3/19/2014

Craft Beer Cuisine's World Cruising Guide

Edition 1
Ft. Lauderdale Bahamas, Turks and Caicos, Dominican Republic, Puerto Rico, and the Caribbean

A Collaboration Project

Craft Beer Cuisine Adventure Charters is where craft beer companies go to compete against each other to serve the best craft beer and food experience to their customers. The platform is on the world's oceans, motor yachts, and sailing vessels. The goal is to influence and expose the world to American craft beer paired with world cuisines. Six craft brewers will have a weeklong competition against each other by bring their best beers and pairing skills. Brewers will have the opportunity to brew custom craft beers with indigenous ingredients during the trip. Craft Beer Cuisine provides the customers, the charter vessel, crew, and destination. Winners advance. Losers get their beer poured overboard and sent back to their brewery.

St. Maarten is represented by over 120 nationalities and the economy is mostly based on tourism, either from tourists staying on the island or day tourists from the many cruise lines that dock in the Philipsburg harbor. The number of stay-over visitors is approaching the 500,000 limit, and the number of cruise passengers has exceeded 1.4 million. In 2007, St. Maarten accounted for 56% of stay-over tourism and 76% of cruise tourism in the Netherlands Antilles. Tourism activities in St. Maarten generate approximately 1.2 billion guilders (0.69 Billion USD) in foreign exchange revenues annually, representing 64% of total foreign exchange revenues from tourism in the Netherlands Antilles. Very little craft beer can be found on the island. Heineken Regatta features one type of beer.

Corporate Sponsorships

Regional Brewery
$10,000 – Brewing Mogul: Corporate coordinator, advertising and brand marketing in foreign markets, export distribution
$5,000 – Brewmaster: Representation and featured for2weeks during the trip. Company branded in book. Accredited as contributing author.
$1,000 – Brewer's Assistant: Company branded in book

Comment [D1]: Start with top 50

Brewpub and Microbrewery:
$2,500 – Business Owner: Competitor's spot for 1 week, branding in book, chance to compete.
$1,500 – Brewmaster: Featured under company brand in book
$500 – Cellar Person: Cross training

Comment [D2]: Start with Florida and move to national

Charter Sailing Company:
$5,000 – Commodore: Company featured in book, company highlighted for 1 week during the trip,
$2,500 – Captain: Featured under company listing, credited as contributing author, services rendered for local waters
$1,000 – First Mate: Feature under company listing, services rendered for local waters
$500 – Boatswain: Cross training

Comment [D3]: FT Laud to Carbbean, include sailing clubs, yatch clubs, etc.

Regatta coordinators
$5,000 – Admiral: Featured in book, crew and contestants will participate in Regatta events as volunteers
$2,500 – Skipper: Craft beer and food demonstrations at a vendor booth, pairing events
$1,000 – Helmsman: Advertising in book, event promotion

Comment [D4]: Start with Key West, Tampa Bay, Fort Lauderdale, Caribbean, ARC

Restaurants:
$1,000 – Executive Chef: Featured and listed in book, advertising
$500 – Host: Autographed book, cross training
$100 – Server: Photograph in book

Comment [D5]: Zagat, tripadvisor, fodors, epicurious, dine, urban spoon, restaurants.com, mobiles apps,

Culinary College:
$5,000 – Dean: School featured in book, crew and contestants will tour culinary college facilities, share ideas with students for a week
$2,500 – Professor: Featured article under the college highlighting teaching and cooking methods, crew and contestants will visit classroom for a day
$1,000 – Associate Professor: Featured dish and cooking style highlighted in article

Comment [D6]: Start with major US and Caribbean

Distributors, provisioning companies, marketing and advertising agencies:
$5,000 – Executive: Weekend festival event hosted with crew and contestants at distributors locale of choice, cooking and pairing classes and demonstrations
$2,500 – General Managers: Featured and listed as distributor of choice for certain regions, listed in book, advertising space
$1,000 – Supervisors: Listed in book and advertising space

Comment [D7]: Start with Ft. Lauderdale Bahamas, Turks and Caicos, Dominican Republic, Puerto Rico, and the Caribbean

Offices of Tourism:

Comment [D8]: Start with Ft. Lauderdale Bahamas, Turks and Caicos, Dominican Republic, Puerto Rico, and the Caribbean

$5,000 – Minister or Director: The country, cuisine, and its people get featured in a week long segment. Weekend festival participation hosted with crew and contestants at the minister or directors locale of choice.
$2,500 – Board: Country gets featured and listed as craft beer cuisine adventure destination, listed in book and advertising space
$1,000 – Liaison: Listed in book, feature distinguishing characteristics and attractions of country, advertising space

Travel Agency:
$5,000 – Executive: Service provider contract for trip. Advertising space and listed in book.
$2,500 – Agent: Accommodations provider, bookings for airfare, hotels, and to/from travel.
$1,000 – Service Provider: Advertising space and listed in the book as a service provider

Comment [D9]: Target kayak, expedia, and slew on on-line companies, then locals

Editing, Publishing, and Printing Companies:
$5,000 – Executive Producer: Receive an invitation to a recording session, a week aboard the Craft Beer Cuisine Adventure, and credit printed in the book
$2,500 – Co-Producer: receive an invitation to a recording session, a weekend aboard the Craft Beer Cuisine Adventure, and credit printed in the book
$1,000 – Associate Producer: A day aboard the Craft Beer Cuisine Adventure, credit printed in the book.

Comment [D10]: Target: Beer magazines, food/ culinary magazines, sailing magazines, travel magazines, tourism brochure publishers

Crewmembers, writers, photojournalists, cinematographers, food critics, beer connoisseurs, cicerones, beer bloggers, cartographers:
$15 - $80 / hour

Every contributor of $500 or more gets the following included with their package	
$250	Cross training in your field of choice (craft beer, cuisine, or sailing), autographed copy of the book, trip photos
$100	Autographed copy of the book
$40	Digital download of the book
$25	Stickers, trip photos, and Craft Beer Cuisine Adventure Charters bling

Cooperative Sponsorship Agreements

We would like to thank the following companies that have entered into cooperative sponsorship agreements with the Craft Beer Cuisine Adventure Charter Excursion Group.

Executive Level:

Associate Level:

Brewmaster Level:

SOMD BREWING
Brew Craft Beer

Dick Brothers Brewing
Quincy, IL USA

Crewmate Level:
Crewmembers, guests, and competitors will be able to contribute to the 2nd revision of the book with trip stories, photos, adventures, anecdotes, and fables.

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Comment [D11]: Go through TOC and indent to remove categorie

1 Preface

About the Authors / Crew

About the ship: The Company Ship (Mythical Pirate Schooner with onboard brewery, stolen beer, megatap bar, beer from 7 continents, 2,000 different types/brands, castaways converted to barmaids, tax evasion, no country flag, not home ported, constantly on the move, crew sworn to secrecy about location, etc.)

2 Introduction

Enclosed you will find tips on pairing craft beer with food. From classic beer and cheese pairings, to beers that pair with rich, chocolaty desserts, to beers that are good with bite sized Hors d'oeuvres. In pairing food with beer remember that matching like with like in both strength and ingredients, will help you find harmonies and flavor hooks that make the food and beer shine. What this means is you might not want a light American lager paired against a rich, dense chocolate cheesecake—that poor lager is going to get knocked down and won't shine like it should. For centuries, beer and food have been enjoyed together as part of the good life. Being grain-based, beer can be considered a food. Beer's broad range of flavors, aromas and textures makes it a perfect match for nearly any kind of food, from handmade sausages to the most luxurious gourmet dishes. Choosing beers and foods that enhance one another requires paying attention to the gustatory qualities of each.

2.1 Craft Beer

There are many different terms to describe it, but we're all essentially talking about the same thing. You know it when you see it…its beer that is different. It has complexity, uniqueness, and variety. It's beer that has *flavor*. It's Craft beer. The following are some concepts related to craft beer and craft brewers:

- Craft brewers are small brewers.
- The hallmark of craft beer and craft brewers is innovation. Craft brewers interpret historic styles with unique twists and develop new styles that have no precedent.
- Craft beer is generally made with traditional ingredients like malted barley; interesting and sometimes non-traditional ingredients are often added for distinctiveness.
- Craft brewers tend to be very involved in their communities through philanthropy, product donations, volunteerism, and sponsorship of events.
- Craft brewers have distinctive, individualistic approaches to connecting with their customers.
- Craft brewers maintain integrity by what they brew and their general independence, free from a substantial interest by a non-craft brewer.

2.2 World Cuisine

Cuisine that is typical of many cultures worldwide either by virtue of obvious uses of local foodstuffs and similar preparation methods or through trade. Many dishes with different origins being approximations of flavor profiles that are common across many different cultures. These profiles that are desirable amongst the majority of humans are a result of food preferences being partially genetic in nature and can explain things such as the use of sweet and sour in many cuisines being paired together to

overpower lower quality cuts of meat even though humans also commonly share a preference for sweet fruit over sour fruit. Cuisine is a characteristic style of cooking practices and traditions, often associated with a specific culture. Cuisines are often named after the geographic areas or regions from which they originate. A cuisine is primarily influenced by the ingredients that are available locally or through trade.

Types of World Cuisine

African cuisine – the various cuisines of Africa use a combination of locally available fruits, cereal grains and vegetables, as well as milk and meat products.

Asian cuisine - Ingredients common to many cultures in the east and Southeast regions of the continent include rice, ginger, garlic, sesame seeds, chilies, dried onions, soy, and tofu. Asian cuisine includes: Chinese, Japanese, Korean, Mongolian, Afghan, Bangladeshi, Bhutanese, Indian, Indonesian, Malaysian, Philippine, Thai, and Vietnamese.

European cuisine is a generalized term collectively referring to the cuisines of Europe and includes: Austrian, Croatian, Czech, German, Hungarian, Polish, Russian, Italian, British, Danish, Norwegian, Swedish, Greek, Portuguese, Spanish, Belgian, Dutch, French, and Swiss cuisines.

Oceanian cuisine – The cuisines of Oceania include Australian cuisine, New Zealand cuisine, Tasmanian cuisine, and the cuisines from many other islands or island groups throughout Oceania

Cuisine of the Americas – the cuisines found across North and South America are based on the cuisines of the countries from which the immigrant peoples came, primarily Europe. However, the traditional European cuisine has been adapted by the addition of many local ingredients, and many techniques have been added to the tradition as well. The main regional cuisines are Canadian cuisine, American cuisine, Mexican cuisine, Central American cuisine, South American cuisine, and Caribbean cuisine.

Caribbean cuisine is a fusion of African, Amerindian, European, East Indian, Arab and Chinese cuisine. These traditions were brought from the many homelands of this region's population. In addition, the population has created styles that are unique to the region.

World cuisine is distinct from Fusion cuisine which refers to the combination of foods and preparation methods of different regions or cuisines. **Fusion cuisine** is cuisine that combines elements of different culinary traditions. Cuisines of this type are not categorized according to any one particular cuisine style and have played a part in innovations of many contemporary restaurant cuisines.

2.3 Cooking Techniques

Cooking is the art of preparing food for consumption with the use of heat. Cooking techniques and ingredients vary widely across the world, reflecting unique environmental, economic, and cultural traditions and trends. The way that cooking takes place also depends on the skill and

type of training an individual cook has. Cooking can also occur through chemical reactions without the presence of heat, most notably with Ceviche, a traditional South American dish where fish is cooked with the acids in lemon or lime juice. Sushi also uses a similar chemical reaction between fish and the acidic content of rice glazed with vinegar.

Preparing food with heat or fire is an activity unique to humans, and some scientists believe the advent of cooking played an important role in human evolution. Most anthropologists believe that cooking fires first developed around 250,000 years ago.

There is no clear archeological evidence when food was first cooked. Most anthropologists believe that cooking fires began only about 250,000 years ago, when hearths started appearing. Phylogenetic analysis by Chris Organ, Charles Nunn, Zarin Machanda, and Richard Wrangham suggests that cooking may have been invented as far back as 1.8 million to 2.3 million years ago.

Food has become a part of material culture, and cuisine is much more than a substance. In the seventeenth and eighteenth centuries, food was a classic marker in Europe. However, in the nineteenth century, cuisine became a defining symbol of national identity. The discovery of the New World represented a major turning point in the history of food because of the movement of foods from and to Europe, such as potatoes, tomatoes, corn, yams, and beans. Food in America consisted of traditions that were adapted from England, but up until the end of this century, the presence of new ingredients along with the contact between diverse ethnic groups influenced experimentation. Industrialization was also a turning point that changed how food affected the nation.

During the period of industrialization, food began to be mass-produced, mass marketed, and standardized. Factories processed, preserved, canned, and packaged a wide variety of foods, and processed cereals quickly became a defining feature of the American breakfast. In the twenties, freezing methods as well as the earliest cafeterias and fast food establishments emerged. This point in time is when processed and nationally distributed foods became a huge part of the nation's diet.

2.3.1 Ingredients

Most ingredients in cooking are derived from living organisms. Vegetables, fruits, grains and nuts as well as herbs and spices come from plants, while meat, eggs, and dairy products come from animals. Mushrooms and the yeast used in baking are kinds of fungi. Cooks also use water and minerals such as salt. Cooks can also use beer, wine or spirits.

Naturally occurring ingredients contain various amounts of molecules called *proteins*, *carbohydrates* and *fats*. They also contain water and minerals. Cooking involves a manipulation of the chemical properties of these molecules.

2.3.2 Carbohydrates

Grain products are often baked, and are rich sources of complex and simple carbohydrates. Carbohydrates include the common sugar, sucrose (table sugar), a disaccharide, and such simple sugars as glucose (from the digestion of table sugar) and fructose (from fruit), and starches from sources such as cereal flour, rice, arrowroot, and potato. The interaction of heat and carbohydrate is complex.

Long-chain sugars such as starch tend to break down into simpler sugars when cooked, while simple sugars can form syrups. If sugars are heated so that all water of crystallisation is driven off, then caramelization starts, with the sugar undergoing thermal decomposition with the formation of carbon, and other breakdown products producing caramel. Similarly, the heating of sugars and proteins elicits the Maillard reaction, a basic flavor-enhancing technique.

An emulsion of starch with fat or water can, when gently heated, provide thickening to the dish being cooked. In European cooking, a mixture of butter and flour called a roux is used to thicken liquids to make stews or sauces. In Asian cooking, a similar effect is obtained from a mixture of rice or corn starch and water. These techniques rely on the properties of starches to create simpler mucilaginous saccharides during cooking, which causes the familiar thickening of sauces. This thickening will break down, however, under additional heat.

2.3.3 Fats

Types of fat include vegetable oils, animal products such as butter and lard, as well as fats from grains, including corn and flax oils. Fats can reach temperatures higher than the boiling point of water, and are often used to conduct high heat to other ingredients, such as in frying or sautéing.

