

BRANDIES - COGNAC

HISTORY	<ul style="list-style-type: none"> Since 3rd: wine in Cognac 16th: excess wine distilled. 17th-18th: Champagne+Borderies area converted to spirit due to hi Dutch demand + growing Cognac reputation esp. in UK. 19th: Martell + Hennessy establish themselves as major players 1871: phylloxera outbreak => whisky took over UK market 20th: USA+Asia supported devt post-war / UK sales down from 70s / Asia then bust => reduction of Cognac vineyards Recent recover thanks to Asia Pacific where Cognac is used in cocktails like Alizé.
LOCATION	<ul style="list-style-type: none"> North of Bordeaux and either side of Charente river with 6 vine growing areas (usually chalkier -> better for drainage & ripening) <ol style="list-style-type: none"> Grande Champagne (chalk)=> jasmine + lime blossom + Petite Champagne (chalk)=> suitable for long oak maturation Borderies (clay) => heavier + violet Fins bois (clay + chalk) => grapey fruitiness 40% prod Bons bois (heavy clay) Bois ordinaires (light & sandy)
GRAPE VARIETIES & WINEMAKING	<ul style="list-style-type: none"> 8 grapes allowed but 3 main grapes by far: <ol style="list-style-type: none"> Ugni blanc: 95% pltg; good acidity; floral spicy + patisserie notes in eau de vie Folle blanche: supple weight+fruitiness+flower (violet & anglica). Colombard: racier & aromatic Harvest: October. The colder the year, the better. Chaptalisation forbidden Winemaking: gentle pressing -> fermentation w no SO2 to alcohol wine (8-10% abv) and hi acidity -> lees sitting + MLF Lees/no lees <ol style="list-style-type: none"> Rémy method: ageing wine on lees before distillation for better longer ageing and softer mouthfeel. Martell method: no lees from quicker maturing crus e.g. Borderies.
DISTILLATION	<ul style="list-style-type: none"> AC -> all Cognac to be distilled by 31st March H+1 in Charentais stills made of copper – all uniform size & shape <u>Charentais still distillation</u>: <ol style="list-style-type: none"> Wine heated in still Alcohol vapours rise through head (<i>chapiteau</i>) and then <i>col de cygne</i> then through a <i>chauffe-vin</i> Alcohol coils around in condenser and collected in receiving cask <i>Brouillis</i> = 1st pass distillate. <i>Brouillis</i> redistilled (<i>bonne chauffe</i>) and divided into tetes, Coeur (new spirit), secondes & queues (both redistilled). <ul style="list-style-type: none"> Heart usually collected at 58-60%abv <u>Key influences</u>: 1. The cut 2. The shape of the head (olive/onion) 3. Speed (slower = better i.e. congeners+reflux) 4. Secondes Secondes management: <ol style="list-style-type: none"> Martell: use of secondes in wine for lighter alcohol with more abv. Other: use of secondes in brouillis for a deeper richer eau de vie Hennessy: 50/50
MATURATION	<ul style="list-style-type: none"> 2 types of 350-400l barrels: Limousin for quicker extraction / Tronçais for longer maturation (tighter grained) 3 steps: <ol style="list-style-type: none"> 6-12mths; ageing in new barrels -> colour fixing & tannins Further maturation in old barrels -> slow oxidation + integration + concentration of flavours 20 yrs+: dried fruit, forest floor, rancio Conditions: moist, humid for rounder but less volume/strength or dry for less flavours but more abv
REDUCTION	<ul style="list-style-type: none"> Collection at 70% abv Slow reduction via demineralised water or faibles (15% old Cognac + water) Bottled at 40%abv
BLENDING	<ul style="list-style-type: none"> Key element to achieve & maintain style. Fine Champagne = min 50% Grande + Petite Champagne
STYLES & KEY BRANDS	<ul style="list-style-type: none"> VS/** Cognac: 2 years VSOP Cognac: 4 years youngest age XO/Napoleon: 6 years youngest age Hennessy (LVMH) #1 w 5m cs/yr Rémy Martin (RM) / Martell (Pernod Ricard) #2/3 w 2m cs/yr Courvoisier (Beam) #4 w 1.5m cs/yr
TASTING NOTE	<ul style="list-style-type: none"> Gold/Amber – Fruits, floral, spices, earthiness and nuts – Light to full bodied.

