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The Art and Science of Food Garniture

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ABSTRACT

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The objective of this thesis was to examine whether food garnishing plays any role in the meal in order to justify garniture's essence in a meal and its value in evaluating meal experience.

Food garnishing art has been used for years in many food establishments. As a matter of fact it is a topic studied in culinary school. Food presentation is also a highlight of many Food TV shows, food magazines books and many culinary journals. However, the intrinsic value of garnishing and meal presentation has not been thoroughly covered in culinary arts literature. This study examines this value by studying elements of food garniture individually.

The first part studies the artistic elements of a garnish which include shapes, craft and patterns. The next part studies perception, behaviour and social psychology thus the scientific. According to the research conducted there is need for garniture in meal presentation. However the appreciation of garniture follows the Abraham Maslow hierarchy of needs.

Keywords Garnish, colour, science, art

Contents

1 INTRODUCTION

Food garniture forms an integral part in food presentation in gourmet cookery. It is an art that has been practised for years in many food establishments. The first known use is in the 14th century. Moreover it shows no signs of extinction in the restaurants it is practised.

1.1 Garniture explained

Garnishing involves adding decor or savoury touches to food or drink. (http://mw4.m-w.com/dictionary/garnishing). The term gastronomy, which refers to the art of good eating, came into usage in France in 1801. A gastronome is one who appreciates good eating while gastronomades are tourist who enjoy regional speciality. (Larousse, 1988)

Garnish can be simple or composite. In the former a single food item is used, usually a vegetable, while in the latter several ingredients blend together as well as with the main dish. Composite garnish may also be ordinary items prepared in variable ways or more elaborate like the Financiére (alà) .Some of the commonly used garnishes were created by the chef of the ancient times. (Larousse, 1988)

Garnishing is not only restricted to restaurants but it is also adopted in many homes especially when entertaining guests and/or holding anniversaries or other events. (http://prettytastesbetter.com/garnishing101/) .To some chefs, garnish is important to the extent that it undergoes cookery. An example is Chicken quenelles (dumpling); a former garnish which nowadays is served on its own or used as part of making Financiére (àla). Financiére is a cooked classic French garnish which also has ragout of chicken combs, finely shredded mushrooms and shredded truffles as ingredients. Truffles -fungi- were easily available before 1914 (1800 tons per year) but since then only 200 tons are realized due to the use of pesticides in trees which they grow on. The deficit is cleared by use of truffle essence and Madeira to enhance taste. (Larousse, 1988)

1.2 Extent of garnish usage

In the traditional kitchen set up there is the garde manger section (the cold kitchen). Amongst the primary duties of the garde man chef is plating, presentation of food and generally performing of all decorative work. The garde manger chef has to be very knowledgeable in food since he has to ensure that the garnish blends with the food. Blending necessitates use of the traditional garnish in French cookery. (http://www.gardemanger.com/).

Food presentation and garnishing topic is present in many books, magazines, websites, television shows and also forms part of the curriculum in culinary schools. However, the psychological or the scientific part of the intrinsic feel of the garnish is rarely discussed. (Carlson, 2004)

Also, the culinary artist's motivation and his feelings on the creation and expression of his thoughts in food artistry is not often thought of or written about. Sensation and perception, which are part of the food presentation (Carlson, 2004), is a topic not usually found in culinary literature.

Culture has a position in determining how we eat, what we eat and how it is presented too. It has also been suggested, though not proven, that culture determines how we see the world. (Carlson, 2004). Food design trends also affect the evolution of garnish. Food stylists ensure that photos of the most creative designs end up in magazines, recipe books and videos. (http://mystyleandtaste.com/?tag=decoration). Some of these designs are quite imaginative and end up in shows. (http://www.noupe.com/inspiration/food-design-at-its-best-40-extraordinary-examples-of-edible-art.html)

Colour, shape, texture and the arrangement of food affect the willingness to consume the food and lower the reluctance to go an extra mile to get it. Colour is sweetly addictive while the shapes, size texture and appearance bring about the lucrative appearance of objects. (Hamlyn, 1995; Everett Ellenwood, 2008)

Food garnishing involves usage of various elements of art. These include colour, shape, texture, carving, design and so on. The human mind perceives (or receives sensations of) each of these aspects differently as will be discussed in the following in this paper. The study is restricted to artistic and psychological part of garniture. Also included is the cultural approach to the subject but not the step by step preparation or garnish choice.

1.3 Goals of study

This study aims to establish the essence of the garnish in a meal. This revolves around aspects of the garnish itself-shape, colour, texture etc and the emotions and feelings evoked by its presence. The study will also attempt to view this from a cultural aspect whereby usage by different cultures and garnishing meaning to them will be sought. The research question is: Does food garnishing play any role in a meal? Is there more to garnishing than just a final touch to a meal? Is there as connection to garnishing to a particular culture or is it a result of blending of cultures?

There are several issues to consider before arriving to the decision of eating a particular dish. The study therefore considers the Maslow Hierarchy of needs to be relevant (see diagram on Appendix 6). Maslow theorizes that physiological needs have to be fulfilled, feeding the hunger in this case, before appreciation of how the food looks can be taken into account. Secondly, the safety of the food comes into play. Then issue of food being a social /family event is brought to mind will his/her friends dine with him also falls here. Next the diner considers how he feels and what others say about him eating the food. This is also affected by the class of a restaurant he picks. Then the highest of a diner's need is the disregard of others' sentiments and concentrating on personal growth and fulfilling his full potential.

1.4 Methodology of research

Research will be conducted by interviewing students who do not study restaurant and hotel business. The twelve students will be picked from different cultures. The theoretical part of the study will be formed by reading from art books and psychological books.

The study will not lay focus on nutrition, taste and smell. It will study food from visual and cultural perspectives.

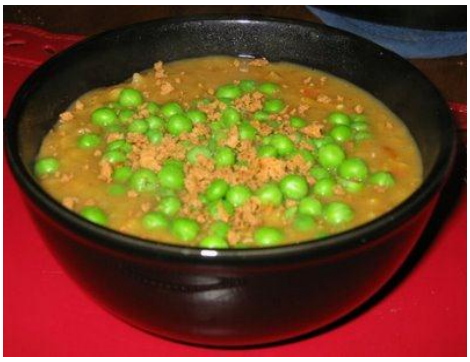
2 COLOUR

The world shines as a result of having light and colour infestation. There is an overflowing, free availability of bright, striking and arty colours. Magazines, television, films- not to mention books and pictures- augment this access. In this way colour forms an irreplaceable part of the human life. Colour influences mood, spirits and feelings depending on the tones and shades. (Hamlyn, 1995). In this way it is not way off to think that colour affects what we choose to eat coupled with other food dimensions.

