert is ONLY made from raw milk. The French passion for cheese culture is uncompromising. Professor Mietton went on to state also that if you have to pasteurise you pasteurise twice. He feels this is vital. The evening milk is ripened or must be left overnight to mature with 2-5% Stam 3 @ 12 degrees. Even though you pasteurise a second time the enzymes produced from the stam 3 will remain in the milk after the second pasteurisation. In the morning the milk is pasteurised and Floradanica is added as culture.

Matt Megard, Professor Mietton and myself.

Professor Mietton proceeded with a comprehensive tour of the institute. Fifteen million euros were spent on the Institutes construction four years ago. This equates to 1,200 euros per square metre, not counting equipment. The institute does pay for the running costs but didn't contribute to the capital costs. The institutes main income is from companies paying for tuition to engineer specific dairy products. Once the correct engineering of the

product has been achieved the company can practice production with institute facilities.

The institute had approx. 70% of the necessary equipment but an entirely new complex was built to house existing equipment, plus the addition of upgraded equipment. The institute is an outstanding showcase for Chalon Megard equipment. In the soft cheese production area Servi Doryl 100 litre tubs are show cased along with smaller representation of other companies. It is easier to appreciate the advanced technology of the equipment in a learning environment. The depth of planning, architectural and engineering input can only be applauded.

There are two levels to the building. The top level consists of all pipes and electrical work. This was designed for hygiene reasons, so maintenance could be carried out without entering the processing rooms. The environmental microbiology of the institutes processing rooms is constantly monitored. When you view the overall plan, of which we were supplied a copy for the tour, the institute flows. Traffic through the rooms all go in the same direction. All maturing rooms can be viewed through holes in the floor. The light switch for the maturing room is next to the hole in the floor.

Brown tiles representing the Montbeliarde markings

There is a fluidity in the architecture of the building. Each and every room has mineralised hot, cold and high pressure pipes. On the ground floor the windows of the building exterior are removable for moving equipment in and out of the building. The detail of the floor was the most interesting. As you look at a floor map of the building, there are brown blotches. These are mirrored in floor tiles. I had no idea what this meant and asked Professor Mietton. The blotches match the patterns of the Montbeliarde cow of the Comte region!

Tiles are used for all flooring instead of concrete as they do not pit. If they are cracked they are replaced. Concrete pits, allowing bacteria contamination. Professor Mietton insists a whey free floor is the way of

the modern day cheese maker. Only cleaning water goes on the floor. Storing the whey to be removed for the production of whey powder or animal feed is the most efficient and environmentally friendly method.

The rooms in the institute have a specific use and aren't used for anything other than designated production. All production rooms have floors sloping one way for drainage, not into a middle drain. The storage tanks are on the high side of the room and the moulding line on the low side. All equipment is on wheels other than vats which must be on the floor. The processing rooms flow in a circle with double push doors.

The Institute houses a commercial cooking school, food and drinks, fermentation machines (brewery), continuous ice-cream production, processed cheeses, cheese laboratory, micro-cheese factory, milk analysis, butter and yoghurt, production and packaging. All the technology fits volume, required humidity and temperature. Every type of cheese can be engineered under tuition at the Institute. Every conceivable mould is available to trial. It is precision dairy engineering at its best.

The walls are fitted with plastic panels and strategically placed concrete walls are placed throughout the inner building incase of fire. No contaminated air enters the building. It is filtered and circulated throughout in order to control the CO2. The school processes 7,000 litres of milk through various manufacturing programs a day.

Milk delivery station at the Institute

Being able to contract face to face tuition for specific dairy product engineering, is an invaluable resource to industry. All the necessary equipment is available and once tuition is complete facilities can be further utilised to practice product manufacturing. Once industry become confident in their particular product production using Chalon Megard equipment, they obviously feel confident in investing capital on Chalon Megard purpose built

The brine tank is filtered once a week

technology. Individual companies pay for the technical tuition and it is these fees which keep the school viable.

Mainstream dairy students completing their degree have constant supervision of the mini industrial facilities. All equipment is mobile on large white wheels for flexibility. One room was particularly well designed – galley production style with drainage tables mounted on the wall (instead of on wheels) and angled so whey drains during acidification.

Push doors throughout the Institute creating a circle work flow for production areas

The cutters for cutting curd in soft cheese production supplied by Chalon Megard have blades 1cm thick with a cutting edge then a horizontal wire threaded through so it does a vertical and horizontal cut at the same time. Tuition in Australia has only ever supplied a frame with one wire horizontal and another cutter with a vertical wire.

