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Culinary Concept-Personal Essay

# The enhancement of natural colors to provoke seasonality

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## Abstract

Seasons provide variation in the beautiful colors that we see in nature and in food. This broad range of natural colors can be used in a dish to intensify the feeling of seasonality that the dish evokes. Guests can appreciate a dish more fully when it is completely matched by the season and nature seen in the surrounding environment. Natural colors can be enhanced by using scientific knowledge and culinary techniques, giving the opportunity to build a calendar of colors and seasons to express the qualities (a chromatic range) of foods aligned with those seasons.

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## Introduction to the culinary concept

### *A world in motion*

There are some aspects to culinary pleasure that, while captured through our senses, are intimately connected to emotions, intellect, and the environment (Korsmeyer, 2002). It is in this ambiguity of concepts and in this abstract space, where rules are not arbitrary, that the senses are met by pleasure. One of the aspects that can considerably influence an individual's perception is the surrounding environment, and a large component of this is season: spring, summer, fall, and winter. Each season expresses their own individual environment, but they each share something in common: their beauty is unique, and one facet of a season's uniqueness is the color seen in the landscape. The sensory perception of the particular characteristic in each season at that time of the year can

guarantee a dining guest a pleasurable and unique experience by helping to align their feelings with nature.

The world is constantly in motion, and this change is marked by the passing of seasons, which in turn cause the external perceived environment to be transient. A cook can control and take into account seasonal changes through time by capturing these changes in a thorough, balanced and conscious manner, producing a dish that becomes an encounter with nature. The guests' encounter with nature in a dish provides them with the beauty and memory of the fleeting environments in a season.

We can enhance the most beautiful properties of produce, and use them in their corresponding season, to induce this encounter with nature. This evocation of memories in a season becomes an artistic experience; as a painter would use color and stroke to make elements stand out, the chef can use food elements to highlight the unique beauty of a season. We view the concept of seasonality through the demarcated four seasons, while the dishes represent nuances of specific moments in each season.

The aim of this culinary concept is to show that it is possible to design cuisine that precisely matches the movement and changes in the world surrounding us. We can tune specific characteristics of the product by enhancing it with scientific knowledge and culinary techniques. Guests can experience a more complete interaction with the dish by being completely matched with their surround environment: season and nature.

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### Culinary concept: definition

Using culinary products and techniques in a particular moment of the season provides an enhancement of the natural colors and textures in food. This manipulation provides a feeling of seasonality, which perfectly matches the surrounding environment.

### Description of the culinary process

The enhancement of natural colors to provoke seasonality (Dominy, 2004) in a dish is carried out with several techniques. These include dehydration, roasting, aeration, steeping and hot infusion, incubation, fermentation, cold-press juicing, gelation, straining, freezing with liquid nitrogen, and sous vide cooking (McGee, 2004). Depending on the particular characteristic of a product to be emphasized, one technique, or a combination of several, are used to increase the potential to induce the feeling of seasonality in a dish. Therefore, the relationship between the dish and the seasonality invoked is paramount to giving the guest a feeling of harmony with their perceptions of nature in their environment. For instance, by using those techniques, a dish can evoke the bright yellow-orange color that surrounds everything in nature during summer time.

Depending on the season, the way of cooking must change in order to enhance the colors for that particular time of the year. Therefore, through cuisine, it is possible to feel the progression as the world moves and turns. As the product from the farmer is also changing through the season, the preparation of that product changes as well.

#### Spring

During the spring, blossoms, reappearing after a barren winter, punctuate the ubiquitous green that has emerged. At that time, rhubarb comes up, with its pink and red colors peeking through the leafy greens on the top of the stalk, so it is crucial to drive a dish with rhubarb by choosing cautiously colors, aromas and other properties to perfectly match the overall presentation (Fig. 1). Techniques used are cold-press juicing, gelation and straining.

In this case, it is possible to obtain a brilliantly colored juice of rhubarb by cold-press juicing this spring vegetable. Cold-pressing is a technique which maintains the integrity of the fruit in that it avoids heat which can alter the structure of plant cells (Knorr et al., 2002). This technique mirrors the spring, since during this season, fruits and vegetables are ripe for the picking and ready to eat without any cooking or processing. The juice is transformed into a gel with the addition of the hydrocolloid Gellan, representing a transformation of the ingredients that avoids cooking, again reflecting the freshness of this season.