BRANDIES - ARMAGNAC

HISTORY	<ul style="list-style-type: none"> 15th: first French Brandy = Armagnac. 17th: Armagnac supplying the Dutch 18th: ↘ of exports but good local reputation 19th: intro of Armagnacais alembic for differentiation vs. Cognac 20th: recovery post 1945 but smaller industry vs. Cognac (18,000hl)
LOCATION	<ul style="list-style-type: none"> South of Bordeaux and Garonne river with 3 vine growing Crus areas: <ol style="list-style-type: none"> Bas-Armagnac: sand, chalk & boulbens (stones) -> elegant & aromatic with prune flavours Tenareze: warmer, chalky -> round & complex. Fiery when young Haut Armagnac: lightest style. Less important region
GRAPE VARIETIES & WINEMAKING	<ul style="list-style-type: none"> 12 grapes allowed but key 4 are: <ol style="list-style-type: none"> Ugni blanc: floral lift – 50% of prod Baco 22A for fruitiness + weight – 40% of prod Colombard for light perfume Folle blanche: richness & scent Warmer region=> base wine higher in abv (8-11%) + lower acidity
DISTILLATION	<ul style="list-style-type: none"> AC -> all Armagnac to be distilled by 31st March H+1 in Armagnacais stills & distillate must be 52% to 72%abv <u>Armagnacais single column still</u> patented by Verdier (1818) with 2 chambers: (pre-heater + condenser) & baffled column i.e. heating chamber + perforated plates <ol style="list-style-type: none"> Low strength wine fills up pre-heater and gets warm by coil inside it. Warm wine transferred from top of pre-heater to heating chamber (i.e. baffled column) Heat at bottom of baffled column vaporises alcohol which is transferred back into 1st column's coil & collected at bottom of condenser
MATURATION	<ul style="list-style-type: none"> 3 types of 350-400l barrels: Limousin for quicker extraction / Alsace / Monlezun for hi tannins & earthy flavours 6-12mths; ageing in new barrels -> colour fixing & tannins Low abv, densely flavoured Armagnacs aged more slowly vs. Cognac => less reduction needed if aged enough
CLASSIFICATION	<ul style="list-style-type: none"> Sgle vineyard & vintages do exist (≠Cognac). Year starts 1st April VS/** Armagnac: 1 year ageing VSOP Armagnac: 4 year ageing XO Armagnac: 5 year ageing Amber colour Fruity aromas (plums to dried fruits) More full bodied vs. Cognac with medium to long finish
TASTING NOTE	

SPANISH BRANDIES

HISTORY	<ul style="list-style-type: none"> ▪ 900AD: first trace of distillation in Andalucia -> maybe the first distilled spirit in Europe ▪ 1580: mention of spirit production in Jerez. Aqua vitae to fortify local wines. ▪ Rise of commerce via Dutch merchants. Pot stills: alquitaras / Premium distillate: holandas ▪ 19th: 1st brandy exports from Gonzalez-Byass ▪ 20th: difficult post-Franco but still important support for sherry houses.
GRAPE VARIETIES	<ul style="list-style-type: none"> ▪ Grapes: Airen, Palomino from La Mancha or Extremadura. ▪ Low acidity + hi alcohol
DISTILLATION	<ul style="list-style-type: none"> ▪ Either in La Mancha or Jerez ▪ <i>Alquitara</i> (pot stills) product fullest-flavoured but bulk distilled in continuous stills ▪ 3 grades: <ol style="list-style-type: none"> 1. Holandas – distilled to 70%abv – fuller bodied - for Solera Gran Reserva 2. Aguardente to 80% abv lighter bodied – for entry level solera 3. Destilado to 85% or 94.8% abv ▪ Final blend = min 50% of distillate < 86%abv
MATURATION & TASTING NOTE	<ul style="list-style-type: none"> ▪ Minimum 1 year ageing. Gran reserva: min 3 years ageing ▪ Solera ageing system <ul style="list-style-type: none"> - Gran Reserva contain spirit for up to 150 years old separate solera - Solera => higher oxidation + greater flavour devt. ▪ Oak: <ul style="list-style-type: none"> - EU (ex-Oloroso or PX butts) for walnut & Plum or raisin flavours - US (ex-Fino) for fresh fruits & grilled nuts flavours#
OTHER	<ul style="list-style-type: none"> ▪ Penedes Brandy: <ul style="list-style-type: none"> - from Catalunya - made from mix of local grapes (e.g. Parelleda) and the Ugni blanc from Cognac - Entry level: column still + solera Premium: Charentais pot stills + static ageing in French oak - Torres -> solera aged / Mascaro -> standard but Limousin oak - Fuller style vs. French brandies