The blade version on enquiring gives far less maceration when cutting the curd. In Professor Mietton's opinion this makes an enormous difference. Using the blade technology the butterfat yield is divided by two plus the blades save 3-4 grams of protein per litre. The cutters cut 2cm cubes exactly.

Professor Mietton also stressed the importance of the geometry of basines and other equipment as he believes the equipment alters the structure of the curd contents. With correct equipment 40 camemberts can be made from 80 litres of milk. He also stressed one can successfully produce cheddar, blue and camembert in the same room, just not at the same time.

The equipment throughout the institute is entirely mobile other than vats. There is a standard 15cm between vats and the wall. Lids are kept on brining tanks to avoid evaporation, plus it is very important not to change the brine water as it develops its own microbiology. When the Poligny institute moved buildings the brine liquid went as well. The brine is filtered once a week to remove cheese particles and kept at constant room temperature.

The Poligny Institute was undoubtedly the highlight of the overseas fellowship for which I am very grateful to Matt Megard. He not only arranged the meeting with Professor Mietton but drove me there and patiently translated for 4 hours. The Institute epitomises the passion and commitment the state government places on dairy training and the food industry. To date I have not seen this reflected in any institution in Australia. The training facilities at Gilbert Chandler Campus in Werribee, Victoria are currently being dissolved leaving Regency Park Campus in Adelaide trying to fill the training void on a shoe string budget. I feel immensely privileged to have witnessed these facilities through Professor Mietton's eyes and discover the talent the French have for seeing beyond the horizons of limitations.

Mini industrial yoghurt making facilities

The self confidence the French display in their cheese making, is undoubtedly an expression of their intellectual and cultural passion.

Soft cheese draining area. There are four rooms for this production area with a set of push doors leading from one room to the next in a circle.

Wooden shelving from the maturing rooms. These are washed in only hot water so not to destroy the natural microbiology then dried in the sun.

The ideal wash and sanitizing station. Soap, paper towel, hot, cold, high pressure tap, sensory wash trough and rubbish bin.

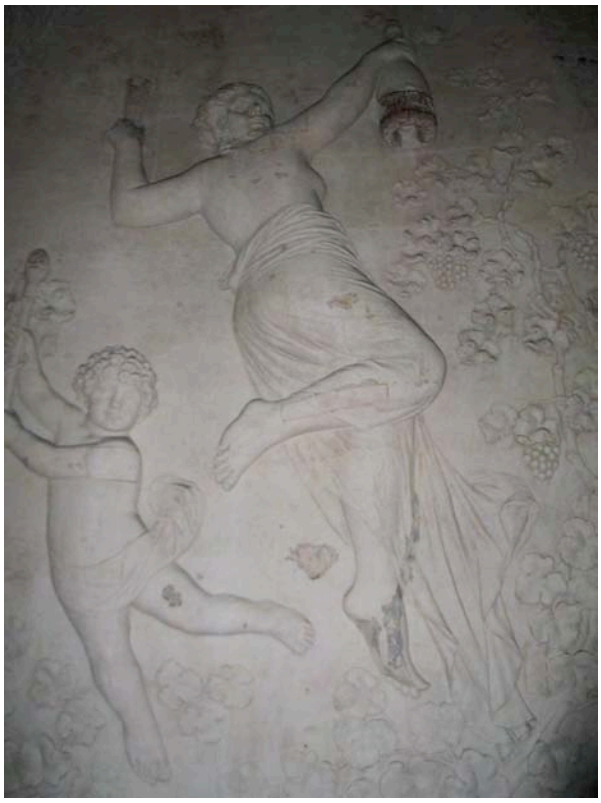
Pasteurizing vats for soft cheese production. Easy access for culture addition and sampling for analysis

Storage for cutting blades in the foreground

Veuve Clicquot: Visitors Centre, 1 Place de Droits de l'Homme, 51100 Reims.

Champagne and cheese are a perfect marriage. Discovering which cheese and champagne varieties are preferred on the palate can be challenging. It is with great appreciation to Tim Boydell, Director – Sales & Marketing, Angove's Australia, that VIP tours were organised with three well-known French champagne houses. Experiencing degustation and extensive champagne tasting's with cheese matching recommendations, was a very memorable experience.

Veuve Clicquot visitors centre is beautifully presented and a marketing machine. It has been owned by Loius Vuitton since 1986. The personalised tour included, the chalk caves, tastings and sales. The chalk caves were originally dug by the Romans in the 11th and 12th century. Amazing to touch. During the second world war the French utilised the caves for the main hospital and schooling. They bribed the Germans with champagne not to bomb them. The caves have a constant humidity of 95 degrees which is ideal for the cellaring of champagne. They were originally dug out for monuments, statues and buildings throughout the town. The caves extend for 25km.