The gel rests upon a yogurt made of sheep's milk, imparting the fresh and tangy flavors of milk produced in spring. The yogurt is strained over cheesecloth, and through this process, whey separates from the yogurt and drips out, resulting in a



Fig. 1. A dish with rhubarb by choosing cautiously colors, aromas and other properties. Techniques used are cold-press juicing, gelation and straining.

thicker, more concentrated flavor in the yogurt. In this flavor, the guest experiences the verdancy of spring through grassy flavors, a vestige of the animals' diet. The rhubarb is garnished with cherry blossoms, eastern redbud and the greenery of wood sorrel. The rhubarb shines through red and green flowers, similar to the color in the stalk peering through green as it comes up in the ground.

#### Summer

When summer arrives, sun beats everywhere and creates a fiery yellow and orange environment, and warm aromas come out. This is seen in a vivid summer dish using techniques of fermentation, roasting and sous vide cooking.

Here, carrots, sea urchin roe (uni) and flowers display the beautiful yellow and orange colors (Fig. 2). A carrot miso is the star of this dish, providing deep flavor and color, complemented by a carrot puree and softened with fresh uni. In order to enhance the specific color and aromas typical of summer, carrots are used in a miso and in a puree. Carrots are scrubbed clean and then roasted slowly to dry out the skins, which concentrates color, producing a brighter orange.

In the summer, the heat causes a natural fermentation of the sugars in plants and their vines. Carrots are fermented with koji to produce intensely flavored miso. In a fermentation process, starches from a substrate are converted into acids and alcohols, which influence the flavor of fermented products



Fig. 2. A vivid summer dish using techniques of fermentation, roasting and sous vide cooking and made by carrots, sea urchin roe and flowers display the beautiful yellow and orange colors.

(Yu et al., 2012). Koji, a grain (wheat or rice is used here) inoculated with the bacteria *Aspergillus oryzae*, is the basis of this fermentation process. These bacteria are developed on the surface of the grain through the process of incubation, in which bacteria are encouraged to grow on the grain by holding them in a warm that is controlled at the humid environment conditions at which the bacteria grow most efficiently and productively. Once a thriving population of bacteria has grown on the grain, the koji is combined with a substrate, in this case, carrot. In order for *A. oryzae* to metabolize the starches, they must be broken down into more simple sugars. Nature provides the solution to this, in that *A. oryzae* inherently has enzymes, primarily  $\alpha$ -amylase, which do the work of breaking down complex starches into simple sugars. The availability of simple sugars is what encourages an efficient and robust fermentation process (Carlsen et al., 1996; Chancharonpong et al., 2012; Francis et al., 2003; de Vos, 1994).

Here, we found a unique and special substrate in the carrot, due to two important features: high starch content and high sugar content. Because the carrot contains simple sugars in addition to complex starches, the fermentation process can begin immediately, as bacteria can begin to ferment the simple sugars while its enzymes break down starches to create more available simple sugars once the carrot's original simple sugars are metabolized by *Asp. oryzae*. The fermentation process is done with sous-vide setup at a constant temperature, creating a supportive environment for the bacteria. This miso undergoes a relatively short fermentation period of 9 days, which results in a miso where the carrot's simple sugars have been fermented, while the complex starches have been broken down into sugars, helping the miso to maintain the integrity of the sweetness of the carrot.

This fermentation mirrors the ruminating heat of the summer that guests experience daily. The bright colors evoke the hot summer sun, while the stringency of the miso provides a refreshing relief from the intense heat. The miso is paired with a whipped roasted carrot full of brown butter and chicken stock, imparting the warm flavors and aromas of this season. Fresh sea urchin roe is the base of this dish, further reflecting the bright orange color. The dish is covered with a blanket of bright flowers, with petals of sunflower (*Helianthus annuus L.*), nasturtium (*Tropaeolum majus*) and signet marigold (*Tajete patula and erecta*), whose bright orange color is an emblem of the sun.

#### Autumn

The hot summer tends to dry out nature, causing changes in color and texture in foliage as autumn begins. Tree branches and their leaves become parched, twigs drop from trees and nests from spring become swept up with fall leaves.

Here, sunchokes and squab represent the autumnal environment (Fig. 3). Dehydration in the kitchen is used to mirror the drying out that takes place in nature during autumn. In this season, sunchokes are at their prime, and their skins are peeled into thin slivers and let to oxidize by through exposure to air. Through oxidation, the sunchokes take on a darker color, similar to that of dried twigs and foliage (Aduriz, 2012). The oxidized sunchoke skins are dried out into crisps by dehydrating