OTHER GRAPE SPIRITS

LEGAL REQUIREMENTS	<ul style="list-style-type: none"> ▪ EU 'wine spirits': distilled to below 86% abv ▪ EU Brandies: distilled to below 94.8 abv. w hi-strength alcohol < 50% of final blend. ▪ Other grape spirits: made from alcoholic residue left in grape skins after wine fermentation. ▪ Min ageing: 1yr or 6 mths if cask under 1,000l
BRANDIES	<ol style="list-style-type: none"> 1. <u>French brandies</u> <ul style="list-style-type: none"> ▪ Throughout France, made from surplus wine distilled into neutral alcohol and aged for min 12mths in wood. ▪ FINE: higher quality AOC spirit e.g. Fine de la Marne, de Bordeaux, de Bourgogne. Light distillates from the regions' grapes with short ageing (12mths). Use of lees to add character (e.g. Fine de Marne). 2. <u>German brandies</u> <ul style="list-style-type: none"> ▪ From imported base wines mainly ▪ Hi strength column still + short ageing before potential sweetening / flavouring ▪ Addition of 2% sugar + 1% other ingredients allowed. 3. <u>Other Brandies</u> <ul style="list-style-type: none"> ▪ South Africa (since 1672): use of Pot + column + 3-year ageing. Column still distillate often blended w pot still distillate ▪ Mexico: major brandy producer + drinker (Domecq's Presidente) ▪ US/AUS: both pot or column 4. <u>Pisco</u> <ul style="list-style-type: none"> ▪ ≠ pomace spirit but brandy. Grapes: Moscatel de Alexandria, Torrontel, PX ▪ Distillation in pot stills ▪ 4 types: Seleccion (30% abv + unaged); Especial (35%abv + short); Reservado (40% abv+ longer); Gran Pisco (longest) ▪ Ageing in Rauli wood. Aromas of Jasmine + orange blossom ▪ Specific Peruvian classification. Bolivia: named Singani and only from Moscatel de Alexandria.
POMACE DISTILLATES	<ol style="list-style-type: none"> 1) <u>Grappa</u> <ul style="list-style-type: none"> ▪ Raw material: <i>vinaccia</i> i.e. grape pomace. Its quality (freshness) will determine quality of final spirit. ▪ 15kg of vinaccia => 1 bottle of grappa ▪ Grape varieties: usually black grape variety for more interesting aromas ▪ Distillation: mainly discontinuous (pot still) <ol style="list-style-type: none"> a. Pot stills or baskets to put pomace & heat it b. Alcoholic vapours released into distillation column. c. Separation of heads, hearts & tails. Continuous distillation also used. ▪ Considerations: <ul style="list-style-type: none"> - Single vs. blend: Moscato: great on its own but Chardonnay not - Ageing: historically unaged. Now, a bit of ageing for a few. - Whole grape from must vs. vinaccia. 2) <u>Other pomace distillates</u> <ul style="list-style-type: none"> ▪ France: Marc (discontinuous) from local grape varieties in most wine regions. ▪ Portugal: Bagaleira ▪ Spain: Orujo