Colour can be classified in regard to the effect it has on the one who perceives it; warm colour includes all shades, tints and tones of red, orange and yellow, cool colours on the other hand include those closely related to blue, green, and violets. Yellowy-green and reddish-violets are in between-warm or cool. Their effect depends on which colour dominates. White, black and grey are considered neutral colours in art and craft. (Hamlyn, 1995) Vegetables and spices, for instance red chillies, get hotter/sharper/spicy in taste as they become redder-with exceptions of tomatoes (also considered a fruit). In the same way they become milder according to how close to colour green they are with some exceptions such as peas, cabbages etc. Unfortunately, blue does not help out with the appetite. It is rare to come by blue food and millions of years ago it was one of the colours considered poisonous. (http://www.colormatters.com/appmatters.html)

In the art of garnishing, in relation to using colours, one needs to be familiar with the colour wheel. It is a traditional diagram, which is represented in a circle, of the relationship between various colours of similar families .If colours that are closely related are adopted then production of a harmonious colour scheme is achieved. Warm colours used together with cool colours bring about a contrasting scheme. However, if a chef masters the art of using colours appearing on opposite sides of the colour wheel (Hamlyn, 1995) then exhilarating designs are bound to appear. Black and white, which do not appear in the colour wheel, result to grey when mixed but when used together in a scheme they produce the ‘ultimate contrast’.

The art of using contrasting colours can be approached differently. To begin with, there is the softened contrast as shown in picture 1, an approach which involves use of colours closely bordering contrasting colours. Secondly, bold contrast approach as shown in picture 2 incorporates use of more of the cool colour then tenderly highlighting it with the stronger warm colour. Alternatively, a warm colour and its various shades can be used then a single shade of the complementary colour is added to the set as shown in picture 3. Complementary colours are colours appearing opposite each other in the colour wheel and if mixed they give white/neutral colour as the result. Meanwhile, when using different colours on the same plate the tone, lightness or darkness of a colour , is of utmost essence and should be thoroughly considered. (Hamlyn, 1995)



Picture 1: Yellow Split Pea Soup with Green Pea Garnish (softened contrast)

Picture 2: Green kale and cherry tomato (bold contrast)

Picture 3: Apple and cinnamon cake garnished with flaked almonds (brown and its shades)

Closely related to contrasting is accenting as shown in picture 4. Accenting is meant to add interest on a one colour setup .It take form of many shapes as it appears on different parts in, for example, a plated dish. Though the accenting colour is more predominant than a contrasting one it should not take over the foundation colour. Some examples include peach accented with green and yellow accented with black; mango sauce garnished (accented) with black sultanas. As a general rule, it is better to use patches than to use dots in accentuation. In this way there is no excess use of the accenting, which is undesirable and at the same time the basic colour scheme's outline is clarified. (Lesley Taylor, 2003)

Picture 4: green used as an accent

Furthermore, neutrality is another colour art skill. It involves use of shades of neutral colours. In achieving a perfect match balancing is a must. Otherwise the human eye will focus on the superior colour. Coffee and cream colours are shades of neutral colours and match perfectly in the same way as spicy colours and natural colours match. (Lesley Taylor, 2003)

Also, flow should be considered when working with different colours. All colours portray different elements but even so a sense of continuity should be present in colour schemes. Patterns and shapes adopted should create some meaning; stripes signify elegance while textured patterns add intrigue and spark interest. Abstract patterns offer informal or realistic attributes while a cultural pattern embraced in a robust of colours gives a distant land feeling. (Hamlyn, 1995)

Another point is that to enable colour to be seen light should be present. This is owing to the fact that sensation of colour is brought about by reflection of light from surfaces. Pure light, also considered white light, is coloured and this is evident when it is passed through a prism. Light passed through a prism has the effect of all its component colours being broken down and displayed. Thus rainbow colours are seen. This effect is reversible: rainbow colours mixed in equal proportions derive white as the final colour. Reflection intensity is dependent on the surface at hand;

shiny surfaces reflect more light than rough ones. Light, for example red and white, may be completely absorbed (read more on page 28). Most colours are, however, partly or completely absorbed with the exception of a few colours that modify forming shades of other colours. (Tony Paul, 2003)

Nevertheless, colours symbolize different events in the different regions of the world. This in turn has a psychological effect on what colours people would like to have on their plate. Therefore the emotions evoked on seeing colours are not totally universal. Table 1 on page 58 for examples of cultural differences regarding colour.

Generally, colours add life and clout to an otherwise uninspiring meal. The meal acquires warming and cooling effects on visual contact when colours are added. Other effects added by colour include mood, enlarging and diminishing (humbling). To achieve this chef requires both caution and confidence in colour use. For instance, it is vital to note that dark colours advance while pale colours recede- in the process creating an enlarging effect, cool colours possess a calming effect which signifies formality. (Lesley Taylor, 2003) Adding light to light strengthens it while adding different colours to light darkens it to the point where black is formed. (Tony Paul, 2003)

Another point, colours usually remind us of something. They are associated with events, certain items, feelings etc. They remind us of past emotional feelings and places we have been before, meal we loved and movies or books we have seen. The unpredictability of colours is their most attractive and amusing quality. A plate of food embellished perfectly with colours arouses interest and will initiate many a conversation. Colour connects places by bringing memories. Each colour has its significance and its place. Blue reminds of the sky while violet is assumed to be colour of a kiss. Colour has effect on moods it can depress, it can bring childish joy- when red, yellow and blue are combined. Black is Chic (fashionable in a high-class manner) while clear white is clean and has a caressing effect. Blue is warm, yellow is cheerful while green is natural and fresh. Colour is an inexpensive decor trick. A professional chef knows colour use to be the least expensive yet effective ingredient in any portion of food. In summary, colour breeds comfort, elegance, relaxation,

entertaining and unique daydreaming away from home feeling. (Matthew Bennett Young, 2008; Terry Trucco, 1998)

3 CRAFT AND PATTERNS

A man who works with his hands is a labourer; a man who works with his hands and his brain is a craftsman; but a man who works with his hands and his brain and his heart is an artist. (Louis Nizer, lawyer, 1902 – 1994)

Carving is one of the oldest skills in the world. Most countries in the world have a history of craft carving in any of its many forms. Carving created objects in times of need and lucrative items during times of abundance. In the kitchen, carving is one of the professional skills required. Anything from turning potatoes to carving centre pieces of platter falls under craft. (http://www.ehow.com/about_6308335_art-vegetable-_amp_-fruit-carving.html) Carving has different styles: including realistic carving which involves carving a replica of something existent, chip carving which is a decorative and involves removal of chips repetitively forming patterns in the process etc. There are two basic skills that are vital for every carver, at the very least, that is pull cut and push cut. Each carving teaches the chef on better carving tools handling and develops the skills further. (Everett Ellenwood, 2008)

Meanwhile, craft thrives by innovation. Skills used in any craft only develop further if the subject's spirit, patience and dignity are involved and thus an artist is born. In other words involvement of body and soul are prerequisites in becoming a professional chef (one who understands food garnishing art).Similarly, in handicraft there is a psychological aspect emanating from the optimal experience perceived by the artist. Optimal experience may be described as deep concentration into a task at hand, elatedly and unperturbed by the surrounding environment. It is also known as "Flow" and was first theorized by Mihaly Csikszentmihalyi. Therefore, it is right to conclude Art and craft success involves confidence, optimal experience and intuition or tacit knowledge. (Leppänen, 2009)