2.3.4 Proteins

Edible animal material, including muscle, offal, milk, eggs and egg whites, contains substantial amounts of protein. Almost all vegetable matter (in particular legumes and seeds) also includes proteins, although generally in smaller amounts. Mushrooms have high protein content. Any of these may be sources of essential amino acids. When proteins are heated they become denatured (unfolded) and change texture. In many cases, this causes the structure of the material to become softer or more friable – meat becomes cooked and is more friable and less flexible. In some cases, proteins can form more rigid structures, such as the coagulation of albumen in egg whites. The formation of a relatively rigid but flexible matrix from egg white provides an important component in baking cakes, and also underpins many desserts based on meringue.

2.3.5 Water

Cooking often involves water, frequently present in other liquids, which is both added in order to immerse the substances being cooked (typically water, stock or wine), and released from the foods themselves. Liquids are so important to cooking that the name of the cooking method used is often based on how the liquid is combined with the food, as in steaming, simmering, boiling, braising, and blanching. Heating liquid in an open container results in rapidly increased evaporation, which concentrates the remaining flavor and ingredients – this is a critical component of both stewing and sauce making.

2.3.6 Methods

There are very many methods of cooking, most of which have been known since antiquity. These include baking, roasting, frying, grilling, barbecuing, smoking, boiling, steaming and braising. A more recent innovation is microwaving. Various methods use differing levels of heat and moisture and vary in cooking time. The method chosen greatly affects the end result because some foods are more appropriate to some methods than others. Some major hot cooking techniques include:

- Roasting, Barbecuing, Grilling/Broiling, Rotisserie, Searing
- Baking, Baking Blind, Flashbaking
- Boiling, Blanching, Braising, Coddling, Double steaming, Infusion, Poaching, Pressure cooking, Simmering, Smothering, Steaming, Steeping, Stewing, Vacuum flask cooking
- Frying, Deep frying, Hot salt frying, Hot sand frying, Pan frying, Pressure frying, Sautéing, Stir frying
- Smoking

2.3.7 Food Safety

When heat is used in the preparation of food, it can kill or inactivate harmful organisms, such as bacteria and viruses, as well as various parasites, tapeworms and Toxoplasma gondii being the most common. Food poisoning and other illness from uncooked or poorly-prepared food may be caused by bacteria such as pathogenic strains of Escherichia coli, Salmonella typhimurium and Campylobacter, viruses such as noroviruses, and protozoa such as Entamoeba histolytica. Parasites may be introduced through salad, meat that is uncooked or not thoroughly done rare, and unboiled water.

The sterilizing effect of cooking depends on temperature, cooking time, and technique used. However, some bacteria such as Clostridium botulinum or Bacillus cereus, can form spores that survive cooking, which then germinate and regrow after the food has cooled. It is therefore recommended that cooked food should not be reheated more than once to avoid repeated growths that allow the bacteria to proliferate to dangerous level.

Cooking prevents many food borne illnesses that would otherwise occur if the food was eaten raw. Cooking also increases the digestibility of some foods such as grains or lactose because most foods, when raw, are inedible, and some are poisonous. For example kidney beans are toxic when raw or improperly cooked, due to the presence of phytohaemagglutinin which can be inactivated after cooking for at least ten minutes at 100 °C. Slow cooker however may not reach the desired temperature and cases of poisoning from red beans cooked in slow cooker have been reported.

Other considerations for food safety include preparation, handling, and storage of food. According to the USDA, the temperature range from 40 °F to 140 °F (4 to 60 °C), is the "Danger zone" where bacteria is likely to proliferate, food therefore should not be stored in this temperature range. Washing of hands and surfaces, and avoidance of cross-contamination are good practices in food safety. Food prepared on plastic cutting boards may be less likely to harbor bacteria than wooden ones, other research however suggested otherwise. Washing and sanitizing cutting boards is highly recommended, especially after use with raw meat, poultry, or seafood. Hot water and soap followed by a rinse with a diluted antibacterial cleaner, or a trip through a dishwasher with a "sanitize" cycle, are effective methods for reducing the risk of illness due to contaminated cooking implements.

2.4 Foodpairing

Foodpairing is a method for identifying which foods go well together. The method is based on the principle that foods combine well with one another when they share key flavor components. Foodpairing is a relatively new method and is often confused with wine and food matching. By contrast, foodpairing uses HPLC, gas chromatography and other laboratory methods to analyze food and to find chemical components that they have in common.

The foodpairing method is designed to inspire chef, foodies, home cooks and food engineers. The method aids recipe design and provides new possible food combinations, which are theoretically sound on the basis of their flavor. Foodpairing provides possible food combinations, which are solely based on the intrinsic properties of the different food products, they are based on the flavor compounds which are present in the products. This results in possible combinations that are innovative and are not influenced or restricted by cultural and traditional context of the products. This independence occasionally results in surprising and unusual combinations, for example: endives in a dessert, white chocolate and caviar, chocolate and cauliflower. Even as they are unusual, these combinations are quite tasty, because the combined food products have flavor components in common. The foodpairing methodology opens a whole new world of possible food combinations.

2.4.1 Foodpairing History

Experimenting with salty ingredients and chocolate, Heston Blumenthal, chef of The Fat Duck, discovered that caviar and white chocolate are a perfect match. To find out why, he contacted François Benzi of Firmenich, the largest privately owned flavor house in the world. By

comparing the flavor analysis of both foods, they found that caviar and white chocolate had major flavor components in common. At that time they stated a hypothesis that different foods will combine well together when they share major flavor components, and foodpairing was born. In 2009, The Flanders Taste foundation organized a gastronomic symposium, The Flemish Primitives, completely dedicated to foodpairing.

2.4.2 Foodpairing Methodology

Foodpairing starts with an analysis of a food. The aroma compounds are determined with the aid of gas chromatography, which in most cases is coupled with a mass spectrometer (GC-MS). The odorants are also quantified with other techniques. Key odorants can be identified by comparing the concentrations of the odorants with their respective flavor threshold. Key odorants are the compounds that a human will effectively smell. They are defined as every compound that is present in concentrations higher than their specific flavor threshold.

For example, coffee contains 700 different aroma compounds, but there are only a couple of aromas important for the smell of coffee because most of the aromas are present in concentrations that are not perceptible with the nose; they are present in concentrations lower than their flavor threshold.

The key odorants are essential to compose the flavor profile of the given product. The resultant flavor profile is screened against a database of other foods. Products which have flavor components in common with the original ingredient are retained. These products could be combined with the original ingredient. With this information, a foodpairing tree is built.

The essence of foodpairing is the practice of combining different foods that share the same major flavor components. Comparing the flavors of individual ingredients can result in new and unexpected combinations, such as strawberries paired with peas.

3 Origins of Beer

Ale is one of the oldest beverages humans have produced, dating back to at least the 5th millennium BC and recorded in the written history of Ancient Egypt and Mesopotamia. As almost any cereal containing certain sugars can undergo spontaneous fermentation due to wild yeasts in the air, it is possible that beer-like beverages were independently developed throughout the world soon after a tribe or culture had domesticated cereal. Chemical tests of ancient pottery jars reveal that beer was produced about 7,000 years ago in what is today Iran, and is one of the first-known biological engineering tasks to utilize the process of fermentation. In Mesopotamia, the oldest evidence of beer is believed to be a 6,000-year-old Sumerian tablet depicting people drinking a beverage through reed straws from a communal bowl. A 3900-year-old Sumerian poem honoring Ninkasi, the patron goddess of brewing, contains the oldest surviving beer recipe, describing the production of beer from barley via bread.

The invention of bread and/or beer has been argued to be responsible for humanity's ability to develop technology and build civilization. The earliest chemically confirmed barley beer to date was discovered at Godin Tepe in the central Zagros Mountains of Iran, where fragments of a jug, at least 5000 years old was found to be coated with beerstone, a by-product of the brewing process.

Ale produced before the Industrial Revolution continued to be made and sold on a domestic scale, although by the 7th century AD beer was also being produced and sold by European monasteries. During the Industrial Revolution, the production of beer moved from artisanal manufacture to industrial manufacture, and domestic manufacture ceased to be significant by the end of the 19th century. The development of hydrometers and thermometers changed brewing by allowing the brewer more control of the process, and greater knowledge of the results.

3.1 History of Beer

In ancient Mesopotamia, clay tablets indicate that brewing was a fairly well respected occupation during the time, and that the majority of brewers were probably women. Indeed, the brewer's craft was the only profession in Mesopotamia which derived social sanction and divine protection from female deities/goddesses, specifically: Ninkasi, who covered the production of beer, Siris, who was used in a metonymic way to refer to beer, and Siduri, who covered the enjoyment of beer. Mesopotamian brewing appears to have incorporated the usage of a twice-baked barley bread called bappir, which was exclusively used for brewing beer. It was discovered early that reusing the same container for fermenting the mash would produce more reliable results; brewers on the move carried their tubs with them.

The Ebla tablets, discovered in 1974 in Ebla, Syria, which date to 2500 BC, reveal that the city produced a range of beers, including one that appears to be named "Ebla" after the city. Early traces of beer and the brewing process have been found in ancient Babylonia as well. At the time, brewers were women as well, but also priestesses. Some types of beers were used

especially in religious ceremonies. In 2100 BC, the Babylonian king Hammurabi included regulations governing tavern keepers in his law code for the kingdom.

Beer was part of the daily diet of Egyptian Pharaohs over 5,000 years ago. Then, it was made from baked barley bread, and was also used in religious practices.

The Greek writer Sophocles (450 BCE) discussed the concept of moderation when it came to consuming beer in Greek culture, and believed that the best diet for Greeks consisted of bread, meats, various types of vegetables, and beer or "ζῦθος" (zythos) as they called it.

In Europe during the Middle Ages, a brewers' guild might adopt a patron saint of brewing. Arnulf of Metz (c. 582–640) and Arnulf of Oudenburg (c. 1040–1087) were recognized by some French and Flemish brewers. Belgian brewers, too, venerated Arnulf of Oudenburg (aka Arnold of Soissons), who is also recognized as the patron saint of hop-pickers. Christian monks built breweries, to provide food, drink, and shelter to travelers and pilgrims.

Charlemagne, Frankish king and ruler of the Holy Roman Empire during the 8th century, considered beer to be an important part of living, and is often thought to have trained some brewers himself.

3.1.1 Etymology

The word *beer* comes from old Germanic languages, and is with variations used in continental Germanic languages, *bier* in German and Dutch, but not in Nordic languages. The word was imported into the British Isles by tribes such as the Saxons. It is disputed where the word originally comes from.

Many other languages have borrowed the Dutch/German word, such as French *bière*, Italian *birra* and Turkish *bira*. The Nordic languages have *öl* or *øl*, related to the English word *ale*. Spanish, Portugues and Catalan have words that evolved from Latin *cervisia*, maybe of Celtic origin. Slavic languages use *pivo* with small variations, based on an old Slavic word meaning beverage.

3.1.2 Early beers

As almost any cereal containing certain sugars can undergo spontaneous fermentation due to wild yeasts in the air, it is possible that beer-like beverages were independently developed throughout the world soon after a tribe or culture had domesticated cereal. Chemical tests of ancient pottery jars reveal that beer was produced about 3,500 BC in what is today Iran, and was one of the first-known biological engineering tasks where the biological process of fermentation is used. Also recent archaeological findings showing that Chinese villagers were brewing fermented alcoholic drinks as far back as 7000 BC on small and individual scale, with the production process and methods similar to that of ancient Egypt and Mesopotamia.

In Mesopotamia (Ancient Iraq), early evidence of beer is a 3900-year-old Sumerian poem honoring Ninkasi, the patron goddess of brewing, which contains the oldest surviving beer recipe, describing the production of beer from barley via bread.

Beer became vital to all the grain-growing civilizations of Eurasian and North African antiquity, including Egypt—so much so that in 1868 James Death put forward a theory in *The Beer of the Bible* that the manna from heaven that God gave the Israelites was a bread-based, porridge-like beer called *wusa*.

These beers were often thick, more of a gruel than a beverage, and drinking straws were used by the Sumerians to avoid the bitter solids left over from fermentation. Though beer was drunk in Ancient Rome, it was replaced in popularity by wine. Tacitus wrote disparagingly of the beer brewed by the Germanic peoples of his day. Thracians were also known to consume beer made from rye, even since the 5th century BC, as Hellanicus of Lesbos says. Their name for beer was *brutos*, or *brytos*. The Romans called their brew *cerevisia*, from the Celtic word for it.

3.1.3 Medieval Europe

Beer was one of the most common drinks during the Middle Ages. It was consumed daily by all social classes in the northern and eastern parts of Europe where grape cultivation was difficult or impossible. Though wine of varying qualities was the most common drink in the south, beer was still popular among the lower classes. Since the purity of water could seldom be guaranteed, alcoholic drinks were a popular choice, having been boiled as part of the brewing process. Beer also provided a considerable amount of the daily calories in the northern regions.

The use of hops in beer was written of in 822 by a Carolingian Abbot. Flavoring beer with hops was known at least since the 9th century, but was only gradually adopted because of difficulties in establishing the right proportions of ingredients. Before that, gruit, a mix of various herbs, had been used, but did not have the same preserving properties as hops. Beer flavored without it was often spoiled soon after preparation and could not be exported. The only other alternative was to increase the alcohol content, which was rather expensive. Hopped beer was perfected in the medieval towns of Bohemia by the 13th century. German towns pioneered a new scale of operation with standardized barrel sizes that allowed for large-scale export. Previously beer had been brewed at home, but the production was now successfully replaced by medium-sized operations of about eight to ten people. This type of production spread to Holland in the 14th century and later to Flanders, Brabant and reached England by the late 15th century.

English ale and beer brewing were carried out separately, no brewer being allowed to produce both. The Brewers Company of London stated "no hops, herbs, or other like thing be put into any ale or liquore wherof ale shall be made – but only liquor (water), malt, and yeast." This comment is sometimes misquoted as a prohibition on hopped beer. However, hopped beer was opposed by some, e.g.

3.1.4 Early modern Europe

In Europe, beer largely remained a home activity, in medieval times. The oldest still operating commercial brewery is the Weihenstephan (Bavaria) abbey brewery, which obtained the brewing rights from the nearby town of Freising in 1040. By the 14th and 15th centuries, beermaking was gradually changing from a family-oriented activity to an artisan one, with pubs and monasteries brewing their own beer for mass consumption.

In the late Middle Ages, the brewing industry in northern Europe changed from a small-scale domestic industry to a large-scale export industry. The key innovation was the introduction of hops, which began in northern Germany in the 13th century. Hops sharply improved both the brewing process and the quality of beer. Other innovations from German lands involved larger kettle sizes and more frequent brewing. Consumption went up, while brewing became more concentrated because it was a capital-intensive industry. Thus in Hamburg per capita consumption increased from an average of 300 liters per year in the 15th century to about 700 in the 17th century.

The use of hops spread to the Netherlands and then to England. In 15th century England, an unhopped beer would have been known as an ale, while the use of hops would make it a beer. Hopped beer was imported to England from the Netherlands as early as 1400 in Winchester, and hops were being planted on the island by 1428. The popularity of hops was at first mixed—the Brewers Company of London went so far as to state "no hops, herbs, or other like thing be put into any ale or liquore wherof ale shall be made—but only liquor (water), malt, and yeast." However, by the 16th century, "ale" had come to refer to any strong beer, and all ales and beers were hopped, giving rise to the verse noted by the curious antiquary John Aubrey.