CALVADOS

APPELLATIONS	<ul style="list-style-type: none"> 4 designations: <ol style="list-style-type: none"> Basic eau de vie de cidre /poire de Normandie or Bretagne AOC Calvados AOC Calvados Domfrontais w 30% pears in blend Premium AOC Calvados du Pays d'Auge
RAW MATERIAL	<ul style="list-style-type: none"> 46 apple varieties allowed. 5 categories: <ol style="list-style-type: none"> Sour + acidic => freshness Bitter => tannins Bittersweet => sugar + tannins Sweet => sugar Blend requires sweet apples for alcohol + sour + acidic to stabilise fermentation Typical blend: 10% acid + 20% bitter + 50% bitter sweet + 20% sweet
FERMENTATION	<ul style="list-style-type: none"> 2 key stages: <ol style="list-style-type: none"> Apples crushed + placed in VATs Natural yeasts strain start working 6% abv cider AOC – 4 wk fermentation AOC Pays d'Auge – 6-8wks
DISTILLATION	<ul style="list-style-type: none"> AOC Calvados: single column still to give lighter racier spirit AOC Domfrontais: single column still over direct fire AOC Pays d'Auge: double distillation in Charentais still (like Cognac) to boost abv to 65-70% abv
MATURATION	<ul style="list-style-type: none"> Follows standard Brandy practice i.e. short period in new oak first and longer ageing in new oak. Large 1,000/2,000l VATs or 250 to 600l barrels
CLASSIFICATION	<ul style="list-style-type: none"> Age = youngest component in blend 4 categories: <ol style="list-style-type: none"> */Fine: min 2 years Vieux/Reserve: min 3 years VO/VSOP/Vieille r�serve: min 4 years XO/Extra/Napoleon/Hors d'Age: min 6 years

OTHER FRUIT SPIRITS

LOCATION	<ul style="list-style-type: none"> Mainly central Europe with use of stone fruits or wild berries 		
DEFINITION	<ul style="list-style-type: none"> Brandy: spirit made from fruit juice or fruit pulp or skin. Grape brandy: made from fermented grape juice (≠ pulp/skin) Pomace brandy: made from pressed grape pulp, skins & stems left after wine made Fruit brandy: all brandies made from fermenting fruit other than grapes (≠ fruit flavoured brandy) Eau de vie: colourless fruit brandy 		
RAW MATERIALS & FERMENTATION	<ul style="list-style-type: none"> 100kg fruits => 5l of alcohol => 10l of fruit spirit Key to use ripe untainted fruits <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> <p>Stone fruits</p> <ul style="list-style-type: none"> - Fermented into fruit wine (enough sugar) - Use/not of stones for almond notes (e.g. Kirsch) - Wild/natural yeasts for 2-4 wks fermentation => 'wine' around 5% abv - EU: no addition of sugar allowed </td> <td style="vertical-align: top; width: 50%;"> <p>Soft fruits</p> <ul style="list-style-type: none"> - Macerated in neutral alcohol (lower in sugar) <p>EU: no addition of sugar</p> </td> </tr> </table>	<p>Stone fruits</p> <ul style="list-style-type: none"> - Fermented into fruit wine (enough sugar) - Use/not of stones for almond notes (e.g. Kirsch) - Wild/natural yeasts for 2-4 wks fermentation => 'wine' around 5% abv - EU: no addition of sugar allowed 	<p>Soft fruits</p> <ul style="list-style-type: none"> - Macerated in neutral alcohol (lower in sugar) <p>EU: no addition of sugar</p>
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DISTILLATION	<ul style="list-style-type: none"> Continuous or discontinuous Potential use of 'bain marie' with lower temperatures for better retention of aromatics. 		
AGEING	<ul style="list-style-type: none"> No ageing but can be put in glass jars to mellow spirit esp. stone fruit to help esterification If wood aged, ash wood (less aggressive vs. oak) 		