To add to that, like many skills art and craft of garniture bears these qualities; it requires time to acquire skills, it can be learned on-the-job (from an expert, by observation) and the practical part should be emphasised as opposed to theory. Emphasis on theory comes only when one intends to teach or learn detailed

knowledge, its use and impact. This illustrates that food garnishing can be taught step by step (theoretically).However, emphasis should be more on creating, carving, moulding or placing the garnish on the plate. (Leppänen, 2009)

Some factors dictate the acquisition of carving skill. Firstly, **tacit knowledge** in craft is passed on to individuals by training, experience or it is passed on from individuals' culture. Tacit knowledge is not always obvious to those who possess it. (http://en.wikipedia.org/wiki/Tacit_knowledge). Secondly, **innovation** (adding new knowledge to existing one) is the driving force in craft as opposed to invention (new idea). Thirdly, **competence**, another required attribute in art and craft, is linked to intellectual capabilities. Competence is knowhow, knowledge and the ability to learn from these to improve one self. Next, there is **skill**, which is the ability to use knowledge in an intelligent way. Intellectual capabilities and tacit skill are key to design and creation of art (craft*). (Leppänen, 2009)

In addition, most (great) artists are willing to share knowledge. Master Jaakko Liikainen and Axel Gallen both had apprentices. Many chefs prior to creating an artistic piece have an image of the end result in their mind. Non-professional chefs are easily nabbed by their usual cutting corners tendency. (Leppänen, 2009)

The input of carving food does have an effect on the value of the plated food. If both the craftsman (Chef) and the customer realize this the price is increased. The customer is comfortable paying for the added value. If however the Chef doesn't realize this while the customer does the latter feel the price is too low and vice versa. If both of them do not realize then it is a game of chances. (Leppänen, 2009)

Apparently most of the vegetables and fruits in the kitchen can be carved. With the art being in existence since 618 AD, when it began in China, only the imagination of the chef is the limit. These vegetables and fruits can be shaped into Flowers and sometimes carved into animals among other things. Competitions, tutorials and DVDs have been made about garniture. (http://www.artchef.com/) In cookery food carving heavily borrows Asian Technique largely developed from Thailand's traditional way of cooking. (http://www.mahalo.com/answers/whats-food-carving)

4 GARNISHING AND SCIENCE

Garnish use in culinary arts has some effects on human behaviour. Emotions are aroused on eye contact with garnished food or food well presented in general. These emotions can be studied by observing the person in experiencing the food and also by studying the particular item (garnish) that caused these emotions (feelings). Literal sense of behavioural research includes nerves and glands secretion while metaphorical sense might include study of hypothetical mental states e.g. anger, fear, curiosity. Environmental approach embraces research on events in the environment and other people's behaviour. **(**Carlson, 2004)

Psychology studies human behaviour in many respects. Some of which will be used in this study; those related to how human behave when observing things. Also the processes involved in the brain during such times and the feelings experienced will be ventured into.

For every psychological study the reification of psychology has to be accommodated by the researcher. This is the assumption that labelled events, e.g. happiness, intelligence and personality, are concrete and exist in substance. It has to be believed these are not fantasies even though they are intangible human traits. As such to study human behaviour the causal events and determinants are looked in to **(**Carlson, 2004)

Research in psychology enables understanding, prediction and changing human behaviour. In this study, psychology aids understanding of the role of a garnish in culinary arts. Then, using this knowledge in an unexplored environment, predicting behaviour and changing the mentality people have of a particular dish with proper garnish finally, invoking interest in the dish through attraction. **(**Carlson, 2004)

Different races and ethnic groups are exposed to different environments, therefore leading to different problems and varying solutions. Strategies displayed in laws, customs, myths, religious beliefs and ethical principles-thinking, health beliefs and approaches to problem solving (cross cultural psychology) are shifty. In cultural psychology, cultures and their processes are unique (variable and not universal).

Interest and curiosity in other people's cultures is thus aroused. The interest in other people also affects the consumer psychology i.e. motivation, perception, learning, cognition and purchasing behaviour of individuals at the market place and at home. **(**Carlson, 2004)

A French chef, Paul Bocuse, has ventured into many nations spreading the new French cookery globally. The French Cuisine was initially introduced to the world in the 20th century by Chef Escoffier. His most important contributions were simplifying recipes, menu arrangement and the introduction of order of ranks in the kitchen. Chef Escoffier, in his simplifying of the menu, left out dishes from many French regions. Escoffier introduced 5 sauces from which many derivatives could be made. (http://en.wikipedia.org/wiki/French_cuisine)

Chef Paul Bocuse, on the other hand, led chefs in the introduction of food from many French regions. In this way authentic French food was realized. He also re-introduced French ingredients that were left out by Escoffier. His success has earned him the nickname the Pope of Cookery. (http://www.travellady.com/Issues/Issue60/french.htm)

(http://www.time.com/time/europe/hero2006/bocuse.html).

The modern French cuisine avoids borrowing ideas from other cuisines or fusing with them. Unlike chefs in American cuisine where butter is abhorred by chefs for health reason, Chef Bocuse uses it in his kitchen. He believes the taste of butter is unique and as long as it's used properly it should not cause health problems. Butter goes well with many ingredients for example fish. (http://www.dininginfrance.com/paul_bocuse.htm)

(http://site.ebrary.com/lib/vamklibrary/docDetail.action?docID=10231672&p00=food%20drink

5 SENSATION

Sensation is detection of simple properties of matter such as warmth, colour, brightness and sweetness etc. Seeing colour red is a sensation.

5.1 Major senses

The five common senses are the ways by which the body detects sensations. In other words olfaction (smell), gestation (taste), somatosenses (body senses, touch, pain and temperature), vision and audition. **(**Carlson, 2004)

The primary visual cortex (VI) located at the back of the brain, receives information concerning vision. On the other hand the primary somatosensory cortex receives information from the body senses. Its base receives information on taste. **(**Carlson, 2004)

With the help of vision we receive powerful experiences on images, art and colour. In contrast, smell is a source of aromatic molecules before we can see or hear that source, for example. sizzling. Tastes of favourite food, touch of someone we love are other senses utilized in the dining room. Then, audition actualizes social behaviour and communication as eating is a social behaviour. Garnishing food assists in making the meal a homely one as it combines aspects of sensation; colour, art and images are brought to the table. The artful sense of the garnish serves as a conversation starter if nothing else does. Garnishing is meant for other people not the chef in this respect. **(**Carlson, 2004)

It should be noted that many sensations hit the body at any one time but only a few are filtered out of these. The filtered information depends on individuals and their centre of focus. (http://www.positive-thinking-principles.com/definition-of-perception.html)