In 1516, William IV, Duke of Bavaria, adopted the Reinheitsgebot (purity law), perhaps the oldest food regulation still in use through the 20th century (the Reinheitsgebot passed formally from German law in 1987). The *Gebot* ordered that the ingredients of beer be restricted to water, barley, and hops; yeast was added to the list after Louis Pasteur's discovery in 1857. The Bavarian law was applied throughout Germany as part of the 1871 German unification as the German Empire under Otto von Bismarck, and has since been updated to reflect modern trends in beer brewing. To this day, the *Gebot* is considered a mark of purity in beers, although this is controversial.

Most beers until relatively recent times were top-fermented. Bottom-fermented beers were discovered by accident in the 16th century after beer was stored in cool caverns for long periods; they have since largely outpaced top-fermented beers in terms of volume.

3.1.5 Asia

There is pre-historic evidence that shows brewing began around 5400 BC in Sumer (southern Iraq). However, as with the history of corn whiskey, the production of other alcoholic beverages is often seen as a way to preserve excess grain, rather than an occupation in and of itself.

Documented evidence and recently excavated tombs indicate that the Chinese brewed alcoholic beverages from both malted grain and grain converted by mold from prehistoric times, but that the malt conversion process was largely considered inefficient in comparison with the use of molds specially cultivated on rice carrier (the resulting molded rice being called 酒麴 (Jiǔ qū) in Chinese and Koji in Japanese) to convert cooked rice into fermentable sugars, both in the amount of resulting fermentable sugars and the residual by products (the Chinese use the dregs left after fermenting the rice, called 酒糟 (Jiǔzāo), as a cooking ingredient in many dishes, frequently as an ingredient to sauces where Western dishes would use wine), because the rice undergoes starch conversion after being hulled and cooked, rather than whole and in husks like barley malt. Furthermore, the hop plant being unknown in East Asia, malt-based alcoholic beverages did not preserve well over time, and the use of malt in the production of alcoholic beverages gradually fell out of favor in China until disappearing from Chinese history by the end of the Tang Dynasty. The use of rice became dominant, such that wines from fruits of any type were historically all but unknown except as imports in China.

The production of alcoholic beverage from cooked rice converted by microbes continues to this day, and some classify such beverages (米酒 (Mǐjiǔ) in Chinese and Sake in Japanese) as beers since they are made from converted starch rather than fruit sugars. However, this is a debatable point, and such beverages are generally referred to as "rice wine" or "sake" which is really the generic Chinese and Japanese word for all alcoholic beverages.

Some Pacific island cultures ferment starch that has been converted to fermentable sugars by human saliva, similar to the chicha of South America. This practice is also used by many other tribes around the world, who either chew the grain and then spit it into the fermentation vessel or spit into a fermentation vessel containing cooked grain, which is then sealed up for the fermentation. Enzymes in the spittle convert the starch into fermentable sugars, which are fermented by wild yeast. Whether or not the resulting product can be called beer is sometimes disputed, since:

1. As with Asian rice-based liquors, it does not involve malting.
2. This method is often used with starches derived from sources other than grain, such as yams, taro, or other such root vegetables.

Some Taiwanese tribes have taken the process a step further by distilling the resulting alcoholic beverage, resulting in a clear liquor. However, as none of the Taiwanese tribes are known to have developed systems of writing, there is no way to document how far back this practice goes, or if the technique was brought from Mainland China by Han Chinese immigrants. Judging by the fact that this technique is usually found in tribes using millet (a grain native to northern China) as the ingredient, the latter seems much more likely.

Asia's first brewery was incorporated in 1855 (although it was established earlier) by Edward Dyer at Kasauli in the Himalayan Mountains in India under the name Dyer Breweries. The company still exists and is known as Mohan Meakin, today comprising a large group of companies across many industries.

3.1.6 The Industrial Revolution

Following significant improvements in the efficiency of the steam engine in 1765, industrialization of beer became a reality. Further innovations in the brewing process came about with the introduction of the thermometer in 1760 and hydrometer in 1770, which allowed brewers to increase efficiency and attenuation.

Prior to the late 18th century, malt was primarily dried over fires made from wood, charcoal, or straw, and after 1600, from coke.

In general, none of these early malts would have been well shielded from the smoke involved in the kilning process, and consequently, early beers would have had a smoky component to their flavors; evidence indicates that maltsters and brewers constantly tried to minimize the smokiness of the finished beer.

Writers of the period describe the distinctive taste derived from wood-smoked malts, and the almost universal revulsion it engendered. The smoked beers and ales of the West Country were famous for being undrinkable – locals and the desperate excepted. This is from "Directions for Brewing Malt Liquors" (1700):

In most parts of the West, their malt is so stenched with the Smoak of the Wood, with which 'tis dryed, that no Stranger can endure it, though the inhabitants, who are familiarized to it, can swallow it as the Hollanders do their thick Black Beer Brewed with Buck Wheat.

An even earlier reference to such malt was recorded by William Harrison, in his "Description of England", 1577:

In some places it [malt] is dried at leisure with wood alone, or straw alone, in other with wood and straw together, but, of all, the straw-dried is the most excellent. For the wood-dried malt, when it is brewed, beside that the drink is higher of colour, it doth hurt and annoy the head of him that is not used thereto, because of the smoke. Such also as use both indifferently do bark, cleave, and dry their wood in an oven, thereby to remove all moisture that should procure the fume ...

"London and Country Brewer" (1736) specified the varieties of "brown malt" popular in the city:

Brown Malts are dryed with Straw, Wood and Fern, etc. The straw-dryed is the best, but the wood sort has a most unnatural Taste, that few can bear with, but the necessitous, and those that are accustomed to its strong smoaky tang; yet it is much used in some of the Western Parts of England, and many thousand Quarters of this malt has been formerly used in London for brewing the Butt-keeoing-beers with, and that because it sold for two shillings per Quarter cheaper than Straw-dryed Malt, nor was this Quality of the Wood-dryed Malt much regarded by some of its Brewers, for that its ill Taste is lost in nine or twelve Months, by the Age of the Beer, and the strength of the great Quantity of Hops that were used in its preservation.

The hydrometer transformed how beer was brewed. Before its introduction beers were brewed from a single malt: brown beers from brown malt, amber beers from amber malt, pale beers from pale malt. Using the hydrometer, brewers could calculate the yield from different malts. They observed that pale malt, though more expensive, yielded far more fermentable material than cheaper malts. For example, brown malt (used for Porter) gave 54 pounds of extract per quarter, whilst pale malt gave 80 pounds. Once this was known, brewers switched to using mostly pale malt for all beers supplemented with a small quantity of highly colored malt to achieve the correct color for darker beers.

The invention of the drum roaster in 1817 by Daniel Wheeler allowed for the creation of very dark, roasted malts, contributing to the flavor of porters and stouts. Its development was prompted by a British law of 1816 forbidding the use of any ingredients other than malt and hops. Porter brewers, employing a predominantly pale malt grist, urgently needed a legal colorant. Wheeler's patent malt was the solution.

Louis Pasteur's 1857 discovery of yeast's role in fermentation led to brewers developing methods to prevent the souring of beer by undesirable microorganisms.

3.2 Modern beer

Many European nations have unbroken brewing traditions dating back to the earliest historical records. Beer is an especially important drink in countries such as Belgium, Germany, Austria, Ireland, UK, France, the Scandinavian countries, Poland, the Czech Republic, Spain and others having strong and unique brewing traditions with their own history, characteristic brewing methods, and styles of beer.

Unlike in many parts of the world, there is a significant market in Europe (the UK in particular) for beer containing live yeast. These unfiltered, unpasteurized brews are more challenging to handle than the commonly sold "dead" beers; "live" beer quality can suffer with poor care, but many people prefer its taste. While beer is usually matured for relatively short times (a few weeks to a few months) compared to wine, some of the stronger so-called real ales have been found to develop character and flavor over the course of as much as several decades.

In some parts of the world, breweries that had begun as a family business by Germans or other European émigrés grew into large companies, often passing into hands with more concern for profits than traditions of quality, resulting in a degradation of the product.

In some sectors brewers are reluctant to embrace new technology for fear of losing the traditional characteristics of their beer. For example Marston's Brewery in Burton on Trent still uses open wooden Burton Union sets for fermentation in order to maintain the quality and flavor of its beers, while Belgium's lambic brewers go so far as to expose their brews to outside air in order to pick up the natural wild yeasts which ferment the wort. Traditional brewing techniques protect the beer from oxidation by maintaining a carbon dioxide blanket over the wort as it ferments into beer.

Modern breweries now brew many different types of beer, ranging from ancient styles such as the spontaneously-fermented lambics of Belgium; the lagers, dark beers, wheat beers and more of Germany; the UK's stouts, milds, pale ales, bitters, golden ale and new modern American creations such as chili beer, cream ale, and double India pale ales.

3.3 Grog

The word grog refers to a variety of alcoholic beverages. The word originally referred to a drink made with water or "small beer" (a weak beer) and rum, which British Vice Admiral Edward Vernon introduced into the Royal Navy on 21 August 1740. Vernon wore a coat of grogram cloth and was nicknamed Old Grogram or Old Grog. Rum with water, sugar, and nutmeg was known as bumbo and was more popular with pirates and merchantmen.

Sailors require significant quantities of fresh water on extended voyages. Since distilling sea water was not practical, fresh water was taken on board in casks but quickly developed algae and became slimy. Stagnant water was sweetened with beer or wine to make it palatable, which involved more casks and was subject to spoilage. As longer voyages became more common, the task of stowage became more and more difficult and the sailors' then-daily ration of a gallon of beer began to add up.

Following Britain's conquest of Jamaica in 1655, a half pint or "2 gills" of rum gradually replaced beer and brandy as the drink of choice. Given to the sailor straight, this caused additional problems, as some sailors saved the rum rations for several days to drink all at once. Due to the subsequent illness and disciplinary problems, the rum was mixed with water. This both diluted its effects and accelerated its spoilage, preventing hoarding of the allowance. A half pint (half of 473 ml; current American measurement; the larger British "Imperial" pint was not introduced until 1824) of rum mixed with one quart (1136 ml) of water and issued in two servings, before noon and after the end of the working day, became part of the official regulations of the Royal Navy in 1756 and lasted for more than two centuries. This gives a ratio of 4:1 (water:rum).

Citrus juice (usually lime or lemon juice) was added to the recipe to cut down on the water's foulness. Although they did not know the reason at the time, Admiral Edward Vernon's sailors were healthier than the rest of the navy, due to the daily doses of vitamin C that prevented disease (mainly scurvy). This custom, in time, got the British the nickname *limeys* for the limes they consumed.

The name "grog" probably came from the nickname of Admiral Vernon, who was known as "Old Grog" because he wore a grogram cloak. American Dialect Society member Stephen Goranson has shown that the term was in use by 1749, when Vernon was still alive. A biographer of Daniel Defoe has suggested that the derivation from "Old Grog" is wrong because Defoe used the term in 1718, but this is based on a miscitation of Defoe's work, which actually used the word "ginger."

The practice of serving grog twice a day carried over into the Continental Navy and the U. S. Navy. Robert Smith, then Secretary of the Navy, experimented with substituting native rye whiskey for the imported rum concoction. Finding the American sailors preferred it, he made the change permanent. It is said his sailors followed the practice of their British antecedents and took to calling it "Bob Smith" instead of grog.

At noon, the boatswain's mate piped *Muster for Rum*, and the cooks from each mess presented with tin buckets. The sergeant of marines ladled out the authorized number of “tots” (half-pints) supervised by the petty officer of the day. The few tots of grog remaining in the tub ('plushers') were poured into the drains (“scuppers”) visibly running into the sea.

The petty officers were served first, and entitled to take their rum undiluted. The ratings drank their grog in one long gulp when they finished their work around noon.

Seamen in Admiral Nelson’s Navy were allowed a gallon of beer a day included in a sailor’s daily ration. The beer was generally weak, around 2–3 percent alcohol by volume, whereas modern British beers are 4 percent and higher, while European and American lagers are often about 5 percent alcohol. Beer was issued to the sailors because the fresh water on board ship was often undrinkable. The problem with water arose mainly from the method of storage.

4 Brewing Process

4.1 Brewing Ingredients

Water, Yeast, Malt and Hops. These four ingredients make up the basic ingredients for the brewing of beer, and with dictate the flavor of a beer. In addition, craft brewers may use other ingredients, such as herbs, spices, fruits, vegetables, sugars, unmalted grains, and more, giving craft beer an infinite variety of flavor options when brewing the craft beer. Beer is an alcoholic beverage produced by the saccharification of starch and fermentation of the resulting sugar. The starch and saccharification enzymes are often derived from malted cereal grains, most commonly malted barley and malted wheat. Most beer is also flavored with hops, which add bitterness and act as a natural preservative, though other flavorings such as herbs or fruit may occasionally be included.

- Water comprises more than 90% of beer. In the past, the mineral content of water influenced greatly the flavor of the final beer and was specific to the region of the earth from which it came. Today, almost any water can be chemically adjusted to create the exact style of beer desired, although pure water supplies are still prized greatly.
- Barley is a basic cereal grain not particularly good for milling into flour and making bread or bakery goods. But it is great for beer. There are three major types of barley. These are differentiated by the number of seeds at the top of the stalk. Barley seeds grow in two, four and six rows along the central stem.
- Malting: Barley must be malted before being used to brew beer. Malting is a process of bringing grain to its highest point of possible soluble starch content by allowing it to sprout roots (germinate) and take the first step to becoming a normal, photosynthesizing plant. It is this sugar or maltose that the yeast metabolizes into carbon dioxide and ethyl alcohol. Some of the malted barley is or can be heated at a higher temperature to roast it. The roasted malted barley no longer has the active enzymes needed to turn the starch into sugars, but does impart characteristics that add flavor to the beer. The degree of roasting determines the color of the beer and the greatest roasted malted barley will impart its roasted flavor to the beer.
- Hops (humulus lupulus) are a flowering vine whose flowers are used as a preservative and for their essential oils that add flavor (bittering hops) and aroma (aroma hops) to balance the sweetness of the malt. The aroma is provided by aroma hops whose essential oils provide the aroma. Each variety of hops has its own distinct flavor\aroma profile.
- Yeast are unicellular fungi. Yeast is the most essential, yet least understood aspect of brewing beer. Since the 1850s, it has been scrutinized by such famous scientists as Pasteur, Guy-Lussac, and van Leeuwenhoek. Most brewing yeast belongs to the genus Saccharomyces

4.2 Types of Beer

There are basically 2 types of beers, lager and ale, that are comprised of 23 styles of beer and hundreds of beer style subcategories within these styles. The main difference between ales and lagers is the type of yeast used in the brewing process, which in turn dictates what ingredients and techniques can be used. Ales are fermented warm and made with a top-fermenting yeast, which is, just like it sounds, a yeast that rises to the top of the brew during fermentation. Ales are generally stronger and more

forceful in taste than lagers because of their relatively fast and warm fermentation. Many countries, including England, serve their ales at “cellar” temperature (50-55 degrees Fahrenheit).