SCOTCH WHISKY

DEFINITION	<ul style="list-style-type: none"> ▪ Whisky: Aged spirit with a base of fermented mash (water and sugar extracted from converted cereals). ▪ Single malt: from one distillery vs. Blended malt: blended from various distilleries
HISTORY	<ul style="list-style-type: none"> ▪ 1494: 1st official record of distillation involving malt, certainly for medicinal purposes. ▪ Like most spirits, whisky was the drink of the poor in the highlands and made from excess grain + sweetened with honey. ▪ 17th-18th: increasingly tight controls and taxes on production with eventual ban of small stills. ▪ lowland + highland whiskies made in different for export to England. ▪ Lowland: distillation of spirit for gin production in England ▪ Highland: smaller stills w double distillation ▪ Early 19th: Highlands smalls stills distillation banned. Underground distillation in Speyside, Kintyre + Islay. ▪ 1823: new Excise Act authorising small stills -> birth of the Scotch Whisky industry. ▪ 1827: new Coffey continuous still. Grain whisky became more popular vs. malt whisky. ▪ 1853: Andrew Usher mixed malt & grain. Example followed by John Walker, William Teacher, James & John Chivas. ▪ 1870s: business boost with Cognac phylloxera demise. ▪ Now: Scotch Whisky = 90% of Whisky in the world.