5.2 Perception

Perception is detection of objects (animate or inanimate) their location, background and movement, for example seeing a red apple. To exemplify further movement is a sensation but seeing an object moving is perception. The scientific definition of perception is the process by which we recognise what is represented by the information we receive from our organs. **(**Carlson, 2004)

Perception takes place in the brain. Information is relayed to the Primary Visual Cortex (PVC). Processing information on perception is an act-not a response: owing to the fact that perception is an ongoing process that forces the perceiver to act in a given way. Every new experience is categorized as it is registered in the brain. This information then requires a certain act from the perceiver which is determined by his environment and his intellectual mechanism. All in all perception does not introduce inexistent information rather it shifts the brain‘s line of thinking making it act appropriately in accordance to the stimuli herein. (http://www.percepp.com/perceptn.htm, 26/10/2010)

Experiences are divided into sensation and perception. Plenty of sensations are filtered reasonably, and then perception of the filtered data (sensations) put through suitable action. In the case of garnishes, seeing the various colours, shapes and designs on the plate falls under the category of sensation. However, the discerning of the food products, herbs, leaves etc is in the perception docket. **(**Carlson, 2004)

Generally, the tasks of the brain include controlling movement of muscles (outward) and regulating physiological functions of the body. In order to control movement of muscles, the brain works in conjunction with motor neurons and sensory neurons. The former transmits information from the brain to the organ responsible while the latter transmits information in the opposite direction. (http://www.kidport.com/Reflib/Science/HumanBody/MuscularSystem/MuscleNervousSystem.htm, 27/10/2010).

The brain also senses the need to replenish the body with more nutrients to keep their level optimum. The need to eat is therefore decided by the brain which in turn performs the function of choice of dish. The eye feasts on 'delicious-looking' food (colourful/ garnished food) and sends the sensations to the brain. Perception occurs and the food is consumed. Through vision the first imagination of meal experience is formed. Control function of the brains helps to perceive events (environment), learn, make plans and act. Whereas Regulation function measures and regulates internal characteristic of the body temperature, blood pressure and nutrients level. Garnish combines sensation and perception. **(**Carlson, 2004)

5.3 Scientific deciphering of colour

5.3.1 Perception of colour

Objects do not emit light, instead unabsorbed frequencies from reflection of light on shining on smooth surfaces are perceived as their colour. Red objects do not emit light. All visible light on hitting a shiny surface is absorbed completely leave alone for some frequencies that are perceived as red light. (http://en.wikipedia.org/wiki/Color_vision)

Light is made up of radiant energy having differing wavelengths. The human eye can only perceive wavelengths ranging from 380 to 762 nm. Light of different wavelengths brings about sensations of different colours. The difference in wavelengths of colours is the reason different colours exist. Common sources of light include the sun, fire and the light bulb.

The eye has three photo pigments. Each photo pigment is sensitive to light of a particular wavelength causing it to split. This brings about decoding of different colours.

At this juncture it worth noting that wavelength approach of colour perception does not cover all the colours the eye can see as it focuses only on rainbow colours (spectral colours).

5.3.2 Elements of perception

Elements of perception include form, movement and space. Form perception describes how shapes and pattern are naturally perceived by the brain. Gestalts psychology theorizes perception describing how people organize visual elements and unify them. (http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm)

The first principle describes proximity. If similar looking patterns are placed next to each other logically they are assumed to belong together. For instance four dots placed closely together strongly imply a square. As they are spread further apart the square is less evident as shown in Figure 1.

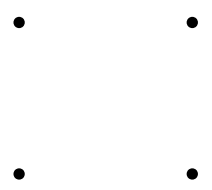


Figure 1: Dots suggesting a square to exemplify law of proximity

(http://www.eruptingmind.com/gestalt-principles-of-form-perception/)

Secondly, gestalt principle of similarity suggests similar elements are perceived to belong to the same form as shown on Figure 2.

Figure 2: principle of similarity illustrated

(http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm)

Thirdly, gestalt principle of closure supplies missing information to our visual system and closes outlines of an unfinished figure as shown in Figure 3.

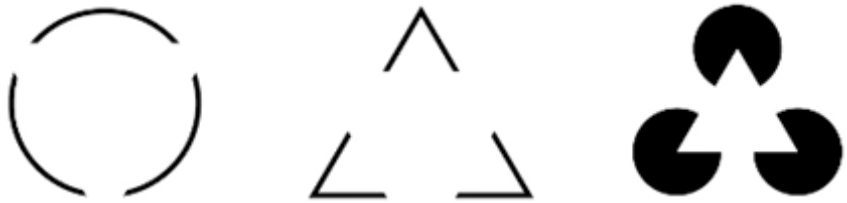


Figure 3: examples showing closure

(http://www.suryaginti.com/?cat=1)

The above examples define how the eye perceives garnish in food platters or arranged in plates.

5.4 Recognition of shapes

There exists different Hypothetical visual recognition of shapes explanations. First hypothesis is that the brain contains templates of all shapes we can perceive. Comparison is done until a fit is found. The second hypothesis suggests the brain contains flexible prototypes of templates. More details are shared by Andrew Hollington and J M Henderson. (http://site.ebrary.com/lib/vamklibrary/docDetail.action?docID=10085279&p00=visual%20recognition%20shapes) Some researchers feel culture affects how we see the world. Not enough research has been done on the subject though. (Carlson, 2004)

6 BEHAVIOURAL ATTRIBUTES

Behaviour is often considered as actions or reactions in response to an internal or external stimulus. Visual behaviour, as pertains to observation of food presentation, then becomes the actions or reactions of sensory mechanism in response to visual stimuli. In this case the stimulus is the garnish and/or the meal presentation. Recognition of the garnish is done both in terms of behaviour and activity and also in terms of size shapes. As a result of actions and reactions of messages transmitted to the brain human behaviour influenced in different ways some of which are discussed here. (http://www.eecs.qmul.ac.uk/~sgg/VAB/GongXiang_VAB_intro_index.pdf)

6.1 Learning and behaviour

Learning is an adaptive process in which the likelihood to perform a certain task is influenced by experience. Favourable consequences are repeated habits while unfavourable do not recur. Learning is inferred by change in behaviour (learning to like new food can be induced). Therefore, if food is presented attractively then customers would be willing to eat it again if other aspects like taste, smell are also considered favourable. (Carlson, 2004)

Learning takes place in the CNS. *Experience* alters structure and chemistry of the brain causing changes that affect subsequent behaviour. *Performance* is behavioural change (or new behaviour) produced by this internal change. *Habituation* is learning not to respond to a recurrent unimportant event. Learning is ,therefore , influenced by habituation, classical conditioning, operant conditioning also referred to as instrumental learning (Carlson, 2004)

A stimulus, for example, food that leads to reflective behaviour is an *unconditional stimulus.* If an unconditional stimulus is combined with a neutral one then a conditional stimulus is brought about – garnish. (Carlson, 2004)

6.1.1 Classical conditioning

Classical conditioning entails the conditions that predict that a significant event will occur ,for instance, smell of food invokes hunger and the mouth waters (salivation). Seeing a familiar garnish is likely to be emotional since it brings forth thoughts about previous experience. (Carlson, 2004)

6.2 Law of effect

The Law of effect deals with the relationship between a response and its consequences. Satisfaction makes the connection between a response and stimuli stronger while a negative experience weakens this bond. (http://site.ebrary.com/lib/vamklibrary/docDetail.action?docID=5005095&p00=law%20effect**)**

Garnish acts as a stimuli which if liked, i.e. it satisfies a customer, may encourage the customer's having a meal in a certain restaurant i.e. response. The connection in this case is strong. *Positive reinforcement* means that if one visits a restaurant and likes the food there is the likelihood of visiting the restaurant often. *Insight* is a form of understanding that changes a person's perception of a problem and its solution.