Lagers, from the German word “lagern” meaning to store, are made with a bottom or cold-fermenting yeast that sinks to the bottom of the brew during the fermentation process. While ales can be brewed in as little as 7 days, lagers traditionally need to age before their brewing process is complete. This can increase their brewing time to more than a month or more. This longer, colder fermentation process inhibits the production of esters (which give beer a more fruity taste) and avoids other fermentation byproducts common in ales. The lager process creates beers with a generally cleaner, smoother, crisper, and mellower taste.

4.3 Beer Style Guide and Beer Style Characteristics

Beer Style is a term that denotes categorization of beer based on several contributing factors such as, but not necessarily limited to: the aroma, appearance, flavor, mouthfeel, the ingredients used and the beer's vital statistics such as Specific Gravity measurements, IBU rating, SRM value and percentage ABV.

Since the dawn of brewing, the combination of how various ingredients and processes came together in a particular recipe have either by accident or determination created rather distinctive, often dominant characteristics in certain beers. These typical characteristics became the benchmarks by which beer exhibiting similar traits could be compared. In order to replicate these recipes and expound on them, many brewers find it necessary to rely on guidelines that will help them achieve this goal. There are hundreds of beer styles, or types of beer, defined by several prominent organizations.

- The Brewers Association Style Guidelines contain descriptions of over 142 styles organized by country of origin.
- In 2012, The Great American Beer Festival judged beers in 84 categories with numerous sub-categories.
- The Beer Judge Certification Program recognizes 23 beer categories in the BJCP Style Guidelines

Most style guidelines define various lager and ale styles by providing detailed descriptions of their characteristic aroma, flavor, bitterness (International Bittering Units), alcohol range and color.

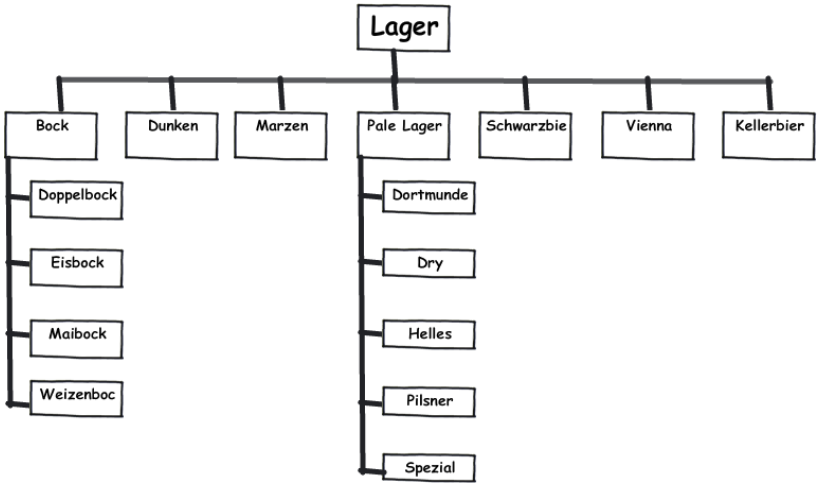


Figure 1 - Types of Lager Beers

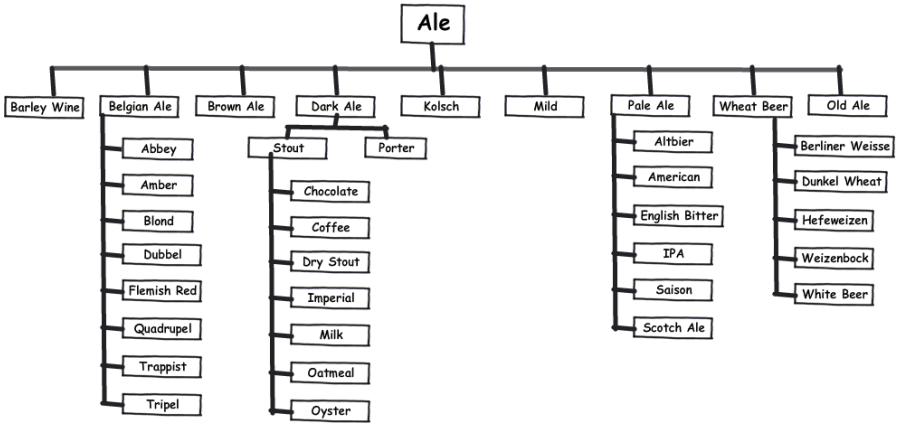


Figure 2 - Types of Ale Beers

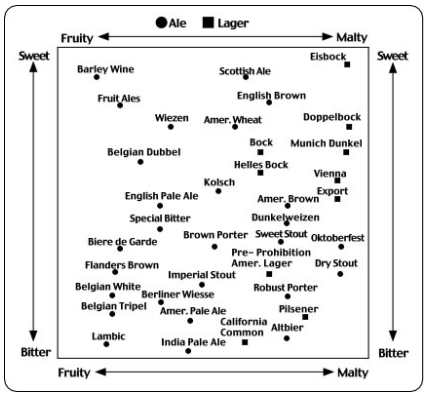


Figure 3 - Flavor Profile of Lagers and Ales

5 Tasting and Pairing Basics

5.1 Beer Tasting Essentials

When analyzing a beer, you can't just swill it down, burp and say "it's great" or "it's crap." And, even though tasting is an individual art, there are a few steps, which if followed, will take your beer tasting to a blissful level.

Look

Take pause and marvel at its greatness before you partake of it. Raise the beer in front of you, but don't hold your beer to direct light as this will dilute its true color. Describe its color, its head and its consistency.

Agitate

Swirl your beer, gently in the glass. This will pull out aromas, slight nuances, loosen & stimulate carbonation and test head retention.

Smell

90-95% of what you experience is through you sense of smell. Breathe thru your nose with two quick sniffs, then with your mouth open, then thru your mouth only (nose and mouth are connected in the experience). Let olfaction guide you. Agitate again if need be, and ensure that you are in an area that has no overpowering aromas. Enjoy its bouquet.

Taste

Now sip the beer. Resist swallowing immediately. Let it wander and explore your entire palate. Let your taste buds speak. Note the mouthfeel, the consistency of the liquid's body, and breathe out during the process of tasting. This process of exhaling is called "retro-olfaction" and will release retained stimulations at the mucus and mouthfeel level, but at a higher temperature. At times this will be the same as the olfactory process if not different and complimentary. Try to detect any sweetness, salty flavors, acids and general bitterness. Explain what they are, or what they are similar to.

5.2 Craft Beer Pairing Essentials

- **Match strength with strength**. It is simply common sense that delicate dishes work best with delicate beers. It is equally true that strongly-flavored foods demand assertive beers. With beer, flavor intensity involves a variety of qualities such as alcoholic strength, malt character, hop bitterness, sweetness, richness and roastiness.
- **Find harmonies**. Combinations often work best when food and beverage share some common flavor or aroma elements. The nutty flavor of an English-style brown ale and a handmade cheddar cheese; the deep, roasted flavors of an imperial stout and chocolate truffles; and the rich, caramel flavors of an Oktoberfest lager and roasted pork are all examples of this.
- **Consider sweetness, bitterness, carbonation, heat (spice) and richness**. At first, this may seem complicated, but it's really quite straightforward. Specific characteristics of food and beer interact with each other in predictable ways. Taking advantage of these interactions ensures that the food and beer will balance each other, creating a desire for a taste of the other.
- **Look to classic cuisines**. The cuisines of beer-drinking countries offer many traditional beer and food combinations. Schnitzel with pale lager may be obvious, but who would have thought to put stout together with oysters? Classic matches like this can be found if you seek them out, and offer a great start to further exploration.
- **Practice makes perfect**. Not every pairing works as expected—this can be fun if you learn to appreciate the unexpected. Build on the things that work and keep seeking those magic combinations.
- **Consider seasonality**. The warm summer months favor light foods and beers while heartier fare works best in winter. The beers and foods of a given season pair naturally together and suit the mood as well.
- **Contrast and complement.** All beer and food combinations should involve both of these principles. Some pairings will be more dependent on contrast, others on complementary flavors. All should strive for some kind of balance

5.3 Pairing Chart

Key to Symbols:
Color approximates actual beer
Shaded circles = range of variation

Alcohol/volume: 3% – 10%+
Hop Bitterness: 15 IBU – 70+
Flavor impact: Delicate – Intense

Flavor impact includes: original gravity, sweetness, bitterness, maltiness, roastiness and fermentation character. Glassware symbols may be found on page 10.

Beer Type	Suggested Foods	Cheese	Dessert	Glassware	Serving Temp
1. **Kölsch, Cream Ale, Blonde Ale**	Lighter food: chicken, salads, salmon, bratwurst; Monterey jack cheese.	Monterey Jack, brick or similar light, nutty cheese.	Light apricot or mandarin cake, lemon custard tart.		4.5–7 °C 40–45 °F
2. **British-Style Bitter**	Wide range of food: roast chicken or pork, fish & chips; mild cheese.	Mild English cheese such as Lancashire or Leicester.	Oatmeal-raisin-walnut cookies or some other satisfyingly basic dish.		10–13 °C 50–55 °F
3. **Pale Ale**	Wide range of food: meat pie, English cheese; great with a burger!	English cheese such as cheddar or Derby with sage.	Pumpkin flan, maple bread pudding, bananas Foster.		10–13 °C 50–55 °F
4. **India Pale Ale**	Strong, spicy food (classic with curry!); bold, sweet desserts like carrot cake.	Milder blue such as Gorgonzola or Cambozola.	Caramel apple tart, ginger spice cake, persimmon rice pudding.		10–13 °C 50–55 °F
5. **Double/Imperial IPA**	Smoked beef brisket, grilled lamb; Southern chicken-fried steak.	Sharp and rich American artisanal blue.	Very sweet desserts like carrot cake, caramel cheesecake or crème brulée.		10–13 °C 50–55 °F
6. **Amber/Red Ale**	Wide range of food: chicken, seafood, burgers; great with spicy cuisine.	Port-Salut or other lightly tangy cheese.	Poached pears with dulce de leche, banana pound cake, pecan lace cookies.		10–13 °C 50–55 °F
7. **Scotch Ale/Wee Heavy**	Roasted or grilled beef, lamb, game, smoked salmon.	Aged sheep cheese: Mizithra or Idiazabal (smoked!).	Brilliant with sticky toffee pudding or chocolate chip shortbread.		10–13 °C 50–55 °F
8. **Brown Ale, Altbier**	Hearty foods: roast pork, smoked sausage, grilled salmon.	Aged Gouda or a crumbly Cheshire.	Almond or maple-walnut cake, pear fritters, cashew brittle.		10–13 °C 50–55 °F
9. **Abbey Dubbel**	Barbecue, meat stews, or a nice thick steak or smoked rib roast.	Washed-rind abbey-type cheese or French Morbier.	Heavenly with milk chocolate; butter truffles, chocolate bread pudding.		10–13 °C 50–55 °F
10. **Abbey Tripel, Strong Golden Ale**	Spicy Cajun food, crab cakes, pheasant or roast turkey.	Triple-crème such as St. Andre or Explorateur.	Non-chocolate desserts: apricot-amaretto tart, baklava, Linzer torte.		4.5–7 °C 40–45 °F
11. **Old or Strong Ale**	Big, intense dishes such as roast beef, lamb or game, grilled or roasted.	Double Gloucester or other rich, moderately aged cheese.	Spiced plum-walnut tart, classic canolli, toffee apple crisp.		10–13 °C 50–55 °F
12. **Barley Wine**	Easily overpowers most main dishes. Best with strong cheese or dessert.	Stilton and walnuts is a classic updated. Who needs port?	Rich, sweet desserts: chocolate hazelnut torte, toffee caramel cheesecake.		10–13 °C 50–55 °F
13. **Porter**	Roasted or smoked food: barbecue, sausages, roasted meat, blackened fish.	Cow milk such as Tilsit or Gruyère.	Chocolate peanut butter cookies, toasted coconut cookie bars.		10–13 °C 50–55 °F
14. **Dry Stout**	Hearty, rich food: steak, meat pie; a classic with raw oysters.	Irish-type cheese like a Dubliner cheddar.	Chocolate soufflé, tiramisu, mocha mascarpone mousse.		10–13 °C 50–55 °F
15. **Sweet or Oatmeal Stout**	Rich, spicy food like barbecued beef, Oaxacan mole or hearty Szechuan dishes.	Great with very buttery, well-aged cheddar.	Chocolate espresso cake, cream puffs, profiterôles.		10–13 °C 50–55 °F
16. **Imperial Stout**	Easily overpowers most main dishes, but stands up to foie gras, smoked goose.	Long-aged cheese: Gouda, Parmesan or cheddar.	Dark chocolate truffles, chocolate raspberry mousse cake.		10–13 °C 50–55 °F
17. **Hefeweizen**	Great with lighter food: salads, seafood, sushi; classic with weisswurst	Simple chèvre goat cheese or herbed spread such as Boursin.	Strawberry shortcake, fruit trifle or other very light dessert; key lime pie.		4.5–7 °C 40–45 °F
18. **American Wheat Ale**	Best with very light foods: salads, sushi, vegetable dishes.	Buffalo mozzarella or Wisconsin brick.	Generally too light for dessert, but could pair with fresh berries or a fruit soup.		4.5–7 °C 40–45 °F
19. **Witbier**	Great with lighter seafood dishes—dassic with steamed mussels.	Mascarpone or herb cheese spread on crackers.	Banana orange crèpes, blood orange sorbet, panna cotta with lemon.		4.5–7 °C 40–45 °F
20. **Dunkelweizen**	Substantial salads; roast chicken or pork; excellent with hearty sausage.	Soft-ripened goat or smoked Gouda.	Sweet potato tart, peach pecan strudel, banana cream pie.		7–10 °C 45–50 °F
21. **Weizenbock**	Roast pork, beef, smoked ham or game dishes.	Aged provolone or Spanish Manchego.	Tarte tatin (caramelized apple), pine nut torta with dried fruit, banana soufléé.		7–10 °C 45–50 °F
22. **Classic Pilsener**	Great with lighter food: chicken, salads, salmon, bratwurst.	Mild white Vermont cheddar.	Light desserts: lemon shortbread, fresh berries with sabayon.		4.5–7 °C 40–45 °F
23. **Helles, Dortmunder**	Lighter food: salads, seafood, pork; works with spicy Asian, Cajun, Latin.	Wisconsin butterkäse or other soft and mild cheese.	Light desserts: blueberry trifle, cranberry-apple cobbler.		4.5–7 °C 40–45 °F
24. **Oktoberfest, Märzen, Vienna**	Mexican or any hearty, spicy food; chicken, sausage, pork.	The perfect beer for spicy jalapeño jack.	Mango or coconut flan, almond biscotti, spice cake with pine nuts.		7–10 °C 45–50 °F
25. **Amber Lager**	Hearty, spicy food: barbecue, hamburgers, chili.	White cheddar, jack, brick.	Passionfruit bread pudding, pears poached in doppelbock.		7–10 °C 45–50 °F
26. **Dark Lager, Dunkel, Schwarzbier**	Hearty, spicy food: barbecue, sausages, roasted meat.	Authentic washed-rind Münster.	Pomegranate tart with walnuts, candied ginger pear cake.		7–10 °C 45–50 °F
27. **Maibock/Pale Bock**	Spicy food like Thai or Korean barbecue; great with fried chicken, too.	Classic Emmenthal Swiss cheese.	Apple almond strudel, white chocolate cheesecake, honey-walnut soufléé.		7–10 °C 45–50 °F
28. **Doppelbock**	Rich roasty foods like duck or roasted pork shanks; great with cured meats.	Limburger is a classic!	German chocolate cake, Black Forest cake, dried fruit (rumtopf) rum tart.		7–10 °C 45–50 °F