MALT SCOTCH WHISKY

RAW MATERIALS	<ul style="list-style-type: none"> ▪ 3 ingredients: malted barley, yeasts, water ▪ Production regulated by Scotch Whisky Act 1988 		
PREPARATION	<ol style="list-style-type: none"> 1. Malting of barley (insoluble starch -> soluble starch) <ol style="list-style-type: none"> a. Germination stimulated via 3 x 48h+ water immersions b. Germination continues in large drums with cool & humid air blown on barley for ~5 days c. Green malt (barley grains putting out shoots and roots) dried in a kiln d. Possibility to light a peat (i.e. semi-carbonised vegetation rich in phenolics) under kiln for peated flavours NB: barley variety not believed to influence taste of final spirit 2. Milling / Mashing (soluble starch to fermentable liquid) <ol style="list-style-type: none"> e. Malted grain ground into flour (=grist) f. Grist blown into mash tun + mixed with hot water @63-64C (strike point below which no conversion of starch in sugars and above which enzymes would be killed). NB: water usually from local sources but little impact. g. Hot water filters through grist, dissolving the sugars -> wort (sweet sugary liquid) h. Wort drawn off at the bottom of the mash tun, cooled and pumped into fermenter (washback). i. Hotter water added and collected in washback. j. Third hotter water added to flush out remaining sugar. Rest used as water for next mash. <p>Mashing: key for flavours. Too quick => cloudy wort (with solids) => malty flavours</p>		
FERMENTATION	<ol style="list-style-type: none"> k. Cool wort + yeasts for 48h to produce 7-10%abv wash <ul style="list-style-type: none"> ▪ Key stage: if short + cloudy wort => malty spirit/ if long + clear wortwash more acidic + devt of congeners 		
DISTILLATION	<ul style="list-style-type: none"> ▪ Double distillation in copper pot stills (discontinuous). Must be distilled to less than 94.8% abv ▪ Key influencers: shape, size, volume of charge, rate of distillation, condensing method. ▪ Cut point also critical: if late, heavily smoked malt (more phenolics towards the end) / if early: light fragrances. ▪ Process: <ol style="list-style-type: none"> 1. 1st distillation: in wash still => low wine 23%abv 2. Low wine distilled in spirit still with separation of foreshots (volatile) and feints (oily heavy parts) 3. Foreshots & feints added to low wine for next distillation in wash still 		
MATURATION	<ul style="list-style-type: none"> ▪ New make reduced in strength + placed in oak casks < 700l for minimum 3 years ▪ Wood gives colour + 70% of flavours to final spirit ▪ Wood: EU oak (ex-Sherry for dried fruits, clove, raisin & orange peel) US white oak (ex Bourbon for vanilla, pine, cherry & spices) ▪ 3 stages of ageing: <ol style="list-style-type: none"> 1) Removal of aggressive / sulphury notes via evaporation + thanks to cask inner surface work 2) Devt of oak-derived notes 3) Full interaction btw wood & spirit for more complex aromas. ▪ First fill barrel -> hi level of flavouring vs. second / refill barrels ▪ 'Finish': 1st ageing in oak for years 2nd ageing for months via decanting in sherry, rum, wine barrels to pick up further flavourings 		
BLENDED & BOTTLING	<ul style="list-style-type: none"> ▪ Now, all malts blended from different casks ▪ Spirits first reduced via demineralised water + chill filtered + potential use of caramel 		
LABELLING	<ul style="list-style-type: none"> ▪ Age = youngest spirit in the blend ▪ Single malt = from one single distillery. May be a mix from different years ▪ Blended malt (since 2005) 		
REGIONS & STYLES	<table border="0"> <tr> <td style="vertical-align: top;"> <p>A) Highlands (6)</p> <ul style="list-style-type: none"> ▪ Malty -> Blair Athol, Tullibardine ▪ Unctuous -> Clynelish, Pulteney ▪ Sweet -> Dalwhinnie ▪ Grassy -> Lochnagar ▪ Heavy -> Dalmore, Ben Nevis ▪ Fruity+citric -> Glenmorangie <p>B) Islay/Islands: no coal => peat to dry malt</p> <ul style="list-style-type: none"> ▪ Heavily-peated -> Lagavulin, Laphroaig ▪ Medium-peated -> Talisker, Highland park ▪ Unpeated -> Jura, Arran, Bruichladdich </td> <td style="vertical-align: top;"> <p>C) Speyside (2)</p> <ul style="list-style-type: none"> ▪ Light, fragrant, floral -> Glenfiddich, Glenlivet ▪ Richer, fruitier -> Balvenie, Macallan <p>D) Lowland/Campbeltown</p> <ul style="list-style-type: none"> ▪ Lowland (only 3 distilleries): Glenkinchie, Bladnoch, Auchentoshan. Light & gentle style ▪ Campbeltown: whisky capital in 20s. Springbank only survivor & only malted, distilled matured & bottled on site. </td> </tr> </table>	<p>A) Highlands (6)</p> <ul style="list-style-type: none"> ▪ Malty -> Blair Athol, Tullibardine ▪ Unctuous -> Clynelish, Pulteney ▪ Sweet -> Dalwhinnie ▪ Grassy -> Lochnagar ▪ Heavy -> Dalmore, Ben Nevis ▪ Fruity+citric -> Glenmorangie <p>B) Islay/Islands: no coal => peat to dry malt</p> <ul style="list-style-type: none"> ▪ Heavily-peated -> Lagavulin, Laphroaig ▪ Medium-peated -> Talisker, Highland park ▪ Unpeated -> Jura, Arran, Bruichladdich 	<p>C) Speyside (2)</p> <ul style="list-style-type: none"> ▪ Light, fragrant, floral -> Glenfiddich, Glenlivet ▪ Richer, fruitier -> Balvenie, Macallan <p>D) Lowland/Campbeltown</p> <ul style="list-style-type: none"> ▪ Lowland (only 3 distilleries): Glenkinchie, Bladnoch, Auchentoshan. Light & gentle style ▪ Campbeltown: whisky capital in 20s. Springbank only survivor & only malted, distilled matured & bottled on site.
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GRAIN SCOTCH WHISKY