6.3 Memory

A smile happens in a flash, but its memory can last a lifetime. (Anonymous)

Remembering of moments that created happiness is one of the reasons that may result in the indulgence of a particular meal. Remembering how food looked may therefore affect what and where one eats. (Carlson, 2004) If, Maine lobster salad "à la parisienne" is consumed and liked at L'Auberge du Pont de

Collonges(http://www.bocuse.fr/accueil.aspx) then the memory of the food , the place and the paris trip may centre around this.

The way memory is perceived, stored and availed is different. This is divided into different aspects which when combined show how an action or event is relived. For instance the presentation and the meal experience are stored in the brain. (Carlson, 2004)

It should be noted that memory is more effectively established if the item is presented in rich context-one that is likely to make us think about the item and imagine an action taking place in other words the meal experience. (Carlson, 2004)

7 SOCIAL PSYCHOLOGY

People are sensitive to negative information probably because it poses a potential harm or danger to them. This brings about the issue of *first impressions* which are based on what we see, in the case of meal presentation, since no other information is available yet. It is worth noting that First impressions can be accurate.

Social psychology attempts to explain human behaviour in relation to attitudes that are acquired internally or slightly influenced by external factors. Some of them are important in determination of food choice are discussed in the following text. (Carlson, 2004)

7.1 Schema

Schema is the mental framework that synthesises information about something. In determining of food choice there is a bias in impression formation on the most decorated food. Schema comes into play when these impressions are formed. Generally, Schema encompasses what is believe to be true and has effect on people, their roles etc. (Carlson, 2004)

- how to order food
- the appearance of professionally prepared food
- what tasty food looks like
- how professional chef should wear

(Formed opinions)

7.2 Attitudes and behaviour

Attitudes have a behavioural intention component-expressed intention- to behave in some way consistent with affective and *cognitive components* of the attitude.

People's attitudes do not necessarily coincide with how they behave, for example, they may like well presented food but may not like to go to certain restaurants where it is served or they do not have the spare time for fine dining.

If attitudes predicted behaviour accurately then advertising would be a total waste of time. (Carlson, 2004)

7.3 Attitudes change and persuasion

Credibility and attractiveness have effects on the aspects of a message. This in turn affects persuasiveness, e.g., people develop favourable attitude towards a meal when it served in what is considered a classy restaurant than when it is served in a fast food restaurant. For instance, a customer may be willing to pay a high price for Tandoori chicken at Great Western but will not pay the same price at Mc Donald's.(Carlson, 2004)

In addition, for persuasion to work on different people then their personality has to be considered. Personality is a series of patterns involving thoughts, feelings and behaviour that make individuals unique. Personality emanates from within the person and in most cases lasts a life time. As a result, in using garnish to influence decision to eat it is important to note that there are already underlying feelings, thought and emotions that subscribe to each individual. (http://psychology.about.com/od/overviewofpersonality/a/persondef.htm)of trying new food and new ideas of dining to others if it is exciting to them (extroverts). (http://en.wikipedia.org/wiki/Big_Five_personality_traits).

7.4 Resistance to persuasion

Some individuals are not easily persuaded. One or more of these reasons explain this: reactance (resistance to persuasion), forewarning and inoculation. Reactance eliminates behavioural freedom by stimulating emotional inversion to rules and regulations. Forewarning is as a result of what has been informed to the individual via various media. Lastly, inoculation is immunity to the persuasive attempts of others by exposure to small doses of attitudes against their position. (Carlson, 2004)

Naturally, when faced up with inconsistencies between behaviour and attitude we change our attitude to suit our behaviour (induced compliance). This in turn proves that our actions have effect on attitude.

Furthermore, we value things at least partly by how much they cost us (cognitive dissonance).Everything we do or think is to some extent grounded in social norms and conventions(conformity norms). (Carlson, 2004)

7.5 Conformity (majority influence)

People uncertain or finding opposition in their thoughts change their perceptions and attitude because they feel they are wrong. This is brought about by informational influence. Then, people wishing to be liked and not appear different may change their behaviour; normative influence. Also, those searching for sense of belonging with defined group adjust their behaviour; they undergo referent informational influence. All these affect people's dining behaviour. (Carlson, 2004)

7.6 Minority influence

Fashion and trend are influenced by active minorities. Significant personal and material sacrifice is a positive add-on for minority influence. Consistent but not rigid or inflexible minority is latent influence resulting in a conversion effect.

Another point Optimum level theory states dictates 'when an individual's arousal is high, less stimulation is reinforcing and vice versa'. Diversive exploration on the other hand is a response to boredom/under stimulation. Next, ingestion of food follows cultural and social conventions as opposed to physiological demands. Indeed taste is shaped by habits acquired early in life and a "comfort zone" is created. On the whole it is correct to say cultural and social factors dictate how and when we eat but the 'real' need to eat is influenced by body's need for nourishment. We eat to satisfy hunger which is a depletion of body nutrients, mainly glucose and fatty acids.

7.7 Food and culture

Different cultures have differing opinions on what a meal is comprised of. Scholars have attempted to correct this anomaly by standardizing constituents of a meal in three broad categories: meal format, eating pattern and social organization of eating.

Meal format relates to the order of the entire meal i.e. the courses and what the main course is comprised of. Eating pattern elaborates the number of eating events, the time between meals and the varying cold and hot snacks and meals. The social organization explains the place where the meal takes place, the people present (commensal partners) and whose responsibility it is to cook. In this context, meal represents breakfast, lunch and dinner while snacks are food taken on other occasions. (Herbert L. Meiselman, 2000)

Culture affects the food outlook when it is presented for consumption. The same basic ingredient may render different results due to addition of contrasting additives and flavourings. For instance, *Greek Souvlaki* and *Indonesian Satay* both have lamb chunks as the basic ingredient. Both the Greek and the Indonesians grill this over open charcoal burners. However, the former add oregano and lemon while the latter add soy sauce, coconut, chiles and ground nuts. Needless to mention the taste is also quite different. Another example is the difference in how the Chinese and the Italians serve their noodles; the Chinese add soy sauce, sesame oil, ginger root etc, while Italians add olive oil, basil, tomatoes etc. From these examples it is possible to derive that there is similarity in basic cooking ingredients in many different cultures but the difference is the processes used in preparation and therefore the final food presentation. There is indeed a blend of cultures nowadays as the same restaurant or the same chef may be serving basic ingredients prepared differently on different occasions and probably to the same food connoisseurs and gourmand. It is also possible to create the garnish from a different culture than the presented food's origin. (Herbert L. Meiselman, 2000)

8 RESEARCH STUDY

8.1 Introduction

This chapter covers the methods chosen for the research, the motivation of the choice made and the findings.