5.4 Sample Pairings

Menu Item	Craft Beer
Pulled Pork Maple Syrup Waffle Sliders	Double/Imperial IPA, Porter, Dark Lager, Dunkel, Schwarzbier, Abby Dubbel, Pale Ale
Bacon Wrapped Jalapeños Stuffed with Cream Cheese and a Cocktail Weenie	IPA, Oktoberfest, Marzen, Vienna, Maibock, Dark Lager
Roast Beef Wrapped Asparagus	Scotch, Wee Heavy, Old Strong Ale, Porter, Weizenbock, Wheat Ale
Bacon Wrapped Corn on the Cob with Blue Cheese Crumbs	Helles, Dortmunder, Dunkelweizen, Hefeweizen
Seafood Gumbo Bites	Amber, Red Ale, Dry Stout, Helles, Dortmunder, Hefeweizen, Belgium Ale
Crawfish Etouffee Empanada	Amber Ale, Red Ale, Dry Stout, Helles, Dortmunder, Hefeweizen, Pale Ale, Wheat Ale , Belgium Ale
Roti Bites	DoppelBock, Maibock, Pale Bock, Amber Lager, Dry Stout, Pale Ale
Creole Meat Pie Quiche	Pale Ale, Dry Stout, Amber lager, Pale Bock, Amber/Red Ale, Helles, Dortmunder, Hefeweizen, Amber Ale, Belgium Ale
Seafood Tartar	Amber, Red Ale, Dry Stout, Helles, Dortmunder, Hefeweizen, Wheat Ale
Teriyaki Dumplings	Pale Ale, Dry Stout, Amber lager, Pale Bock, Amber/Red Ale, Helles, Dortmunder, Hefeweizen
Grilled Curried Beef / Lamb Skewers	India Pale Ale, Double/Imperial IPA, Porter, Sweet or Oatmeal Stout, Belgium Ale
Shwarma	India Pale Ale, Double/Imperial IPA, Porter, Sweet or Oatmeal Stout, Amber Ale
Poutine (Fries, gravy, and cheese curds)	Pilsner, Pale Ale
Boudin	Kolsch, Cream Ale, Blonde Ale, Brown Ale, Altbier, Porter, Dark Lager, Dunkel, Schwarzbier
Chocolate Coconut Rice Rum Cakes	Porter, Stout, Dry Stout, Abbey Dubbel
Pho Noodle Soup	IPA, Oktoberfest, Marzen, Vienna, Maibock, Dark Lager, Amber Ale
Sausage Pizza Crepe	
Chicago Italian Beef Sandwich	
BBQ Scallop Skewer	
Stuffed Portabella Mushrooms	
Oysters Rockefeller	
Bay-B-Back Ribs	
Salt and Chili Pepper Fried Calamari	
Baked Fresh Oysters Toscanini	
Coconut Beef with Red Curry	

5.5 The Pairing Event: Sampling Process, Setup, and Execution

5.5.1 7 Course Meal

Guests will have a traditional seven course meal served consecutively with each dish having a unique beer pairing. Guests will be seated and served food and beer consisting of multiple dishes, or *courses.* In these more formalized dining events, the courses are carefully planned to complement each other gastronomically. The courses are smaller and spread out over a long evening, up to three, four or five hours, and follow conventions of menu planning and beer pairing.

5.5.2 Social with Pairing Stations

Guests will have the choice of several walk-up stations to eat and drink. Each "station" will consist of appetizers or singular dishes paired with a certain type of beer style. These events have a more casual atmosphere and conducted without formal seating. This pairing event is similar to what a guest would find at a large social gathering happy hour with the addition of pre-paired food and craft beer.

5.5.3 Blind Tastings – Guess the Country / Style

Blind tastings are used for guest to evaluate beer styles and their culinary pairing. The single blind tasting is where the experimenters know a little information about the participants (i.e. they enjoy drinking beer) but the participants do not know anything about the craft beer of food that they taste. Guests will be allowed to see, smell, taste and discuss with each other the craft beer and food but will not know any information about the type of beer or culinary cuisine they taste prior to the event. Guest will evaluate the craft beer and the food and be allowed to guess their country of origin.

5.5.4 Control Method – 1 beer, 7 foods or 7 beers, 1 food

A scientific control is an experiment or observation designed to minimize the effects of variables other than the single independent variable. This increases the reliability of the results. Research subjects or "tasters" will be divided into two groups: an *experimental group* and a *control group*. Guests in the "experimental" group will be given 7 different beers (served in small flight glasses) and a single food item to determine which beer they think best suits that food item. Guests in the "control" group will be given 1 beer style (served in numerous large pints) and 7 different types of cuisine to evaluate which food item best suits the beer style.

5.5.5 Judging Style

Guests will be poured beer in a manner that gives each entry its optimum appearance, keeping in mind some entries may be under- or over-carbonated. Guest should sniff the beer immediately after pouring to ensure proper evaluation of volatile aromatics. If you need to re-evaluate aroma after your initial evaluation, swirl the entry in the cup to release volatiles. Evaluate the appearance immediately after evaluating aroma. Make note of head, head retention, color, and clarity. Taste the entry after your initial evaluation of aroma and appearance. Attempt to isolate as many flavor components as you are able, making note of each of them and their appropriateness to style. After noting your initial impressions of aroma, appearance, and flavor, re-evaluate the entry and note any changes or additions to your initial

comments. Fill out the overall impression section of the scoresheet, noting major issues affecting the total score and providing feedback to the brewer.

5.5.6 Around the World (World Cuisines and Beers)

Guests will be delighted by cuisines and craft beers from around the globe. Each station will have a unique country that serves their unique beer styles as well as their country's culinary styles. Guests will have the choice of several walk-up stations to eat and drink. Each "station" will consist of appetizers or singular dishes paired with a certain type of beer style from a specific country. These events have a more casual atmosphere and conducted without formal seating.

5.5.7 Freeform / Potluck

A potluck is a gathering of people where each person or group of people may contribute a dish of food and / or craft beer prepared by the person or the group of people, to be shared among the group. Guests may bring in any form of food and craft beer, ranging from the main course to desserts. Guests will be encouraged to brew and cook their own dishes for others to evaluate their culinary and brewing expertise.

5.5.8 Picnic and On the Go Style

This style is for the adventurer on the go… to the beach, snorkeling, scuba diving, between kite surfing sessions, or on top of the mountain. Whatever and wherever the customer wants.

6 Sailing and Early Trade

Trade routes http://en.wikipedia.org/wiki/Trade_route

Maritime history: http://en.wikipedia.org/wiki/Ancient_maritime_history

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

Clipper route: http://en.wikipedia.org/wiki/Clipper_route

http://www.the-map-as-history.com/demos/tome05/index.php

Notable explorers, conquistadors, privateers, and pirates
http://en.wikipedia.org/wiki/Conquistador
http://en.wikipedia.org/wiki/Privateer
http://en.wikipedia.org/wiki/Piracy
Duarte Barbosa - 1st Circumnavigation, became second in command (later co-captain general).
Commanded the ship Victoria from the South Atlantic and across the Pacific.
Vasco Núñez de Balboa - Panama, 'discovered' the Pacific Ocean
Juan Ponce de Leon
Christopher Columbus
Hernan Cortes
Ferdinand Magellan

Early and well traveled Ports: Port Royal, Kalkutta, Portsmouth/ South Hampton
http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports
http://en.wikipedia.org/wiki/List_of_North_American_ports
http://en.wikipedia.org/wiki/Port
http://en.wikipedia.org/wiki/List_of_world%27s_busiest_port_regions
British Empire
http://www.bbc.co.uk/history/british/empire_seapower/overview_empire_seapower_01.shtml

6.1 Sailing Standards

There are many organizations worldwide that provide nautical and sailing training. Below are a few organizations that are responsible for setting the nautical training standards for certifications and licensing. Training centers, facilities, and classes are offered on a regular basis at numerous locations. Licensing regulations vary widely across the world. While boating on international waters does not require any license, a license may be required to operate a vessel on coastal waters or inland waters. Some jurisdictions require a license when a certain size is exceeded (e.g., a length of 20 meters), others only require licenses to pilot passenger ships, ferries or tugboats.

American Sailing Association
http://www.asa.com/lts-asa-standards-summary.html
National Maritime Center
http://www.uscg.mil/nmc/

Royal Yachting Association
http://www.rya.org.uk/coursestraining/Pages/default.aspx
Maritime and Coastguard Agency
http://www.dft.gov.uk/mca/

International Maritime Organization (IMO). Regulations for Preventing Collisions at Sea (Colregs)

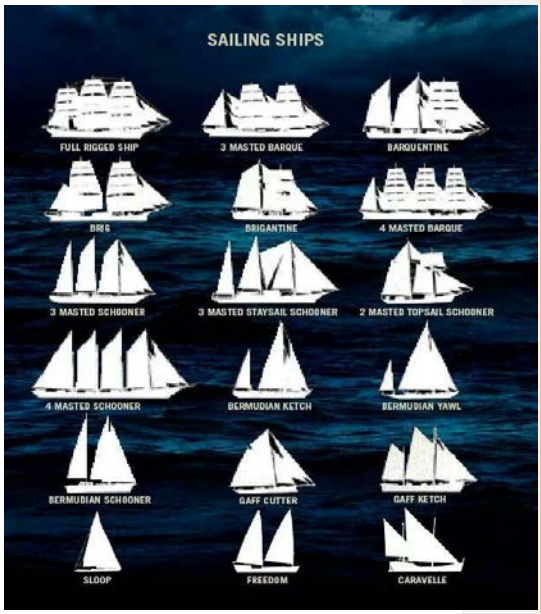
http://www.imo.org/Pages/home.aspx

6.2 Crew Position Qualifications

Craft Beer Cuisine Pairing Event Duties			
# of Required Crew	**Crew Position**	**Responsibility**	**Training / Qualifications**
1	Captain	Ensure boat has a liquor license and applicable permits, safe and efficient operation, including cargo operations, navigation, crew management and ensuring that the vessel complies with local and international laws, as well as company and flag state policies.	USCG Captain's License or equivalent (MCA, MMC, RYA, Etc.)
2	1st Mate	Manages logistics, facilitate craft beer competitions, safety and security of the ship, watchstanding, navigation, crew's welfare and training in areas such as safety, firefighting, search and rescue.	Mate's License (MMC, USCG or equivalent) Cicerone, BJCP, or Brewmaster certification
3	Engineer	Determines the fuel, lube oil, and other consumables required for a voyage. Compiles an inventory for spare parts, oversees fuel, lube, and slop oil transfers, all major maintenance, prepares the engine room for inspection by local marine/safety authorities and is in charge of the engine room during emergency situations. Supervises the daily operation of the engine room and engine department	QMED
4	Deckhand	Safety of the ship and crew, Operation of sails, line handling, and watch keeping.	
5	Chef	Preparing meals and meal logistics. Directs and participates in the preparation and serving of meals; determines timing and sequence of operations required to meet serving times; inspects galley and equipment for cleanliness and proper storage and preparation of food	
6	Steward	Ensuring guest's meals and coordinate day activities. Directs, instructs, and assigns personnel performing such functions as preparing and serving	

		meals; cleaning and maintaining quarters, receiving, issuing, and inventorying stores, plans menus, compiles supply, overtime, and cost control records.	
7.	Craft Beer Competitors	Chose a manageable position, compete in the beer pairing contest, rotate positions.	

6.3 Types of Boats, Crew Size and Training Requirements

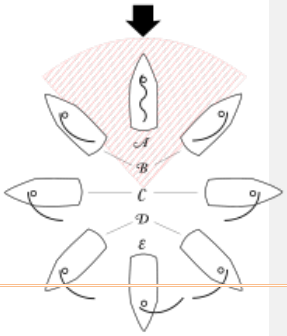


	Catamarans Monohulls	Clippers/Schooners	Tallships
Day/weekend charters			
1 to 2 week charters			
3 to 4 week plus cruises			

(Chart: classes of ships across horizontally and vertically: 1) day/weekend charters 2) 1 to 2 week charters, 3) Month long charters

6.4 Basic Sailing Knowledge

6.4.1 Points of sail



The points of sail. A. In Irons (into the wind) B. Close Hauled C. Beam Reach D. Broad Reach E. Running (not shown: Close Reach, between Close Haul and Beam Reach)

The point of sail describes a sailing boat's course in relation to the wind direction.

No sailboat can sail directly into the wind (known as being "in irons"), and for a given boat there is a minimum angle that it can sail relative to the wind; attempting to sail closer than that leads to the sails luffing and the boat will slow down and stop. This "no-go zone" (shown shaded in accompanying figure) is about 45° either side of the true wind for a modern sloop.

There are 5 main points of sail. In order from the edge of the no-go zone (or "irons") to directly downwind they are:

- close haul (the minimum angle to the wind that the boat and its rig can manage - typically about 45°)
- close reach (between close hauled and a beam reach)
- beam reach (approximately 90° to the wind)
- broad reach (between a beam reach and running)
- running (close to directly downwind)

The sail trim on a boat is relative to the point of sail one is on: on a beam reach sails are mostly let out, on a run sails are all the way out, and close hauled sails are pulled in very tightly. Two main skills of sailing are trimming the sails correctly for the direction and strength of the wind, and maintaining a course relative to the wind that suits the sails once trimmed.

6.4.2 Close Hauled or "Beating"

A boat can be 'worked to windward', to arrive at an upwind destination, by sailing close-hauled with the wind coming from one side, then tacking (turning the boat through the eye of the wind) and sailing with the wind coming from the other side. By this method of zig-zagging into the wind, known as beating, it is possible to reach any upwind destination. A yacht beating to a mark directly upwind one mile away will cover a distance through the water of at least 1.4 miles, if it can tack through an angle of 90 degrees including leeway. An old adage describes beating as sailing for twice the distance at half the speed and three times the discomfort.

When beating to windward one tack may be more favorable than the other - more in the desired direction. The best strategy is to stay on the favorable tack as much as possible. If the wind shifts in the sailor's favor, called a *lift*, so much the better, then this tack is even more favorable. But if it shifts against the sailor's, called a *header*, then the opposite tack may become the more favorable course. So when the destination is directly into the wind the best strategy is given by the racing adage "tack on a header." This is true because a header on one tack is a lift on the other.

How closely a boat can sail into the wind depends on the boat's design, sail shape and trim, the sea state, and the wind speed.

Typical minimum pointing angles to the true wind are as follows. Actual course over the ground will be worse due to leeway.