A beautiful sculpture carved into the chalk wall
of the Veuve Clicquot cave. It depicts the celebration of harvest.

Veuve Clicquot Ponsardin. Veuve means widow in French, Clicquot is the original family name and Ponsardin was the great dames maiden name. Veuve Clicquot champagne is marketed on a story. It is the story of Mme Clicquot who was married to the son of the original company founder in 1772. She was widowed at the young age of 27 and took over from her father in-law soon after his son died. She was officially the first business woman in France. Ponsardin is written on the label of bottles today, following Veuve Clicquot. Mme Clicquot was

the first to use a logo. Her logo was a star, patterned from a comet that flew through the sky prior to the best harvest in the history of the company to date. The story is extensive and rich in unparalleled feats. In her honour the company market a magnum sized designer dimpled bottle called "The Great Dame".

Today, growers for Veuve Clicquot receive 5 euros for 1 kilo of grapes. It takes 1.2kgs of grapes to make a 750ml bottle of champagne. One bottle retails in France for approx. 30 euros, depending on where you buy it. The recommended cheeses to have with champagne were Langres A.O.C, a washed rind cheese from whole raw cow's milk; Chaource A.O.C. usually served after the main meal in cubes and Rocamadour goats cheese. It was a privilege to be a VIP customer and again you cannot be anything but impressed by the passion and self-belief that they produce the finest champagne on the planet.

Nicolas Feuillatte: Centre vinicole Champagne Nicolas Feuillatte, Chouilly – BP 210, F-51206 Epernay cedex, France. Ann De Keyser and Mr.Chris McIndoe. www.feuillatte.com

Nicolas feuillatte is situated in the birthplace of champagne, Epernay. As VIP guests' accommodation was organnised at Hotel l'Assiette Chamenoise, 40 ave Paul Vaillant – Couturier, 51430 Tinqueux. Ann, the VIP coordinator drove to Epernay from Reims. On arrival a private tour of the totally automated winery took place. In contrast to the marketing story of Veuve Clicquot, Nicolas feuillatte markets itself as a new, contempory constantly changing and evolving company and proud of it. This year, 2006 their sales have reached 16 million bottles. Moet are currently the largest at 30 million bottles.

Nicolas Feuillatte was created in 1972 and is now the third largest producer of champagne in France. The company has over 5,000 growers grouped together into 83 local co-operatives. The growers supply grapes from over 2,150 hectares, or 7%, from the area designated as "Champagne". To its original vocation, which was vinification and storage on site, the Centre Vinicole – Champagne Nicholas Feuillatte has added over the years a wide range of services, which its members appreciate and use regularly. These services include everything from technical advise (meetings on the requirements of viticulture are organised in the vineyards), to marketing assistance. This allows professionals to access research work and thinking on vine growing, thereby guaranteeing the quality of wines. These meetings are a successful training tool for the local co-operatives.

Every stage of production at Nicolas Feuillatte is able to be viewed. The company regularly changes its packaging in colour and print. The only constant being the brand name. This is in stark contrast to Veuve Clicquot that only have the yellow and black theme. For the tastings, the company provided five of the most marketed champagnes. Nicolas Feuillatte Brut Reserve, the most sold in Australia. This was matched with Langres A.O.C. Langres can be recognised by its slightly tacky, light yellow or orange brown rind. The dip in its top, barely noticeable when the cheese is young, is accentuated through ripening. The supple interior of this cheese gives off a penetrating, characteristic aroma. Less strong than Epoisses, Langres has a pleasant flavour, sustained without being aggressive, and fairly salty.

Nicolas Feuillatte Rose Brut, is particularly suited to goats cheese.

Nicolas Feuillatte Brut Blanc de Blancs, 100% chardonnay is beautifully matched, light and fresh, with Brie Cendre de Champagne.

Palme d' Or Vintage 1997 was matched with Chaource. A delicious creamy combination the ultimate in food and wine.

Palmes d'or Rose vintage 2000 was very aromatic on the palate and well matched with Brie Cendre de Champagne, Chaource, Langres and Rocamadour goats cheese.

The finer the bubbles the more superior the champagne. Champagne grown from the A.O.C. designated region can only be produced from three varieties of grapes, Pinot Noir, Chardonnay and Pinot Meunier. The champagne industry is subjected to the same A.O.C. requirements as the cheese industry when grown and manufactured in designated

A.O.C. areas. I was a bit surprised with over 400 varieties of cheese in France exactly the same cheeses were recommended as Veuve Clicquot to best match with champagne.