8.2 Methods

The main method of research was a qualitative study through interviews in groups. Qualitative method of research is suited for research where opinions, behavioural aspects and social contexts of different cultures are sought.

In this particular research specific information about the research set of questions was required from perspective of the different cultures. The data could then be used to draw conclusions of the general population view on the subject. The results cannot be used to represent the entire population since the interviewees were all students. Student, don't dine out often enough and avoid precision of the food outlook preferring to use price tag as the main determinant of food choice

The same research could be carried out with food gourmands being the respondents. Some food portions could be used instead of pictures alone. The shown to the audience appear on Appendices 3, 4 and 5. the picture on Appendix 3 has a moulded rice portion containing vegetables and garnished with prawns and chives. Appendix 4, on the other hand displays a moulded rice portion, garnished with coriander and slices of red chillies, at the middle of a joint plate. Some meat portions and various vegetables and a fruit surround the rice portion. Appendix 5 has a picture of a plain rice portion.

The interviewees were twelve students studying IT and Nursing: four were Asians, two males and two females one of the males being Indian and the other three, Chinese .Four were European, three Finns of which two were females and one was a male, the last one was German. There were four Africans two males and two females. The age ranged from 24-31.

The first question asked which of the foods in the picture the respondent would be willing to eat. Nine out of the 12 chose the garnished rice appearing on Appendix 4.

The second question studied the reason of food choice to which the nine out of the twelve described the food to be balanced, colourful and succulent looking. The food described here appears on appendix 4.

The third question sought more reasons for willing ness to eat the food chosen. Five of the twelve respondents thought the food on appearing on Appendix Three and Appendix Four were most likely prepared by a professional therefore food hygiene was likely to have been observed.

The next question explored the respondents' feeling about the appearance in terms of colour, form and the presentation. Eight out of the twelve respondents described colourful food as exciting to eat. Four out of the twelve respondents mentioned that it is better to have different bits of food on one plate rather than one single piece. Out of the twelve interviewees, ten paid attention to the appearance of the food presented.

The fifth question studied the price the respondents were willing to pay for the selected meal. Six out of the twelve respondents were willing to pay a maximum of twelve Euros.

On the question of suggestions for improvement, eight out of the twelve respondents would have liked an accompanying sauce with the meal. Five out of these eight would have preferred the sauce be served aside.

Finally, the seventh question examined the respondents' confidence in the food by recommending it to others, to which seven out of the twelve respondents confirmed their willingness to do so.

The results show there is a need for several colours in a meal pattern. Different food items appearing on the same plate rather than individually is desirable; sauces served separately are preferable since different people prefer different amounts. People are also wary of how their food is handled, therefore food appearing to have been done hygienically by a professional sells.

9 CONCLUSION

The intrinsic value of garnishing and meal presentation has not been thoroughly covered in culinary arts literature. In culinary arts journals and discussions, the main focus is the method creating garnishes and the most suitable garnish in a given meal. Based on this information this research was conducted to verify the importance of the presence of garnish in meal presentation.

As previously mentioned, there is unavailability of some vital data regarding importance of garniture in culinary literature. Therefore alternative sources of information were used. To begin with, some elements of food garnish were split up and researched individually. The elements studied include colour, shape and patterns. These attributes formed the 'Art' part of this study and were studied by venturing into Art, craft, design and carving literature both in print and electronic media.

The next part of the study revolved around the scientific effects of food garnish. Under this broad category sensation, human behaviour and social psychology were examined. Cultural perspective of food was also studied. The research was based on both the food artist and the clients view. In Appendix 8 there is a presentation version of this topic.

Then, based on these theories a qualitative study was conducted. The respondents were picked from different cultural backgrounds and the research revealed that consciously or subconsciously the presentation of the food matters. However, the Abraham Maslow hierarchy of needs applies whereby other aspects have to be fulfilled, such as hunger. Also the class of food establishment and who one is sharing the meal with are key issues.

Through writing of this report a lot was learnt as it involved reading several books not to mention the many websites browsed in search of specific information. The topic of psychology in itself was quite a read and lots of information was picked up; some of which is not relevant to the topic and therefore doesn't appear in it. Patience and humility are important in a research project since not every source-books or internet pages-give the information required though the heading of the book describes otherwise.

Problems encountered in the writing of this paper include lack of a similar written literature (at least in English). The language of the questionnaire could attract different results if the same was done in Finnish, Swedish or French.

References:

Literature sources:

Hamlyn (1995), Guide to creating your home, *creative colour scheme for your home* .Eagle moss publication.

Tony Paul (2003), How to mix and use colour, *the artists' guide to achieving the perfect colour.* New Holland publishers.

Lesley Taylor (2003), Colour schemes. New Holland publishers.

Matthew Bennett Young (2008), Maybe colours. Advantage digital print Ltd.

Terry Trucco (1998), Colour, *details and design* .Pbc international, Inc.

Everett Ellenwood, (2008), The complete book of wood carving, *everything you need to know to master the craft.* Fox chapel publishing.

Rolf Leppänen, (2009), Secrets of great craftsmen, *the art of genuine handicraft.* "Ahertajat" Master craftsmen's historic society of Wasa.

Neil R Carlson, G Neil Martin William Buskist, (2004), Psychology. Pearson education Limited.

Anthony Kenny edition, (1997), The oxford illustrated history of western philosophy. Oxford university press.

Herbert L. Meiselman (2000), Dimension of the Meal, *the science, culture, business and art of eating.* Aspen publishers Inc.

Paul Hamlyn (1988), Larousse Gastronomique, *the world greatest cookery encyclopaedia.* Reeds international books limited.