- about 35° for modern racing yachts which have been optimized for upwind performance (like America's Cup yachts)
- about 40 to 45° for modern cruiser-racer yachts (fast cruising yachts)
- about 50 to 60° for cruisers and workboats with inefficient keels, inefficient hull shapes, or low draught, when compared to craft designed for sailing performance, and for boats carrying two or more masts (since the forward sails adversely affect the windward ability of sails further aft when sailing upwind)
- close to 90° for square riggers and similar vessels due to the sail shape which is very ineffective when sailing upwind

Sailing close-hauled under a large amount of sail, and heeling a great deal, can induce weather helm, or a tendency for the boat to turn into the wind. This requires pulling the tiller to windward (i.e. 'to weather'), or turning the wheel leeward, in order to counteract the effect and maintain the required course. The lee side of the hull is more under water than the weather side and the resulting shape of the submerged parts of the hull usually creates a force that pushes the bow to weather. Driving both the asymmetric heeling hull form and the angled rudder through the water produces drag that slows the boat down. If weather helm builds further, it can limit the ability of the helmsperson to steer the boat, which can be turned towards but not effectively away from the wind. At more extreme angles of heel, the boat will spontaneously 'round up' into the wind during gusts, i.e. it will turn into the wind regardless of any corrective action taken on the helm.

Any action that reduces the angle of heel of a boat that is reaching or beating to windward will help reduce excessive weather helm. Racing sailors use their body weight to bring the boat to a more upright position, but are not allowed to use "movable ballast" during a race. Reducing or reefing the total sail area will have the same effect and many boats will sail faster with less sail in a stiff breeze due to the reduction in underwater drag. Easing the sheets on aft-most sails, such as the mainsail in a sloop or cutter can have an immediate effect, especially to help with maneuvering. Moving or increasing sail area forward can also help, for example by raising the jib (and maybe lowering the staysail) on a cutter.

6.4.3 Reaching

When the boat is traveling approximately perpendicular to the wind, this is called reaching. A *beam reach* is with the wind at right angles to the boat, a *close reach* is anywhere between beating and a beam reach, and a *broad reach* is between a beam reach and running.

For most modern sailboats, that is boats with fore-and-aft sails, reaching is the fastest way to travel. The direction of the wind is ideal when reaching because it can maximize the lift generated on the sails in the forward direction of the boat, giving the best boat speed. Also when reaching, the boat can be steered exactly in the direction that is most desirable, and the sails can be trimmed for that direction.

Reaching may, however, put the boat on a course parallel with the crests of the waves. When the waves are steep, it may be necessary to sail closer to the wind to avoid waves directly on the beam, which create the danger of capsizing.

6.4.4 Running

Sailing the boat within roughly 30 degrees either side of dead downwind is called a run. This can be the most comfortable point of sail, but requires constant attention. When the wind is coming directly behind the boat, the sailor must sail "wing on wing," one sail on port the other on starboard. Loss of attention by the helmsperson can lead to an accidental jibe, causing injury to the boat or crew. All on deck must be aware of, and if possible avoid, the potential arc of the boom, mainsheet and other gear in case an accidental jibe occurs during a run. A preventer can be rigged to reduce danger and damage from accidental jibes.

This is generally the most unstable point of sail, but the easiest for a novice to grasp conceptually, making it a common downfall for beginners. In stronger winds, rolling increases as there is less rolling resistance provided by the sails, as they are eased out. Also, having the sails and boom(s) perpendicular to the boat throws weight and some wind force to that side, making the boat harder to balance. In smaller boats, death rolls can build up and lead to capsize.

Also on a run an inexperienced or inattentive sailor can easily misjudge the real wind strength since the boat speed subtracts directly from the true wind speed and makes the apparent wind less. In addition sea conditions can also falsely seem milder than they are as the waves ahead are being viewed from behind making white caps less apparent. When changing course from this point of sail to a reach or a beat, a sailboat that seemed under control can instantly become over-canvassed and in danger. Any boat over-canvassed on a run can round up, heel excessively and stop suddenly in the water. This is called broaching and it can lead to capsize, possible crew injury and loss of crew into the water.

Options for maneuvering are also reduced. On other points of sail, it is easy to stop or slow the boat by heading into the wind; there may be no such easy way out when running, especially in close quarters or when a spinnaker (including an Asymmetrical spinnaker), whisker pole or preventer are set.

6.4.5 Basic sailing techniques

6.4.6 Trim

An important aspect of sailing is keeping the boat in "trim".

- **C**ourse made good - The turning or steering of the boat vessel using the wheel or tiller to the desired course or buoy. See different points of sail. This may be a definite bearing (e.g. steer 270 degrees), or along a transit, or at a desired angle to the apparent wind direction.
- **T**rim - This is the fore and aft balance of the boat. The aim is to adjust the moveable ballast (the crew) forwards or backwards to achieve an 'even keel'. On an upwind course in a small boat, the crew typically sit forward to reduce drag. When 'running', it is more efficient for the crew to sit to the rear of the boat. The position of the crew matters less as the size (and weight) of the boat increases.
- **B**alance - This is the port and starboard balance. The aim, once again, is to adjust weight 'windward' or 'leeward' to prevent excessive heeling. The boat moves at a faster velocity if it is flat to the water.
- **S**ail trim - Trimming sails is a large topic. Simply put, however, a sail should be pulled in until it fills with wind, but no further than the point where the front edge of the sail (the luff) is exactly in line with the wind. Let it out until it starts to flap, and then pull it in until it stops.
- **C**enterboard (Daggerboard) - If a moveable centerboard is fitted, then it should be lowered when sailing "close to the wind" but can be raised up on downwind courses to reduce drag. The centerboard prevents lateral motion and allows the boat to sail upwind. A boat with no centerboard will instead have a permanent keel, some other form of underwater foil, or even the hull itself which serves the same purpose. On a close haul the daggerboard should be fully down, and while running, over half way up.

Together, these points are known as 'The Five Essentials' and constitute the central aspects of sailing.

6.4.7 Tacking and Jibing

There are two ways to change from port tack to starboard tack (or vice versa): either by turning the bow through the eye of the wind, "tacking" or the stern, "jibing". In general sailing, tacking is the safer method and preferred especially when sailing upwind; in windsurfing, Jibing is preferred as this involves much less maneuvering for the sailor.

For general sailing, during such course changes, there is work that needs to be done. Just before tacking the command "Ready about" is given, at which point the crew must man the sheet lines which need to be changed over to the other tack and the helmsperson gets ready. To execute the tack the command "Lee-ho" or "Hard-a-lee" is given. The latter is a direct order to the helmsperson to push the tiller hard to the leeward side of the boat making the bow of

the boat come up and quickly turn through the eye of the wind to prevent the boat being caught in irons. As the boat turns through the eye of the wind, some sails such as those with a boom and a single sheet may self-tack and need only small adjustments of sheeting points, but for jibs and other sails with separate sheets on either side, the original sheet must be loosened and the opposite sheet lines hauled in and set quickly and properly for the new point of sail.

Jibing is often necessary to change course when sailing off the wind or downwind. It is a more dangerous maneuver because the boom has further to travel (because the sails are let further out to the side of the boat when travelling downwind) in the same amount of time and therefore must be controlled as the sails catch the new wind direction from astern. An uncontrolled jibe can happen suddenly by itself when sailing downwind if the helmsperson is not paying attention to the wind direction and can be very dangerous as the main boom will sweep across the cockpit very quickly and with great force. Before jibing the command "Ready to jibe" is given. The crew gets ready at their positions. If any sails are constrained with preventers or whisker poles these are taken down. The command "Jibe-ho" is given to execute the turn. The boomed sails must be hauled in and made fast before the stern reaches the eye of the wind, so that they are amidship and controlled as the stern passes through the eye of the wind, and then let out quickly under control and adjusted to the new point of sail.

The choice of which strategy to use (coming-about or jibing) depends on the conditions, sail configuration, and the craft. For light craft such as a Hobie Cat (which has little mass) coming into the wind should only be attempted when moving very quickly such as >8 knots. Of course this happens under strong wind. The timing of the crew shift is also critical when coming into the wind. If in light wind, a jibe is the better choice as there's less danger of the wind tipping the boat. A phrase to help remember this is: "l**i**ght j**i**be, h**a**rd t**a**ck" (light/hard referring to wind strength) Of course being caught in irons near shore/structures in strong wind can be catastrophic.

6.4.8 Reducing sail

An important safety aspect of sailing is to adjust the amount of sail to suit the wind conditions. As the wind speed increases the crew should progressively reduce the amount of sail. On a small boat with only jib and mainsail this is done by furling the jib and by partially lowering the mainsail, a process called 'reefing the main'.

Reefing means reducing the area of a sail without actually changing it for a smaller sail. Ideally reefing does not only result in a reduced sail area but also in a lower centre of effort from the sails, reducing the heeling moment and keeping the boat more upright.

There are three common methods of reefing the mainsail:

- Slab reefing, which involves lowering the sail by about one-quarter to one-third of its full length and tightening the lower part of the sail using an outhaul or a pre-loaded reef line through a cringle at the new clew, and hook through a cringle at the new tack.

- In-mast (or on-mast) roller-reefing. This method rolls the sail up around a vertical foil either inside a slot in the mast, or affixed to the outside of the mast. It requires a mainsail with either no battens, or newly developed vertical battens.
- In-boom roller-reefing, with a horizontal foil inside the boom. This method allows for standard- or full-length horizontal battens.

Mainsail furling systems have become increasingly popular on cruising yachts, as they can be operated shorthanded and from the cockpit, in most cases. However, the sail can become jammed in the mast or boom slot if not operated correctly. Mainsail furling is almost never used while racing because it results in a less efficient sail profile. The classical slab-reefing method is the most widely used. Mainsail furling has an additional disadvantage in that its complicated gear may somewhat increase weight aloft. However, as the size of the boat increases, the benefits of mainsail roller furling increase dramatically.

An old saying goes, "The first time you think of reducing sail you should," and correspondingly, "When you think you are ready to take out a reef, have a cup of tea first."

6.4.9 Sail trimming

The most basic control of the sail consists of setting its angle relative to the wind. The control line that accomplishes this is called a "sheet." If the sheet is too loose the sail will flap in the wind, an occurrence that is called "luffing." Optimum sail angle can be approximated by pulling the sheet in just so far as to make the luffing stop, or by using of tell-tales - small ribbons or yarn attached each side of the sail that both stream horizontally to indicate a properly trimmed sail. Finer controls adjust the overall shape of the sail.

Two or more sails are frequently combined to maximize the smooth flow of air. The sails are adjusted to create a smooth laminar flow over the sail surfaces. This is called the "slot effect". The combined sails fit into an imaginary aerofoil outline, so that the most forward sails are more in line with the wind, whereas the more aft sails are more in line with the course followed. The combined efficiency of this sail plan is greater than the sum of each sail used in isolation.

More detailed aspects include specific control of the sail's shape, e.g.:

- reefing, or reducing the sail area in stronger wind
- altering sail shape to make it flatter in high winds
- raking the mast when going upwind (to tilt the sail towards the rear, this being more stable)
- providing sail twist to account for wind speed differential and to spill excess wind in gusty conditions
- gibbing or lowering a sail

6.4.10 Hull trim

Hull trim is the adjustment of a boat's loading so as to change its fore-and-aft attitude in the water. In small boats, it is done by positioning the crew. In larger boats the weight of a person has less effect on the hull trim, but it can be adjusted by shifting gear, fuel, water, or supplies. Different hull trim efforts are required for different kinds of boats and different conditions. Here are just a few examples: In a lightweight racing dinghy like a Thistle, the hull should be kept level, on its designed water line for best performance in all conditions. In many small boats, weight too far aft can cause drag by submerging the transom, especially in light to moderate winds. Weight too far forward can cause the bow to dig into the waves. In heavy winds, a boat with its bow too low may capsize by pitching forward over its bow (pitch-pole) or dive under the waves (submarine). On a run in heavy winds, the forces on the sails tend to drive a boat's bow down, so the crew weight is moved far aft.

6.4.11 Heeling

When a ship or boat leans over to one side, from the action of waves or from the centrifugal force of a turn or under wind pressure or from amount of exposed topsides, it is said to 'heel'. A sailing boat that is over-canvassed and therefore heeling, may sail less efficiently depending on fundamental or opportunistic factors such as temporary nature of the feature (e.g. wind gust), use (e.g. racing), crew ability, point of sail, hull size & design.

When a vessel is subject to a heeling force (such as wind pressure), vessel buoyancy & beam of the hull will counter-act the heeling force. A weighted keel provides additional means to right the boat. In some high-performance racing yachts, water ballast or the angle of a canting keel can be changed to provide additional righting force to counteract heeling. The crew may move their personal weight to the high (upwind) side of the boat, this is called *hiking*, which also changes the centre of gravity & produces a righting lever to reduce the degree of heeling. Incidental benefits include faster vessel speed caused by more efficient action of the hull & sails. Other options to reduce heeling include reducing exposed sail area & efficiency of the sail setting & a variant of hiking called "trapezing". This can only be done if the vessel is designed for this, as in dinghy sailing. A sailor can (usually involuntarily) try turning upwind in gusts (it is known as *rounding up*). This can lead to difficulties in controlling the vessel if over-canvassed. Wind can be spilled from the sails by 'sheeting out', or loosening them. The number of sails, their size and shape can be altered. Raising the dinghy centerboard can reduce heeling by allowing more leeway.

The increasingly asymmetric underwater shape of the hull matching the increasing angle of heel may generate an increasing directional turning force into the wind. The sails' centre of effort will also increase this turning effect or force on the vessel's motion due to increasing lever effect with increased heeling which shows itself as increased human effort required to steer a straight course. Increased heeling reduces exposed sail area relative to the wind direction, so leading to an equilibrium state. As more heeling force causes more heel, weather helm may be experienced. This condition has a braking effect on the vessel but has the safety effect in that

an excessively hard pressed boat will try and turn into the wind therefore reducing the forces on the sail. Small amounts (≤5 degrees) of weather helm are generally considered desirable because of the consequent aerofoil lift effect from the rudder. This aerofoil lift produces helpful motion to windward & the corollary of the reason why lee helm is dangerous. Lee helm, the opposite of weather helm, is generally considered to be dangerous because the vessel turns away from the wind when the helm is released, thus increasing forces on the sail at a time when the helmsperson is not in control.

6.4.12 Sailing hulls and hull shapes

Sailing boats with one hull are "monohulls", those with two are "catamarans", those with three are "trimarans". A boat is turned by a rudder, which itself is controlled by a tiller or a wheel, while at the same time adjusting the sheeting angle of the sails. Smaller sailing boats often have a stabilizing, raisable, underwater fin called a centerboard, daggerboard, or leeboard; larger sailing boats have a fixed (or sometimes canting) keel. As a general rule, the former are called dinghies, the latter keelboats. However, up until the adoption of the Racing Rules of Sailing, any vessel racing under sail was considered a yacht, be it a multi-masted ship-rigged vessel (such as a sailing frigate), a sailboard (more commonly referred to as a windsurfer) or remote-controlled boat, or anything in between. (See Dinghy sailing.)