After the champagne and cheese matching I was driven back to Reims by Chris to enjoy a degustation menu at Le Foch. The meal was rated 2 star Michelin and needless to say was superb. This lunch degustation consisted of 6 courses. The fromage course was accompanied by 8-10 varieties of berry and fruit conserves. Only by observation, conserves seem to accompany cheese at lunch time rather than with evening cheese boards. The above photo was "tomatoes". The dish was tiny, as they all are, with miniature shapes of amazing taste sensations. The white swirl was tomato ice cream. The cherry tomatoes had been skinned seeded and stuffed with foie gras. The salmon coloured cube was spicy tomato sorbet. All were placed on a piece of seaweed garnished with deep fried crisp basil.

Cheese board accompanied by conserves

Outside G.H. Mumm

G.H. Mumm:

The appointment was with Claudette Legrand, in charge of hospitality and VIP guests. The tour again went underground to the cellars, and covered 25km but very different from Veuve Clicquots white milky chalk colour, these walls were black. Mumm is the original German family name with almost two centuries behind it. The house of G.H.Mumm was established in 1827 and still aspires to the original aims of the great George Hermann Mumm, one of the father figures.

Mumm owns 215 hectares of vines at one million euros per hectare with vines on. Vines are usually replaced every 50 years. It then takes five years to fruit. The name Cordon Rouge, one on Mumm's varieties means "red sash' of the Legion d' Honneur, the highest French civilian distinction created by Napolean. Over and above the symbol of excellence that it represents, the Cordon Rouge embodies the true spirit that drives the house – the quest for perfection and panache. The Cordon Rouge is a blend from 77 different vineyards with a high proportion of reserve wines from up to five of the best vintages to create a fresh yet rich complex champagne.

With champagne and cheese matching Claudette felt Chaource A.O.C was overall the most suited to any of the varieties the house of G.H.Mumm produced. Chaource's white rind exhibits a slight reddish pigmentation. The interior is smooth and creamy without being soft. Its aroma has affinities with mushrooms and cream. As for taste, its fruity flavour is enhanced by a touch of acidity. Chaource can be served in cubes with pre dinner drinks. It also makes a perfect ending for a celebratory meal with champagne.

The deduction at this stage was that companies in the champagne region will only recommend other products from the same region. They are consistently and fiercely loyal to each others products.

G.H. Mumm produces 8 million bottles of champagne a year and is fully automated. The caves at Mumm were hand dug, 25 kilometres and took 70 years to complete. The caves or cellars are quite a different shape to those at Veuve Clicquot. They have the same constant 95% humidity and constant temperature of 10 degrees. The chalk goes underground for approx. 200 metres.

Of the three champagne houses, Veuve Clicquot, Nicolas Feuillatte and G.H.Mumm my palate preferred the house of G.H. Mumm. The Cordon Rouge, red sash is as synonymous as the yellow of Veuve Clicquot but the house of Mumm had a style somewhere in between.

Signature etching

Veuve Clicquot is a marketing machine of sales and rides on the wonderful history and story of Mme Clicquot. Nicolas Feuillatte is a young totally new and dynamic company growing by the hour. They change their labels constantly and their bottles, which to me alters their identity but also means they can package to the market theme of the day. No doubt this would be more appealing to the Y generation. All three houses were fabulous and very generous in their hospitality towards guests and you couldn't help but compare the three. The sophistication, style and taste of Mumm champagne were my preferred match between champagne and fromage.

On returning full of champagne a Epoisses A.O.C. was purchased for dinner, the rind cut off and eaten with dried biscuits. After five weeks of eating A.O.C. cheeses everyday, I really felt it was only now that I had a sound appreciation for the complexity of their flavours. It had a core at the bottom with a creamy surround, one of the nicest I had tried since being in France. It was extremely smelly being a washed rind but the pungent odour isn't transferred in flavour, especially with the rind removed.

5.0 Findings:

Passion

- The French are passionate about food. The culture of *eating* is taught at an early age not only in the home but also through school and government supported programs.

Promotion

- The promotion of cheese "regionalism" in France is a sophisticated marketing tool for the history, tradition and culture of cheese production. These regions are labeled under *Appellation d' Origine* or A.O.C., in other words a controlled denomination of origin. This labeling is awarded to products that are particularly representative of a region, a history and manufacturing know-how. Australian specialist cheese makers would benefit enormously from creating identities of quality, regionalism and integrity.

A.O.C

- Producers of A.O.C. products traditionally support producers of other A.O.C. products in the same region. When matching cheese with champagne, A.O.C. champagne producers will recommend A.O.C. cheeses from the same region to an outsider.