Websites:

All websites working on 09/02/2011

http://www.waltercarl.neu.edu/PDFs/flowpaper.pdf

http://www.thehouseofoojah.com/audiobooks/ccp0-prodshow/flow-mihaly-csikszentmihalyi-audio-book.html

http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/Spectrpy/UV-Vis/spectrum.htm

http://laserpointerforums.com/f54/pink-magenta-wavelength-54293.html

http://www.how-to-cook-gourmet.com/foodpresentationtips.html

http://prettytastesbetter.com/garnishing101/

http://www.psywww.com/intropsych/ch01_psychology_and_science/constructs_and_reification.html

http://www.positive-thinking-principles.com/definition-of-perception.html

http://www.percepp.com/perceptn.htm

http://www.kidport.com/Reflib/Science/HumanBody/MuscularSystem/MuscleNervousSystem.htm

http://en.wikipedia.org/wiki/Color_vision

http://books.google.com/books?id=Q1yJNr92-YcC&pg=RA2-PA21&lpg=RA2-PA21&dq=wavelength+,+purity+intensity&source=bl&ots=vq6AGPlV4x&sig=qV_-swGJXOUeF4uGKqn8iCr_FNo&hl=en&ei=dGvKTKz5O4OVOvOz4OEB&sa=X&oi=book_result&ct=result&resnum=1&ved=0CBIQ6AEwAA#v=onepage&q=wavelength%20%2C%20purity%20intensity&f=false

http://www.nrmera.org/files/Richmondetal.Vol21.Issue2.pdf

http://www.suite101.com/content/choose-food-by-colour-for-better-health-a130309

http://www.gardemanger.com/

http://www.noupe.com/inspiration/food-design-at-its-best-40-extraordinary-examples-of-edible-art.html

http://mystyleandtaste.com/?tag=decoration

http://almostbourdain.blogspot.com/2010/05/apple-and-cinnamon-cake.html

http://www.shutterstock.com/pic-23055478/stock-photo-green-kale-and-cherry-tomato-garnish.html

http://webdesign.about.com/od/color/a/bl_colorculture.htm

http://www.mahalo.com/answers/whats-food-carving

http://www.artchef.com/

http://psychology.about.com/od/sensationandperception/f/trichrom.htm

(http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm)

http://www.eruptingmind.com/gestalt-principles-of-form-perception/

Closure image

http://www.google.com/imgres?imgurl=http://www.atpm.com/9.11/images/design-closure.gif&imgrefurl=http://www.atpm.com/9.11/design.shtml&usg=__Mk0auHIXohJ_1-z1p-o2KiZXj7I=&h=102&w=420&sz=5&hl=en&start=0&zoom=1&tbnid=s1ctHUqHKp3_UM:&tbnh=50&tbnw=207&ei=81taTbr0EoOO4QbVp-32AQ&prev=/images%3Fq%3Dgestalt%2Bclosure%26um%3D1%26hl%3Den%26sa%3DN%26biw%3D1659%26bih%3D833%26tbs%3Disch:1&um=1&itbs=1&iact=hc&vpx=433&vpy=178&dur=218&hovh=81&hovw=336&tx=135&ty=61&oei=81taTbr0EoOO4QbVp-32AQ&page=1&ndsp=32&ved=1t:429,r:2,s:0

http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm

http://site.ebrary.com/lib/vamklibrary/docDetail.action?docID=10085279&p00=visual%20recognition%20shapes

http://www.unifr.ch/ztd/HTS/inftest/WEB-Informationssystem/en/4en001/d590668ef5a34f17908121d3edf2d1dc/hb.htm

http://pillowlab.cps.utexas.edu/teaching/CompNeuro10/slides/slides03_Trichromacy.pdf

http://en.wikipedia.org/wiki/Retina

http://www.yorku.ca/eye/opponent.htm

http://faculty.washington.edu/chudler/eyecol.html

http://www.bookrags.com/tandf/opponent-process-theory-of-colour-tf/

http://www.travellady.com/Issues/Issue60/french.htm

http://en.wikipedia.org/wiki/French_cuisine

http://www.dininginfrance.com/paul_bocuse.htm

http://www.eecs.qmul.ac.uk/~sgg/VAB/GongXiang_VAB_intro_index.pdf

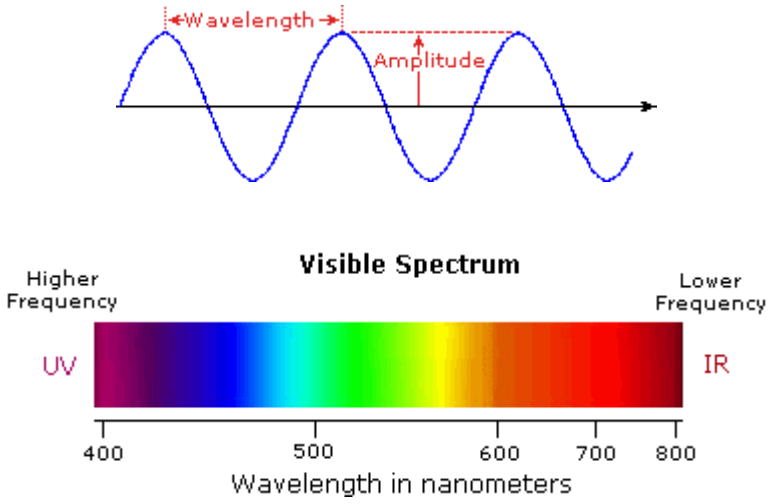
http://www.suryaginti.com/?cat=1

http://www.bocuse.fr/accueil.aspx

APPENDIX 1

http://www.flickr.com/photos/10494790@N00/1711885/

APPENDIX 2



- **Violet:** 400 - 420 nm
- **Indigo:** 420 - 440 nm
- **Blue:** 440 - 490 nm
- **Green:** 490 - 570 nm
- **Yellow:** 570 - 585 nm
- **Orange:** 585 - 620 nm
- **Red:** 620 - 780 nm

http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/Spectrpy/UV-Vis/spectrum.htm

Appendix 3

APPENDIX 3

http://www.shutterstock.com/pic-2476133/stock-photo-a-bowl-of-prawn-mushroom-and-egg-stir-fried-rice-garnish-with-chives.html

APPENDIX 4

http://3hungrytummies.blogspot.com/2009/10/khao-klub-gapi-rice-with-shrimp-paste.html

APPENDIX 5

http://www.hanneng.net/2008/07/

APPENDIX 6

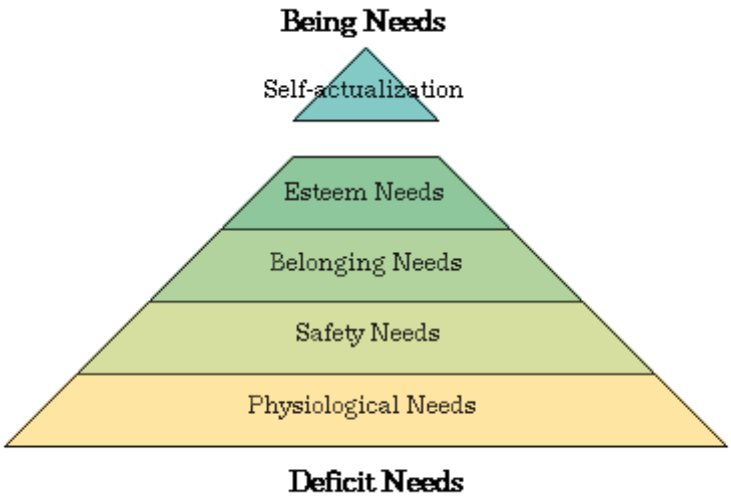


Fig 1 ***the Abraham Maslow hierarchy of needs***

(http://webspace.ship.edu/cgboer/maslow.html)