Multihulls use flotation and/or weight positioned away from the centre line of the sailboat to counter the force of the wind. This is in contrast to heavy ballast that can account for up to 90% (in extreme cases like AC boats) of the weight of a monohull sailboat. In the case of a standard catamaran, there are two similarly-sized and -shaped slender hulls connected by beams, which are sometimes overlaid by a deck superstructure. Another catamaran variation is the proa. In the case of trimarans, which have an unballasted centre hull similar to a monohull, two smaller amas are situated parallel to the centre hull to resist the sideways force of the wind. The advantage of multihulled sailboats is that they do not suffer the performance penalty of having to carry heavy ballast, and their relatively lesser draft reduces the amount of drag, caused by friction and inertia, when moving through the water.

One of the most common dinghy hulls in the world is the Laser hull. It was designed by Bruce Kirby in 1969 and unveiled at the New York boat show (1971). It was designed with speed and simplicity in mind. The Laser is 13 feet 10.5 inches long and a 12.5 foot water line and 76 square feet (7.1 m^2) of sail.

6.4.13 Types of sails and layouts

A traditional modern yacht is technically called a "Bermuda sloop" (sometimes a "Bermudan sloop"). A sloop is any boat that has a single mast and usually a single headsail (generally a jib) in addition to the mainsail (Bermuda rig but c.f. Friendship sloop). A cutter (boat) also has a single mast, set further aft than a sloop and more than one headsail. Additionally, Bermuda sloops only have a single sail behind the mast. Other types of sloops are gaff-rigged sloops and lateen sloops. Gaff-rigged sloops have quadrilateral mainsails with a gaff (a small boom) at their

upper edge (the "head" of the sail). Gaff-rigged vessels may also have another sail, called a topsail, above the gaff. Lateen sloops have triangular sails with the upper edge attached to a gaff, and the lower edge attached to the boom, and the boom and gaff are attached to each other via some type of hinge. It is also possible for a sloop to be square rigged (having large square sails like a Napoleonic Wars-era ship of the line). Note that a "sloop of war", in the naval sense, may well have more than one mast, and is not properly a sloop by the modern meaning.

If a boat has two masts, it may be a schooner, a ketch, or a yawl, if it is rigged fore-and-aft on all masts. A schooner may have any number of masts provided the second from the front is the tallest (called the "main mast"). In both a ketch and a yawl, the foremost mast is tallest, and thus the main mast, while the rear mast is shorter, and called the mizzen mast. The difference between a ketch and a yawl is that in a ketch, the mizzen mast is forward of the rudderpost (the axis of rotation for the rudder), while a yawl has its mizzen mast behind the rudderpost. In modern parlance, a brigantine is a vessel whose forward mast is rigged with square sails, while her after mast is rigged fore-and-aft. A brig is a vessel with two masts both rigged square.

As one gets into three or more masts the number of combinations rises and one gets barques, barquentines, and full rigged ships.

A spinnaker is a large, full sail that is only used when sailing off wind either reaching or downwind, to catch the maximum amount of wind.

6.4.14 Sailing terminology

Sailors use traditional nautical terms for the parts of or directions on a vessel: starboard (right), port or larboard (left), forward or fore (front), aft or abaft (rearward), bow (forward part of the hull), stern (aft part of the hull), beam (the widest part). Vertical spars are masts, horizontal spars are booms (if they can hit the sailor), yards, gaffs (if they are too high to reach) or poles (if they cannot hit the sailor).==Further

1. **Aft** - The back of a ship. If something is located aft, it is at the back of the sailboat. The aft is also known as the stern.
2. **Bow** - The front of the ship is called the bow. Knowing the location of the bow is important for defining two of the other most common sailing terms: port (left of the bow) and starboard (right of the bow).
3. **Port** - Port is always the left-hand side of the boat when you are facing the bow. Because “right” and “left” can become confusing sailing terms when used out in the open waters, port is used to define the left-hand side of the boat as it relates to the bow, or front.
4. **Starboard -** Starboard is always the right-hand side of the boat when you are facing the bow. Because “right” and “left” can become confusing sailing terms when used out in the open waters, starboard is used to define the right-hand side of the boat as it relates to the bow, or front.

5. **Leeward -** Also known as lee, leeward is the direction opposite to the way the wind is currently blowing (windward).
6. **Windward** - The direction in which the wind is currently blowing. Windward is the opposite of leeward (the opposite direction of the wind). Sailboats tend to move with the wind, making the windward direction an important sailing term to know.
7. **Boom** - The boom is the horizontal pole which extends from the bottom of the mast. Adjusting the boom towards the direction of the wind is how the sailboat is able to harness wind power in order to move forward or backwards.
8. **Rudder** - Located beneath the boat, the rudder is a flat piece of wood, fiberglass, or metal that is used to steer the ship. Larger sailboats control the rudder via a wheel, while smaller sailboats will have a steering mechanism directly aft.
9. **Tacking** - The opposite of jibing, this basic sailing maneuver refers to turning the bow of the boat through the wind so that the wind changes from one side of the boat to the other side. The boom of a boat will always shift from one side to the other when performing a tack or a jibe.
10. **Jibing -** The opposite of tacking, this basic sailing maneuver refers to turning the stern of the boat through the wind so that the wind changes from one side of the boat to the other side. The boom of a boat will always shift from one side to the other when performing a tack or a jibe. Jibing is a less common technique than tacking, since it involves turning a boat directly into the wind.

6.4.15 Rope and lines

In most cases, *rope* is the term used only for raw material. Once a section of rope is designated for a particular purpose on a vessel, it generally is called a *line,* as in *outhaul line* or *dock line*. A very thick line is considered a *cable.* Lines that are attached to sails to control their shapes are called *sheets*, as in *mainsheet*. If a rope is made of wire, it maintains its rope name as in 'wire rope' halyard.

Lines (generally steel cables) that support masts are stationary and are collectively known as a vessel's standing rigging, and individually as *shrouds* or *stays*. The stay running forward from a mast to the bow is called the *forestay* or *headstay*. Stays running aft are backstays or after stays.

Moveable lines that control sails or other equipment are known collectively as a vessel's running rigging. Lines that raise sails are called *halyards* while those that strike them are called *downhauls*. Lines that adjust (trim) the sails are called *sheets*. These are often referred to using the name of the sail they control (such as *main sheet*, or *jib sheet*). Sail trim may also be controlled with smaller lines attached to the forward section of a boom such as a cunningham; a line used to hold the boom down is called a *vang*, or a *kicker* in the United Kingdom. A *topping lift* is used to hold a boom up in the absence of sail tension. *Guys* are used to control the ends of other spars such as spinnaker poles.

Lines used to tie a boat up when alongside are called *docklines*, *docking cables* or *mooring warps*. In dinghies the single line from the bow is referred to as the *painter*. A *rode* is what attaches an anchored boat to its anchor. It may be made of chain, rope, or a combination of the two.

6.4.16 Other terms

Walls are called *bulkheads* or *ceilings*, while the surfaces referred to as ceilings on land are called 'overheads'or 'deckheads'. Floors are called 'soles' or *decks*. "Broken up" was the fate of a ship that hit a "rocky point" or was simply no longer wanted. The toilet is traditionally called the 'head', the kitchen is the *galley*. When lines are tied off, this may be referred to as 'made fast' or 'belayed.' Sails in different sail plans have unchanging names, however. For the naming of sails, see sail-plan.

6.4.17 Knots and line handling

The tying and untying of knots and hitches as well as the general handling of ropes and lines are fundamental to the art of sailing. The RYA basic 'Start Yachting' syllabus lists the following knots and hitches:

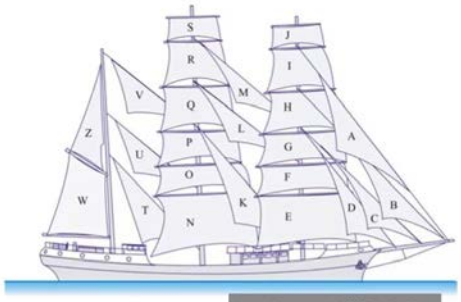
- figure-eight knot — stopper knot
- round turn and two half hitches — secure the end of a rope to a fixed object
- bowline — used to form a fixed loop at the end of a rope

It also lists securing a line around a cleat and the use of winches and jamming cleats.

The RYA Competent Crew syllabus adds the following to the list above, as well as knowledge of the correct use of each:

- clove hitch — securing lines running along a series of posts
- rolling hitch — rigging a stopper to relax the tension on a sheet
- reef knot — joining two ends of a single line to bind around an object
- single and double sheet bend — joining two ropes of different diameters

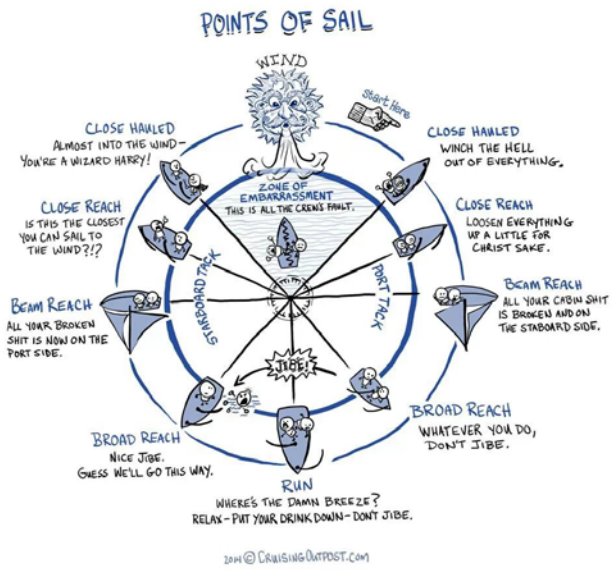
In addition it requires competent crewmembers to understand 'taking a turn' around a cleat and to be able to make cleated lines secure. Lines and halyards need to be coiled neatly for stowage and reuse. Dock lines need to be thrown and handled safely and correctly when coming alongside, up to a buoy, and when anchoring, as well as when casting off and getting under way.



BARK EUROPA

SAIL NAMES

A. Flying Jib
B. Outer Jib
C. Inner Jib
D. Fore Topmast Staysail
E. Foresail / Forecourse
F. Fore Lower Topsail
G. Fore Upper Topsail
H. Fore Topgallant
I. Fore Royal
J. Fore Skysail
K. Main Topmast Staysail
L. Main Topgallant Staysail
M. Main Royal Staysail
N. Main Sail / Main Course
O. Main Lower Topsail
P. Main Upper Topsail
Q. Main Topgallant
R. Main Royal
S. Main Skysail
T. Mizzen Staysail
U. Mizzen Top Staysail
V. Mizzen Topgallant Staysail
W. Mizzen
Z. Gaff Topsail



7 Ft. Lauderdale to the Bahamas

8 Bahamas to Turks and Caicos

9 Turks and Caicos to Dominican Republic

10 Dominican Republic to Puerto Rico and Virgin Islands

11 Virgin Islands to the Caribbean

12 Caribbean

12.1 Map and Routes

12.1.1 Anchorages
12.1.2 Day Activities and Attractions
12.1.3 Hiking Trails
12.1.4 Historic Places
12.1.5 Diving and Snorkeling Spots
12.1.6 Kitesurfing
12.1.7 Surfing and Boogey Boarding
12.1.8 Sunset Views
12.1.9 National Breweries (with Brands)
12.1.10 Beer Distributors

12.2 Brewing History

12.3 Caribbean Beer Style Guide

12.4 Culinary History

12.4.1 Regional dishes

Kallilou Soup, Samosas

French/Creole: Boudin Balls

After nightcap: T'Punch, Green Flash Rum Punch: orange juice, pineapple juice, limes, rum, red grenadine, bitters, nutmeg, splash of midori on top
Cocconut Rum T'Punch: French Rum, 1 coconut grated or blended, brown sugar, Ice, Lime… add rum to coconut in a mason jar and let sit overnight, put ice in glass, brown sugar, squeeze lime over ice leave in glass, pour rum off coconut.

12.5 Provisioning Guide

Fruits:

Bananas, Golden Apple, Cinnamon Apple, Lime, Coconuts, Mango, Guava, Orange, Plantains, Soursop, Roselle Sepals, Bread fruit, grapefruit, passion fruit…

Vegetables:
Carrots, celery, potatoes, onions, leeks, dasheen, Christophine or Chayote, scotch bonnet peppers, yams, sweet potatoes, pumpkin squash…

Meats:
Fish, Chicken, beef, goat, lobster, snails, lambi (conch), ham/hog, turtles, saltfish, bullfoot…

Cheese:
Stinky French…

Breads/Grains:
Johnny cakes (bakes), baguettes, rice

Spices: jerk

Staples:

12.6 Regional Specialty Craft Beer Recipes (based on food and local ingredients)

Dominica Citrus Ginger Ale (grapefruit rinds zested and fresh ginger with brown sugar)
Mayreau Toasted Coconut Cream Ale
Tamarind Vanilla Brown Ale
St. Vincent Rastaman IPA
St. Maarten Amber Ale

12.7 Calendar of Events

12.8 Local Charter Companies

12.9 Local Caterers and Chefs

St. Vincent (Kingstown):
Cumberland Bay:
Mojito's
Benis' Bar and Restaurant
Joseph's
Wallallibou:
Chateaubellair:

Unions Island:
Eclipse / Twilight Bar
Eagle's Nest
Caio's Pizza

Lambi's
Bouganvilla
Anchorage Yacht Club
Joy's BBQ
Chattam Bay:
Bollheads
Mr. Fantastic
Tobago Cays:
Romeo's
Mayreau:
Dennis' Hideaway
Happy Hour Place with Sylvia and Jerome
Last Bar Before the Jungle (Saltwhistle Bay)
Bequia:
Beige's
Fringepenny
Jack's
Whaleboner

St. Lucia / Rodney Bay:
Gros Islet places

Martinique:
Facebook: La Dunnette St. Anne Martinique
Le Marin: Zanzibar, Bratwurst Stop Plus, Mango Bay, Mayday (new marina)
Fort de France
Le Robert
Bay of Treasure / Tartane:
St. Pierre

Dominica:
Plymouth: Big Poppas, The Blue Sign Bar, Kabuli Bar, Street food vendors

Guadalupe:
Deshaies
Isle de Saints

Nevis

St. Kitts:
Travis and his mother's place

St. Maarten/St. Martin
Antigua

12.10 Local Beer Distributors and Available Brands

13 Future Editions

13.1 Baja California
13.2 Mediterranean
13.3 Baltic
13.4 Pacific Northwest
13.5 Atlantic / Chesapeake Bay
13.6 Great Lakes
13.7 South Pacific
13.8 New Zealand / Fiji /Australia
13.9 Mississippi River

Research and Writing Process Guidance

Goal 1 is to get the guidebook to a professional look to cast out to Caribbean network, send emails and contact folks, work the process, bring everyone together to collate document, revise methods/process, focus on remaining tasks to get Caribbean portion complete, discuss future sections. The guide is used to create buy-in and help create relationships. CC everybody or have responses forwarded to food/beer/maps/sailing people. Note: that not all responses must be attained from the people contacted in order to write and complete each section.