Intellectual Property Ownership

- Photographing retail outlet cheese displays and other French produced products is an arrest able offence in Paris. In the main cities the French like to keep all French ideas in France.

Government Subsidies

- The French government subsidies and supports food producers and growers alike, to the extent, food, is the countries first industry.

Cultural Depth

- Children are educated to appreciate and support artisan producers within both the home and the school system. With government supported education programs each generation contributes to support the cultural food passion. Most Australian children are only familiar with processed foods.

Industry Training

- The Poligny Institute is a fine example of academic excellence in dairy education and training, something the French embrace and insist on. Victoria has just closed the only remaining industry training facility at Gilbert Chandler, Werribee.

Afordablility

- Dairy education and training in France is very expensive to outsiders but as a French citizen very affordable and offer some of the best training facilities in the world. A weekly fee (five

days) for training in cheese engineering of choice was quoted at 4,500 eruos.

Science and Technology

- The level of science and technology behind dairy manufacturing is very high and students train with the world's best modern technology and educators. Australia does not offer such education pathways.

Access for Regional Producers

- Artisan producers of farmhouse cheeses have multiple choices when viewing the worlds most advanced technology for cheese making. To visually assess the benefits of high tech equipment in a working environment allows the appreciation of capital investment and therefore accurate financial decisions. This is very difficult to access in Australia.

Mould and Mould Making

- The findings on moulds for soft bloomy rind cheeses was comprehensive. The quality of perforated poly ethanol moulds produced in France by various companies was precision engineering. The tooling engineering for the moulds is usually done on site in conjunction with moulding production. To witness the complexities of engineering the tooling gives one an appreciation of the cost for these high quality moulds.

Comprehensive Knowledge Base

- The knowledge of science behind soft cheese making is complex and a comprehensive understanding is critical to the success of producing a constant high quality product. Without adequate knowledge in this area the ability to trouble shoot and problem solve occurs. The flow on effect will compromise the integrity of the product and cause stock and profit loss.

Scientific Control of Cultures

- Understanding the scientific reasoning for usage of mesophilic and thermophilic cultures is just as vital to the success of cheese flavouring as monitoring the PH at renneting, cutting, moulding, draining and salting as the maturation progresses. Each stage of production has critical control points.

Surface Mould-Ripened Cheese

- Surface mould-ripened cheeses are becoming increasingly popular with consumers and the demand for them is increasing. (Gripon and Spinnler, 2004). The surface mould, Penicillium camemberti gives these cheeses the characteristic appearance as well as a typical aroma and taste. This mould leads to a more complex ripening pattern than other varieties of cheese.

Need for Collaboration

- Developing professional working relationships with individuals in France, who are experts in their field, will have long and productive benefits for Australians seeking specialist information difficult to access in Australia.

Broad Range of Educational Materials

- Learning centers are easily accessible for teaching primary aged students in France and most teaching materials are free of charge. Science related cheese-making books are very well represented in French technical bookshops.

Government Legislation

- The dairy industry in France is highly supported at state government level. The findings from scientific research and development strongly benefit both growers and manufacturers. The legislative requirements are stringent and expensive but subsidies are in place to support these costs. This does not occur in Australia.

Traditional Practices

- Traditionally in France, cheeses are matured on timber shelves in mostly natural environments, i.e. underground rooms (resembling caves), beneath the house or factory. The atmosphere is cool, humid and stable. These cheeses develop their own natural ecosystem to mature in. In Australia this is not possible due to inflexible regulations and conditions are artificially created.

Raw Milk

- Raw milk cheeses are widely regarded as superior in flavour and texure to pasteurised cheeses in France. They are marginally more expensive to produce due to constant milk analysis.

Whey

- The modern day French cheese producer has a dry or whey free floor during production. In Australia small artisan producers unable to purchase automated equipment drain whey onto the floor and miss the opportunity to value add.
- Whey is stored and removed for the production of whey powder or animal consumption in France.

Retail Links

- Affinuers and Fromargerie retailers play an important role in the storing and caring of maturing cheeses. This is a support to producers as it helps cash flow, frees more shelving for further production and requires fewer staff.

Marketing and Branding

- Supermarkets superbly merchandise dairy products in France. The range of dairy products to choose from would be at least ten

times that of Australian supermarkets. Packaging of processed and artisan cheese is decorative, enticing and informative.

Specialised Packaging

- Packaging and marketing of high quality cheeses is very advanced compared to Australian cheeses. The use of specialist papers and timber boxes allows traditional cheese to breathe and continue to mature. The availability of these materials, locally produced in Australia is non existent.