APPENDIX 7

	orange	Red	Yellow	green	black	white	purple
Chinese		celebration	nourishing	exorcism	young boys		royalty
Eastern		brides gown				funerals	
Western	Halloween	excitement	hazards	spring	funerals	peace	
Japan			courage			death	
South Africa		mourning					
Russia		communism					
India		purity	merchants	Islam			
Ireland	religious			national Symbol			
Egypt			mourning				
Thailand							mourning

Table 1: showing colours and their meaning to different world regions

(http://webdesign.about.com/od/color/a/bl_colorculture.htm)

APPENDIX 8

The Art and Science of Food Garniture

Anthony Mwangi

Definition

- Garniture/garnishing- decoration
- Gastronomy- art of good eating

Garniture usage

- First known usage 14th century.
- Gastronomy –came to use –France -1801
- Gastronome-person –appreciate good eating
- Gastronomades-tourist gastronomes
- Stimuli - events -environment - influence behavior

Scope of garniture

- Worldwide- fine dining restaurants, homes
- Chefs' Competition
- Magazine ,TV shows, internet
- Culinary schools

Garnishing

Art

- Process -deliberately arranging items –influence & affect one or more of the senses, emotions and intellect .
- Elements of art – Shapes, Colour ,texture

Colour

- World shines as a result of light and colour infestation
- Classified into two:
  - Warm colours > tints & tones of red, orange ,yellow
  - Cool colours > blue, green, and violets
- Vegetables and spices get hotter/sharper/spicy in taste as they become redder

Art of colouring

softened contrast

Bold contrast

brown and its shades

green used as an accent

Craft

Carving is one of the oldest skills in the world

Turning potatoes to carving centre pieces of platter

Craft thrives by innovation

Also confidence, optimal experience and intuition or tacit knowledge

Optimal experience - deep concentration into a task - unperturbed by - surrounding environment

Garnishing

Science

- Emotions -aroused on eye contact –garnished food or food well presented generally.
- emotions -studied by observing the person in question and/or by studying causality(garnish)
- Psychology studies human behaviour- how humans behave when observing things

Science

Psychology of food garniture

SENSATION

- *Vision*
- powerful experiences on images, art and colour
- Perception –process-recognise what is represented by the information we receive from our organs.

Perception

law of proximity

principle of similarity

principle of closure

Psychology of food garniture

- Eye colour coding theories
  - Trichromatic theory > basis- light's reflection coming into contact with the human eye
    - human eye needs three different receptors(Red, Blue and Green) to decipher colour and detail.
  - Opponent process of colour >explains deficit of Trichromatic theory- greenish red or yellowish blue
    - Red/green, blue/yellow and black/white

Psychology

- Behavioural attributes-stimuli, learning
- Memory
- Social psychology
- Motivation

Research

- Qualitative
- Interview
- Find out the experiences and own thoughts


Thank you

Appendix 9

Eye colour coding theories

1. Trichromatic theory (Thomas Young)

This theory was conceptualized by Thomas young and Hermann von Helmholtz. The basis of this theory is that colour formation is as a result of light's reflection coming into contact with the human eye. The Retina, a multi-layered tissue lining located at the back of the eye, is sensitive to light and therefore enhances its (light) perception (http://en.wikipedia.org/wiki/Retina). Thomas proposed the human eye needs three different receptors to decipher colour and detail. Cone cell, which are photoreceptors in the retina, are responsible for colour vision and work best in plenty of light. Red, blue and Green cones are present in the human eye and differ in absorption. (http://en.wikipedia.org/wiki/Cone_cell)

Blue-violet	Red	Yellow green
420nm	530nm	560nm

(Carlson, 2004)

These are assumed to be RGB (Red, Green, and Blue). R and G cones are in equal proportion but B cones are fewer.

Hermann added that three wavelengths of light were required to form different colours. (http://psychology.about.com/od/sensationandperception/f/trichrom.htm). This is further highlighted by James Maxwell's experiment where he found that two wavelengths were not enough while four distorted colour formation. (http://pillowlab.cps.utexas.edu/teaching/CompNeuro10/slides/slides03_Trichromacy.pdf)

2. Opponent process of colour

The Trichromatic theory was found to offer insufficient information about why some colours cannot be seen subsequently at the same place. We can neither see nor imagine greenish red or yellowish blue however bluish green, yellowish green, bluish red and yellowish red are in existence (http://www.yorku.ca/eye/opponent.htm). These observations were first theorized by Ewald Hering who also noted the at the after effect of images after seeing them; if one looks into a bright red spot for consistently for some time then shifts his gaze on to a white area a green circle is observed thought the white screen is empty .A red circle is observed on the white area when one stares at green circle.

(http://faculty.washington.edu/chudler/eyecol.html)

Opponent process, suggests that colour perception is determined by existence of two opponent colour system Red/green, blue/yellow and black/white. Note that the pairing of these colours is based on colours that cannot be seen subsequently at the same place making them opponent. Response to one colour within the opponent pair is inhibited by response to the other colour. For instance response to green colour, in the red/green pair, is inhibited by red causing cancellation and vice versa. Yellow, Red, Blue and Green are considered pure hues in this theory. (http://www.bookrags.com/tandf/opponent-process-theory-of-colour-tf/)

Ganglion cells present in the eyes' cones are involved in this theory: Red/green ganglion cells and blue/yellow ganglion cells. The order of light is as follows:

Light source ▸ cone → retinal ganglion cells → Brain

Both Red/green cells & blue/yellow cells fire at steady rates

Red light shines on Retina	
R/G ganglion excited by red	Increased firing
Green light shines on Retina	
R/G ganglion inhibited by green	Decreased firing
Blue light shines on Retina	
B/Y ganglion inhibited by blue	Decreased firing
Yellow light shines on Retina	
B/Y ganglion excited by blue	Increased firing

Table 2: antagonistic colour vision illustration

NB: The red/green ganglion is excited and inhibited (equally) simultaneously causing a cancelling effect when yellow light shines on the Retina. Reddish-green would only be possible if a ganglion could be fired up slowly and fast simultaneously

The various sub-divisions are:

Working memory –refers to new information combined with information retrieved from long term memory

Iconic (visual) memory-sensory memory that briefly holds a visual representation of something that has just been perceived.

Loci, peg word- mnemonics-“memory aids that assist one in remembering specific information by using a process, strategy, or technique that enables a person to improve memory”

Episodic and semantic memory-Long term exact records of sensory information in terms of meaning-breakfast

Implicit memory-the theory works in that remembering is automatic and Reading helps remember meaning of a word. In the same way Garnish(same presentation) recalls the taste and experience.

State dependent memory -Research suggests that memory is better when people’s moods or emotional state match their emotional states when they originally learned the material.

(Garnish attraction is a reflex or induced action. Fishing expedition research not knowing what one will find out. Reason of research may form a theory. LOOKS VS HEALTH e.g. waist to hip, garnish looks vs. health, ration/ portion size vs. neatness/presentation. Nature vs. nurture