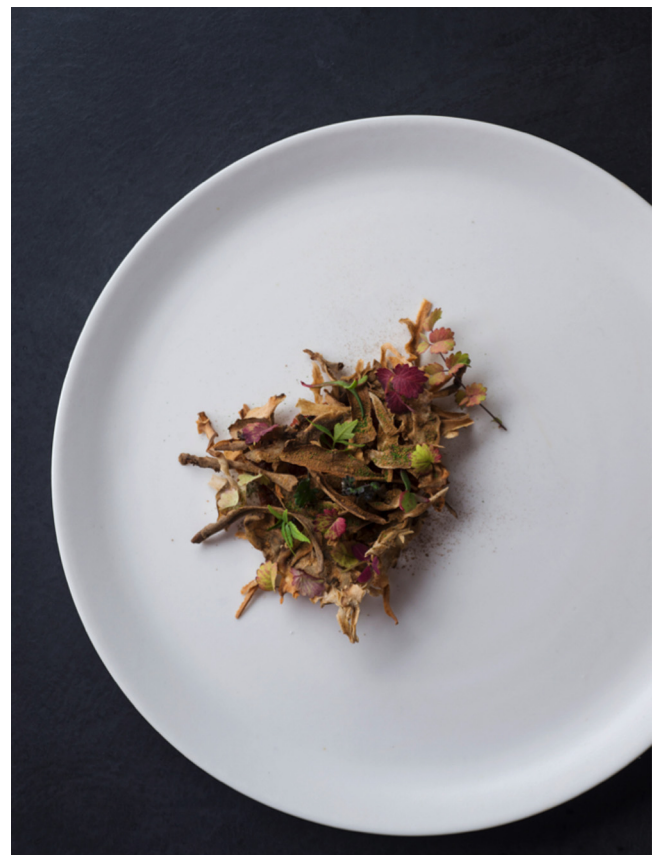


Fig. 3. Sunchokes and squab represent the autumnal environment. Dehydration in the kitchen is used to mirror the drying out that takes place in nature during autumn.

in a standard dehydrator at 65 °C overnight. The result has a texture and color reminiscent of foliage that has become crunchy in this season. A ragout of squab, made with the poultry and its heart and liver, enhances the warm, brown colors and flavors of autumn. The dish becomes nest-like with the addition of sheep sorrel and wrinkled cress. Chinese toon provides a delicate touch of burgundy color, a bit of brightness leftover from summer.

### Winter

In wintertime, frost and ice grow on the surface of rocks. The bark on trees becomes weathered by cold, dry wind. In particular, the bark of the birch tree becomes papery and flakes off.

A dessert in the style of winter birch (Fig. 4) uses aeration, food processing, steeping and dehydration to achieve the colors and textures that one might see in a barren birch forest in the dead of wintertime. Birch bark chips are hot-infused, creating a steeped sirup rich in the flavor of birch and tinted by the bark chips to the light woody color characteristic of birch. A blend of fine rice flour and birch sirup is spread onto a tray and dehydrated, allowing the flavor of birch to concentrate in



Fig. 4. A dessert in the style of winter birch uses aeration, food processing, steeping and dehydration.

the ‘bark’ through its crisp, brittle texture and muted color, reminiscent of winter birch bark.

A birch ice cream is aerated, mimicking the soft patches of snow that become solid packs, given structure by air bubbles trapped throughout. The ice cream is aerated with the use of a container with a one-way valve and a chamber vacuum sealer. The ice cream base is put into the sealed one-way valve container and put in the chamber of the sealer. The sealer is turned on, and as the pressure in the chamber decreases, air bubbles begin to be drawn from the ice cream. The sealer is stopped before the final vacuuming step, in which atmospheric pressure is restored to the chamber and a vacuum is created within the container. As a result of ending this process before vacuum is achieved in the ice cream container, the ice cream still has air bubbles when the container is removed from the sealer. Since the container has a one-way valve, the air bubbles remain inside and the ice cream remains inflated (Blumenthal, 2008). The container is then transferred to a blast freezer, where the ice cream sets with the air bubbles maintaining structure. Once frozen, the ice cream is cut out into rectangles. Then, the ice cream is dipped first in liquid nitrogen to help maintain its solid structure, and then dipped into a birch tea made of birch, sugar and water. The block of birch tea coated ice cream is then layered with a birch cake.

The birch cake and ice cream is sitting on a bed of white chocolate crumbles that have also been steeped in birch tea. White chocolate is steeped and melted in birch sirup, then spread out and dried until brittle. The chocolate is broken down in a food processor with ash, creating a crumble that looks like dark gray pebbles weathered by a harsh winter wind.

### Summary

If we observe nature carefully we can create food products from the different stages of each season, in effect building a culinary calendar of colors and seasons. This calendar would become an amazing tool to give expression to the unique qualities of season through food. Therefore, the guests who receive the colored stimulus from the dish causes the diner to recall their personal memories, perceptions, sensations and emotions (Spence, 2011) associated with the season, thereby harmoniously aligning them with their natural surroundings.

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