Co operatives

- The use of co-operatives for cheese manufacturers are well supported by the French government. Pooling resources is not only financially beneficial but also advantageous for meeting legislative requirements, marketing under the same story or region and therefore developing a more widely recognised product.

Local Markets and Value Adding

- Local French markets and festivals are a stunning example of how to buy the best quality seasonal and regional foods the country has to offer. Farmers markets in Australia are the closest we have to French markets.

- At markets and festivals vendors vans and displays are professionally and hygienically equipped, meeting all HACCP requirements. For Australian markets this level has yet to be met.

Professional Standing

- French cheese makers are highly regarded and well paid professionals within their communities.

6.0 Recommendations:

6.1 Government

The blanket application of regulations and legislative requirements by government towards producers large and small presents major difficulties for unique small specialist cheese makers. The financial backing behind Murray Goulbourn is not comparable to a farmhouse artisan producer trying to offer the public an alternative to "tasty" cheddar or generic Camembert. Further consideration is needed by government towards small producers having to accommodate the high levels of legislative requirements. Accessible funding to meet these needs is highly recommended.

Government's inflexible regulations place restrictions on maturation methods. Wooden shelving is widely used in France for maturation. It is recommended the state laws take the reasoning behind this into consideration when policy reviewing.

The production of raw milk cheese in Australia is currently banned despite government regulations allowing the importation of raw milk cheeses. The necessary changes in regulations allowing production of raw milk cheeses in Australia will be a critical turning point for Australian specialist cheese makers. To capitalize on this the industry needs to be prepared with necessary specialist equipment. The safe production of these cheeses requires the development of a safe code of practice which is uncompromising. The development of this government policy is vital to the success of the specialist industry.

Further dissemination of information by government departments to individual specialist makers can only be encouraged both locally and internationally. The obvious benefit to this is increased business growth globally.

6.2 Industry

Specialty cheese refers to all cheeses other than bulk cheddar. In Australia 80% of cheese is made by five big companies, two of which are owned at least partially by overseas interest. There is a handful of medium sized producers accounting for another 10%. In Australia there are 90 individual or small company specialty cheese makers and artisans who make smaller quantities using labour intensive methods. They are often farmer, microbiologist, sales rep and marketing expert.

Without automated technology these producers will always remain small. Funding grants for modern technology that can be shared through co-operatives would attract skills especially from overseas. This would attract obvious opportunities to value add to regional produce on a larger scale.

While the majority of Australian Specialist Cheeses are sold nationally, exports have recently become a new growth opportunity. For those starting in the industry it would be recommended at commencement to meet the regulatory criteria for export, however some manufacturers feel they are 'being strangled

through prescription food manufacturing' and forced to make cheeses that are dull and boring.

- Specialist cheese (SC) is the fastest growing category in the Australian Dairy Sector.
- The demand for SC grew by 18% on 2005
- In terms of Australian production, exports and imports

Produced 46,250 tonne of SC / 372,750 tonnes of cheese
- all categories

SC represents 12.4% in volume of total cheese produced and
SC represents $425m in value (wholesale)
Exported 14,480 tonne of SC
SC represents 7.3% in volume of total cheese exported and
SC represents $64m in value (wholesale)

Imported 13,000 tonne of SC (estimate)
This represents $259m in value (retail)

6.3 Business Sector

Australians eat approx. 12 kilos of cheese a head per year as to approx. 53 kilos a head in France. Only 20% of the cheese produced in France is made from raw milk cheese so processed cheese sales are at an attractive price point and the variety of merchandise is exhaustive.

This indicates room for business investment to expand both processed and artisan cheese production for pasteurised and raw milk cheese manufacturing in Australia. A combination of investment from the business sector, super fund investors and government support would undoubtedly boost the industries confidence. This support adds essential weight when lobbing for research and development recognition to change regulation requirements.

6.4 Professional Associations

Entry to the Australian Specialist Cheese Makers Association was by default rather than invitation. Research on an individuals behalf is often the only method of discovering professional associations that can one can be involved in and gather information from.

Regional Development Victoria continues to be an invaluable government support to the Australian specialist Cheese Association. Their support is vital for the running of specialty cheese shows, creating public awareness of the industry through media campaigns and encouraging excellence and promotion of the industries growth both regionally and globally. As a member of the Specialist Cheese Makers Association, members receive industry representation on various committees belonging to:

- Australian Dairy Producers Federation
- Department of Agriculture, Forestry and Fisheries
- Department of Foreign Affairs and Trade
- Australian Quarantine Inspection Service
- Food Safety Australian New Zealand
- State dairy authorities
- NCDEA

6.5 Education and Training

In view of the findings, all levels of government need to address a skills shortage in the field of educators currently available to deliver high quality science based training programs for cheese making. Funding for further training programs for Australian educators needs addressing.