Cartographer/ Maps and Routes Person

1. Start with the Caribbean Region and contact the board of tourism using the below letter template to request information for sailing ports, vacation destinations, information packets, etc. (Start with St. Maarten to St. Vincent, then expand to include BVI, USVI, Puerto Rico, Dominica Republic and then Bahamas before moving on to the next region… I.e. Baja California. Write the major chapters then go back and fill in the routes needed to circumnavigate the globe)
2. Use the references to give additional information about the routes and maps
3. Use WIKI sailing routes to map the region's sailing route and preferred time of year for sailing
4. Overlay brewery stops or ports close to breweries via www.beerrmapping.com
5. Determine potential ports for anchorage and map distances
6. Upload information to Cloud Storage: Google Drive/Documents or Dropbox.com
7. Gleen information from books, tourism pamphlets, wiki, www's and meld into cohesive 1 to 2 week charter trip for each (i.e. use a trip of 1 to 2 weeks as a "leg" of a trip for example from St. Vincent mainland to Union Island and Tobago Cays would be a 2 week leg)

Maps/Routes/Cartographer:
Board of Tourism (ask each country): similar letter… ask for digital maps, brochures, permission to reprint maps… in return for cooperative sponsorship agreement, entertaining the idea of a centralized Caribbean craft brewery located in St. Maarten with distribution to other islands, brewing the specialty beers mentioned in the book based on local ingredients,

Tourism Info

Ins and Outs of St. Vincent
http://www.insandoutsofsvg.com/
https://www.facebook.com/david.jones.75054?ref=tn_tnmn#!/insandoutsofSVG?fref=ts
Do 32
http://discoversvg.com/
Skyview Maps
http://www.skyviews.com/skyviews/
Martinique
http://www.onf.fr/martinique/
Martinique BonJour
http://www.martinique-bonjour.com/spip/
Martinique Ti'Ponton
http://www.tiponton.com/
St. Lucia
http://www.thismenu.com/

http://www.thismenu.com/restaurants-in-st-lucia.html
Harbour Magazine
http://www.magazineharbour.com/

Expectation: the main map for the region will be 1 page and each 1 to 2 week long legs will have a more detailed route map for a total of 5 to 10 pages per region (i.e. Caribbean region, Bahamas region, etc.)

Craft Beer Person

1. Start with the Caribbean Region, locate the breweries using beermapping.com or other references (i.e the cartographer) and contact each brewery using the below letter template to request information for using logos and stabling a cooperative sponsorship agreement.
2. Contact the top 20 major US craft breweries and request a cooperative sponsorship agreement with the letter template.
3. Use additional reference to give additional information about the brewing history of each brewery in the Caribbean region.
4. Upload information to Cloud Storage: Google Drive/Documents or Dropbox.com
5. Gleen information from books, tourism pamphlets, wiki, www's and meld into cohesive 1 to 2 week charter trip for each (i.e. use a trip of 1 to 2 weeks as a "leg" of a trip for example from St. Vincent mainland to Union Island and Tobago Cays would be a 2 week leg)

Sample Letter/Message to Breweries (use business letter and scan/email/snail mail)

Dear Hairoun Brewing Company,
I am interested in obtaining some of Hairoun Brewing Company's advertising memorabilia, glassware, plastic shipping crates, growlers, posters, stickers, beer coasters, for Craft Beer Cuisine's World Beer memorabilia museum located in the Historic Dick Brothers Brewery Building in Quincy Illinois.

We would like to establish a cooperative sponsorship agreement…
I recently visited the Caribbean Islands and enjoyed the beer, food, and hospitality so much I would like to partition a section of the museum to the Caribbean islands dedicated to the unique beer and culinary traditions or the different regions within the islands.

In return I can offer the Hairoun brewing Company an advertising spot in my upcoming book, Craft Beer Cuisine's World Cruising Guide (insert cover page). A guide book dedicated to sailing and motor cruisers for tasting, drinking, and touring the various locations through out the world. Please contact (insert freelancer's email) and cc davidjones@md.metrocast.net and send donations to David Jones, Craft Beer Cuisine, PO Box 275, California, MD 20619. Attached you will find a pre-signed copy of the cooperative sponsorship agreement to accommodate your donation. Any requested changes please send to…

Craft Beer

Craft Beer and Food Pairing
http://www.craftbeer.com/beer-and-food/pairing-tips/craft-beer-and-food-pairing-specifics
http://www.craftbeer.com/category/beer-and-food
http://members.brewersassociation.org/store/SearchResults.aspx?Category=COOK
Beer Styles
http://www.bjcp.org/stylecenter.php
Top 20 Craft Breweries


Top Craft Breweries.xlsx

Expectation: the background information that won't change with each region will have 5 to 10 pages. Each region's craft beer section will be 5 to 10 pages.

World Cuisine Person

1. Start with the Caribbean Region, locate the ports and restaurants at each anchorage. Contact each restaurant using the below letter template to request information for using logos and stabling a cooperative sponsorship agreement.
2. Use additional reference to give additional information about the culinary history and create a provisioning guide of the local vegetables, fruits, cooking styles, and spices of each culinary style in the Caribbean region.
3. Upload information to Cloud Storage: Google Drive/Documents or Dropbox.com
4. Gleen information from books, tourism pamphlets, wiki, www's and meld into cohesive 1 to 2 week charter trip for each (i.e. use a trip of 1 to 2 weeks as a "leg" of a trip for example from St. Vincent mainland to Union Island and Tobago Cays would be a 2 week leg)

Dear Restaurants (Cuisine Person)
Ask for menus, company logos, pics of servers with beer and food in hand, free advertising in the book… cooperative sponsorship agreement…

World Cuisine and Yacht Cooking:
Sailboat cooking
http://www.amazon.com/The-Boat-Galley-Cookbook-Essential/dp/0071782362
Culinary Institute of America's Professional Chef
http://www.amazon.com/Professional-Chef-Culinary-Institute-America/dp/0471382574/ref=cm_lmf_tit_1
Table Manners, Antigua / Caribbean Cooking
http://www.fooddrinkcaribbean.bigcartel.com/product/tablemanners-a-culinary-review-of-hospitality-in-antigua-barbuda
Capt Jan Robert's Ship to Shore Cookbook Collection
http://www.shiptoshoreinc.com/
Dining on Deck
http://www.amazon.com/Dining-Deck-Foods-Sailing-Boating/dp/0913589217
French Creole Chef from Guadeloupe
http://www.amazon.com/s/ref=nb_sb_noss?url=search-alias%3Dstripbooks&field-keywords=babette+de+rozieres
French Cuisine Books (in French but may be available in English)
L' essential de la Cuisine Martinique
Le Grand Livre de la Cuisine Antillaise
Cuisiner Creole
Larousse le Meiller des Antilles

Expectation: this section will have 5 to 10 pages of background / static material and each regional section will contain 10 to 20 pages of world cuisine content.

Sailing Person

1. Start with the Caribbean Region, use the routes provided by the cartographer and tourism information guides and contact the local charter sailing companies using the below letter template to request information for using logos and stabling a cooperative sponsorship agreement.
2. Create a guide using the station bill or muster list chart to "map out" each crew person's duties (i.e. from captain to 1st mate to chef and stewardess) in order to host a Craft Beer Cuisine Adventure Charter.
3. Use additional reference to give additional information about the sailing history, and the different types of sailing vessels/charter vessels in Caribbean region.
4. Upload information to Cloud Storage: Google Drive/Documents or Dropbox.com
5. Gleen information from books, tourism pamphlets, wiki, www's and meld into cohesive 1 to 2 week charter trip for each (i.e. use a trip of 1 to 2 weeks as a "leg" of a trip for example from St. Vincent mainland to Union Island and Tobago Cays would be a 2 week leg)

Dear Charter Boat (sailing person):

Ask to be put on the crew list, use of boat's logo, 10% to 15% of charter for travel agency business, digital company logos, reprint boat details, offer crew training on Craft Beer Adventure Tour, in return for a cooperative sponsorship agreement, final copy of the book, included in the list of available charters running a craft beer cuisine tour….

Sailing and Route Planning

Sailing Passages
http://www.cruiserswiki.org/wiki/World_Cruising_Guides
Sailboat Types
http://en.wikipedia.org/wiki/Category:Sailboat_types
http://www.google.com/search?q=sailboat+types&hl=en&gscrl=1&rlz=1T4TSHB_en___US470&tbm=isch&tbo=u&source=univ&sa=X&ei=jiIxUZmoEoiu8ASUiIDQAQ&ved=0CEgQsAQ&biw=1280&bih=662
Beer Mapping
http://beermapping.com/
Free Cruising Guides
http://freecruisingguides.com/
Jimmy Cornell's Sailing Passages Books: *World Voyage Planner* (available September 2012), *World Cruising Routes* and *World Cruising Destinations*
http://www.cornellsailing.com/buy-cornell-books-ebooks/jimmy-ivan-cornell-ocean-atlas-pilot-charts-routeing/

Expectation: the section will have 5 to 10 pages of background/static material and each regional section will contain 10 to 20 pages.

References

Sailing and Route Planning

Sailing Passages
http://www.cruiserswiki.org/wiki/World_Cruising_Guides
Sailboat Types
http://en.wikipedia.org/wiki/Category:Sailboat_types
http://www.google.com/search?q=sailboat+types&hl=en&qscrl=1&rlz=1T4TSHB_en___US470&tbm=isch&tbo=u&source=univ&sa=X&ei=jilxUZmoEoiu8ASUilDQAQ&ved=0CEgQsAQ&biw=1280&bih=662
Beer Mapping
http://beermapping.com/
Free Cruising Guides
http://freecruisingguides.com/
Jimmy Cornell's Sailing Passages Books: *World Voyage Planner* (available September 2012), *World Cruising Routes* and *World Cruising Destinations*
http://www.cornellsailing.com/buy-cornell-books-ebooks/jimmy-ivan-cornell-ocean-atlas-pilot-charts-routeing/

Tourism Info

Ins and Outs of St. Vincent
http://www.insandoutsofsvg.com/
https://www.facebook.com/david.jones.75054?ref=tn_tnmn#!/insandoutsofSVG?fref=ts
Do 32
http://discoversvg.com/
Skyview Maps
http://www.skyviews.com/skyviews/
Martinique
http://www.onf.fr/martinique/
Martinique BonJour
http://www.martinique-bonjour.com/spip/
Martinique Ti'Ponton
http://www.tiponton.com/
St. Lucia
http://www.thismenu.com/
http://www.thismenu.com/restaurants-in-st-lucia.html
Harbour Magazine
http://www.magazineharbour.com/

Craft Beer

Craft Beer and Food Pairing
http://www.craftbeer.com/beer-and-food/pairing-tips/craft-beer-and-food-pairing-specifics
http://www.craftbeer.com/category/beer-and-food
http://members.brewersassociation.org/store/SearchResults.aspx?Category=COOK
Beer Styles
http://www.bjcp.org/stylecenter.php
Top 20 Craft Breweries


Top Craft Breweries.xlsx

World Cuisine and Yacht Cooking:
Sailboat cooking
http://www.amazon.com/The-Boat-Galley-Cookbook-Essential/dp/0071782362
Culinary Institute of America's Professional Chef
http://www.amazon.com/Professional-Chef-Culinary-Institute-America/dp/0471382574/ref=cm_lmf_tit_1
Table Manners, Antigua / Caribbean Cooking
http://www.fooddrinkcaribbean.bigcartel.com/product/tablemanners-a-culinary-review-of-hospitality-in-antigua-barbuda
Capt Jan Robert's Ship to Shore Cookbook Collection
http://www.shiptoshoreinc.com/
Dining on Deck
http://www.amazon.com/Dining-Deck-Foods-Sailing-Boating/dp/0913589217
French Creole Chef from Guadeloupe
http://www.amazon.com/s/ref=nb_sb_noss?url=search-alias%3Dstripbooks&field-keywords=babette+de+rozieres
French Cuisine Books (in French but may be available in English)
L' essential de la Cuisine Martinique
Le Grand Livre de la Cuisine Antillaise
Cuisiner Creole
Larousse le Meiller des Antilles

Misc.
Floating Brewery
http://beerpulse.com/2010/10/sabmillers-floating-brewery-concept/
History of Beer on Sailing Vessels
http://www.sailingmagazine.net/columns/full-and-by/576-sailing-history-is-soaked-in-booze-for-good-healthy-reasons
The Lonely Planet Guides

Notable Culinary Colleges around the World

Africa

- School of Tourism and Hospitality, University of Johannesburg, South Africa
- International Hotel School, Cape Town, Sandton, Johannesburg, South Africa

Asia

- Tadmor School of Hoteliery, Herzliya, Israel
- JaganNath Institute of Management Sciences, Rohini, Delhi, India
- College of Tourism & Hotel Management, Lahore, Punjab, Pakistan
- Culinary Academy of India, Hyderabad, Andhra Pradesh, India
- ITM School of Culinary Arts, Mumbai, Maharashtra, India
- IHM-A Institute of Hotel Management Aurangabad, Aurangabad, Maharashtra, India
- Welcome Group Academy of Culinary Arts Manipal, Manipal, Karnataka, India

Europe

- Culinary Institute of Bologna, Bologna
- École des trois gourmandes, Paris, France
- HRC Culinary Academy, Bulgaria
- Institute Paul Bocuse, Ecully, France
- Mutfak Sanatlari Akademisi, Istanbul, Turkey
- School of Culinary Arts and Food Technology, Dublin Institute of Technology, Dublin, Ireland
- Apicius International School of Hospitality, Florence, Italy
- Westminster Kingsway College (London)
- School of Restaurant and Culinary Arts, Umeå University (Sweden)

America

Latin America & Caribbean

- Academia de Artes Culinarias de Guatemala, Guatemala.
- Instituto de Banca y Comercio, Puerto Rico
- Trinidad and Tobago Hospitality and Tourism Institute, Trinidad and Tobago
- Instituto Culinario de México, México

North America

- Camosun College (Victoria, BC)
- Georgian College (Owen Sound, ON)
- George Brown College (Toronto, ON)
- Humber College (Toronto, ON)
- Sault College (Sault Ste. Marie, ON)
- St. Clair College (Windsor, Ontario)
- Vancouver Community College (Vancouver, BC)
- Baltimore International College, Baltimore, Maryland
- Culinard, the Culinary Institute of Virginia College
- Culinary Institute of America

- Culinary Institute of Canada Prince Edward Island [PEI]
- International Culinary Centers in NY and CA
- Johnson & Wales University, College of Culinary Arts
- Kendall College in Chicago, Illinois
- Lincoln College of Technology
- Manchester Community College in Connecticut
- New England Culinary Institute in Vermont
- Pennsylvania Culinary Institute
- The Pennsylvania School of Culinary Arts, Lancaster, Pennsylvania,
- The Restaurant School at Walnut Hill College, Philadelphia, Pennsylvania
- Sullivan University Louisville, Kentucky
- Los Angeles Trade–Technical College
- Texas Culinary Academy
- L'Ecole Culinaire St. Louis, Missouri, Memphis, Tennessee, and Kansas City, Missouri

Oceania

- AUT University (Auckland University of Technology)
- MIT (Manukau Institute of Technology)
- Wintec, Waikato Institute of Technology