There is an outstanding lack of industry facilities for training purposes and educational pathways in Australia. It is urgently required, as trainers delivering programs in the form of workshops have no access to modern technology. They operate with a ***hands on*** approach with little technical equipment to support the practical components. This approach leaves students unable to problem solve and trouble shoot when industry production results aren't satisfactory. Therefore niche artisan cheese makers are inhibited by these constraints in my opinion leaving the industry unable to reach its full capacity.

The availability of government consultants for specialty cheese makers are very difficult to find if they exist at all in Australia. As a beginner in the specialty cheese industry in Australia, I have extensively researched details on stringent legislative requirements. Government authorities are able to supply details of requirements but from personnel experience, they have limited knowledge on how and why these requirements are needed nor can they assist you in implementing them. This leaved little room for negotiation

and discussion on how the regulations can be implemented and to what degree.

Dairy Australia as of December 2006, ceased funding for the "Cheese help desk" where many of these queries could be answered. Small scale artisan producers in no way would like to compromise the quality and safety of their product but should not be made to meet the same legislative requirements as multi national companies. It is usually at this point many specialty cheese makers feel the capital required to meet the legislative bench marks questions the viability of their business plan. The ideal scenario would be trained government consultants available to assist producers through a stepped program of legislative requirements as production increases. This would be of enormous benefit for start up projects.

The ideal education pathway for commercial producers, in my opinion is a University qualification. The theory component should preferably offered both distance education and institution based. The practical "Hands on" component offered with mini industrial facilities and a work placement in industry for a minimum of three months. These steps would be required for individual cheese varieties. For example cheddar, soft bloomy rind etc. This suggested requirement would be for those wanting to enter the industry commercially, however, this pathway is also ideal for artisan producers, as it provides the essential science and practical repetition, essential for producing a constant product successfully. The home manufacture can produce without this training but may always wonder how and why different results were achieved.

6.6 Our Community

Creating opportunities for consumer awareness of specialty cheeses within the community will drive consumer demand for locally produced specialist cheeses over imported alternatives. Suggested ways of achieving this dissemination are;

- providing school based programs for primary aged children
- hosting cheese course on farm
- input to Slow Food and Organic Associations
- on-going involvement with Australian Specialist Cheese Makers i.e. supporting technical conferences and cheese shows

- personal sharing and networking of information within the Australian cheese making fraternity
- publication of this report and others involving the food industry on the ISS website
- supporting local farmers markets and community fairs and festivals

Identifying advantages for local communities containing a specialist cheese maker adds strength and pride to the creation of regionalism. This provides increased regional economic, employment and manufacturing growth. Specialty cheese makers can assist the knowledge base of other manufacturers within the community to value add to regional produce.

6.7 ISS Institute

ISS Institute has the opportunity to disseminate gathered information to other fellows within related industries and provide further avenues to grow and utilize learnt knowledge. Gathering new found knowledge is one step but what advantage or use this has to community, government or industry is the real challenge. Developing this knowledge and then disseminating through seminars, conferences and specialist workshops on an ongoing and developmental basis is part of ISS Institutes philosophy and practice.

6.8 Further Skills Gaps

- Science credentials to teach students above the level of Home cheese making:

An individual program could be commercially negotiated through distance Education with Charles Sturt University.

- Research and development in cheese engineering

This is available through the Poligny Institute, the most recognized dairy training centre in France. A block of either group or individual tuition would be invaluable.

- Formalisation of Cheese Makers Certificate

This may be available through the National Centre of Dairy Excellence, Werribee Campus, 2007.

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8. Attachments

Itinery

Attachment:
Excel Spreadsheet

Date	Location	Time	Activities	Status	Person	Title	Enterprise	Address	Phone	Fax	Email	Website
Sat 20/05/06	Depart Melbourne	10:05	Quantas QF612	confirmed	Sanford International t/as Harvey World Travel	02 93275884	Booking number 28802 PNR Locator ND4DPKConsultant Peter	394 New South Head Road Double Bay NSW 2028 Booking on 13/3/06				
20/05/06	Arrive Brisbane terminal D	12:10										
20/05/06	Depart Brisbane terminal 1	13:55	Quantas QF51	confirmed								
Sat 20/05/06	Arrive Singapore terminal1	19:50										
Sat 20/05/06	Depart Singapore terminal1	23:20	Qantas QF3977	confirmed								
Sun 21/05/06	Arrive Paris De Gaulle	6:30						30 rue Bosquet, 75007 Paris				
23/05/06	Pont de Sevres Metro as pick up point. Contact Professor Spinnler once on metro to Grignon on mobile	8:30		confirmed	Professor Eric Spinnler	Microbiologist	Institut National	Agronomique Paris, Grignonocedes Laboratoire de Genie et Microbiologie des Procedes Alimentaires	78850 Thivernal Grignon 33 130815387			
24/05/06	Paris	10:00			Marie-Anne Cantin		Fromagerie	12 rue du champ-de-mars				
25/05/06	Paris in the suburb Clichy	11:00	Food Packaging Specialist including soft cheeses	confirmed	To be contacted		Cheese packaging	13 rue Morice, BP 150-92113 Clichy	01 4127 2800	01 4270 2986		http://www.alpma.fr
26/05/06	Paris	10:00	Fromagerie			Boursault	Famous Fromargerie	near metro Alesia				
27/05/06	Paris	10:00	Fromagerie			Androuet	Famous Fromargerie					
28/05/06												
29/05/06	Livarot 14140	9:00	Fromagerie Graindorge, Hire car, 200km west Paris	confirmed	Valerie Curet	Manager	Factory for Camembert and washed rind	42 rue du Genal Leclerc, Bp 38 14140 Livarot	33 2 3148 2000			
30/05/06	Lessay		Fromagerie Reaux, 50 km further west of Livarot	confirmed	Mr. Genest	Manager	Factory for Camembert and washed rind	50 Lessay	33 2 3346 4133	33 2 3346 0754		
	Travelling south from Lessay to Langeais	10:30	Cheese Making Equipment Factory		Aust. Contact is Florence 02 9345 5006, mob: 0402 478 685		Manufactureres of cheese making equipment, both large and small	21 Sud - BP 27, Langeais 37130 France			cwillmotte@agapebd.net	www.Servidoryl.com
3,4,5 and 6th June 2006	Travelling south from Langeais to rocamadour via Tours, Poicters and Limoges.	All Day	Rocamadour Annual Cheese festival on June 3rd & 4th	confirmed	Tourist Information Centre in Rocamadour		XVIleme Fetes des Fromages: Penecote 3 & 4 Juin 2006: Invite d'Honneur le Fromage d' Abondance AOC. Huge program over 2 full days. All Day	Tourism office: 05 65 33 22 00. office de tourisme de Rocamadour. Maison du tourisme 46500 Rocamadour		05 6533 2201		
7, 8, 9, 10 & 11th June 2006	Spent travelling east through Clermont Ferrand, on to Lyon, then north up to Nantua near the Swiss boarder.	All Day										
11, 12 & 13th June 2006	Nantua, sourcing equipment for Farmhouse production. Jura mountains	All Day	Visiting Matthiue megard in regard to equipment. Visiting smaller artisan factories near by. Mont d'Or, Reblochon Factory (fruitiere) in the French Alps 100km from Nantua	confirmed	Matthieu Megard	Owner	Manufactureres of cheese making equipment. Mainly large factories.	25 route d' Apremont, Nantua 01130 france	474 766 236, Matthiue's mobile: 673 983 427		mmegard@chalonmegard.fr	
14th June 2006	Travel North West to Epoisses	12:00	Fromagerie Berthaut	confirmed	M Jean Berthaut	Owner	Factory producing washed rind cheese	7 Place du champs de foire, 21460 Epoisses	33 3 8096 4444	33 3 8096 3040		
15, 16, 17, & 18th June 2006	Riems		Champagne Mumm	confirmed	Martine Loilier	Touristical Activities manager	Champagne House	29 rue du Champ de mars, 51100 Reims. France	03 2649 5970	03 2649 5901	martine_loilier@mumm.fr	
	Reims	12:00	Champagne Veuve Cliquot	confirmed	Countess Roselyne de Casteja		Champagne House	12 rue du Temple, 51100 Reims, France	33 3 2689 5390	33 3 2689 5395		www.veuvecliquot.com.au
	Epernay	12:00	Champagne Nicolas Feuillatte	confirmed	Mr. Chris Mcindoe		Champagne House	Chouilly - Bp 210, F - 51206 Epernay Cedex, France	33 (0) 3 2659 5550	33 (0)3 2659 5580		www.feuillatte.com
19, 20, 21 & 22nd June 2006	Paris		lesuire									
22/06/06	Depart Paris De Gaulle terminal 2C	23:15	Qantas QF3978									
23/06/06	Arrive Singapore	17:45										
23/06/06	Depart Singapore	19:45	Qantas QF10									
24/06/06	Arrive Melbourne	4:45										