LOCATION	<ul style="list-style-type: none"> 7 large distilleries, mostly in coastal Lowland locations
RAW MATERIALS	<ul style="list-style-type: none"> Wheat or corn + malted barley (less than 10%)
PREPARATION	<ol style="list-style-type: none"> Cereal cooked @144C in pressure cooker to hydrolyse starch Malted barley is ground and tepid water added to it (grist) Grist + hydrolysed cereal + 62.8C water in mash tun to convert starches in sugars Wort drawn off + cooled to 20C and pumped into fermenters
FERMENTATION	<ol style="list-style-type: none"> Cool wort + yeasts for 48h to produce 7-10%abv wash <ul style="list-style-type: none"> Key stage: if short + cloudy wort => malty spirit/ if long + clear wortwash more acidic + devt of congeners
DISTILLATION	<ul style="list-style-type: none"> Traditional Coffey continuous distillation to spirit <94.8% abv (other grain neutral alcohol for gin)
MATURATION	<ul style="list-style-type: none"> Min 3 years Wood: 1st fill US barrels (max 700l)
TYPES	<ul style="list-style-type: none"> Single grain (small quantities) vs. Blended grain (more than one grain distillery) Also controlled by Scotch Whisky Act 1988

BLENDED SCOTCH WHISKY

DEFINITION	<ul style="list-style-type: none"> Whisky made from blend of grain + malt whisky. Usually aged after blending
BLENDING	<ul style="list-style-type: none"> Key to maintain house style
HOUSE STYLES	<ul style="list-style-type: none"> Johnnie Walker (Diageo - #1 brand in world w 20m cs/yr) -> always an element of peaty whisky in blend Chivas Regal (Pernod Ricard - #3 brand w 5m cs/yr) -> lighter Speyside whisky blends Cutty Sark/J&B -> light spirit (post-prohibition consumer trend)

IRISH WHISKEY

HISTORY	<ul style="list-style-type: none"> 14th: potentially birthplace of whisky-making with the Celts. 18th: drink of the urban & rural poor. Regulations limited production but most Irish distillers continued to produce illicit poitin. Early 19th: rise of Irish whiskey towns and brands. Irish whiskey = most popular in Europe. Key centres: Dublin, Cork, Belfast, Derry. Key producers: John Jameson, John Power, Murphys. No move to Coffey continuous distillation system. Early 20th: Prohibition + Independence => industry decline 1960s: only 4 distillers 1966: Jameson+Power+Cork => Irish Distillers Ltd. 1973-89: IDL+Bushmills: monopoly 1987: Cooley new arrival 2005: IDL (now Pernod Ricard) sold Bushmills to Diageo
RAW MATERIAL	<ul style="list-style-type: none"> Midleton: various grains, mainly corn and barley. Up to 20-60% unmalted barley in the mash. Bushmills: malted barley, plus grain whiskey from Midleton Cooley: various grains incl. Corn, malted/unmalted/peated barley
DISTILLATION	<ul style="list-style-type: none"> Irish Distillery Ltd (IDL) template: triple distillation + unpeated, unmalted & malted barley Midleton: pot still distillate usually blended column still whisky. Redbreast only single malt. Midleton Pot still distillation: 2 pot stills for the first distillation -> 22-50% abv low wine 3rd pot still distils the feints -> low wine redistilled w feints to 50 to 78%abv -> pot feints 4th pot is the spirits still -> pot feints run through it to separate foreshots, new make & feints. Midleton Column still distillation (for grain whiskey) Beer column to remove heavy alcohols -> hydroselector -> rectifying column Bushmills distillation (Northern Ireland) Only malted barley + triple distillation in pot stills for malts. Final spirit 84% abv. Only Malt whiskeys produced but Black bush + original contain grains whiskeys from Midleton Light, delicate, floral and slightly grassy style. Cooley distillation (since 1987) More on Scottish template: double distillation in pot stills for malt & continuous for grain. Connemara: peated.
MATURATION	<ul style="list-style-type: none"> Min 3 years in wood (max 700l) w 1st fill EU oak and US oak for greater weight, sweetness and complexity Jameson: #1 brand w/ 4m cs/yr. Irish whiskeys are lighter in colour and body with spicy, fruity flavours + oily texture

JAPANESE WHISKY

HISTORY	<ul style="list-style-type: none"> 1923: first Whisky distilled by Suntory's Yamazaki Now: 6 distilleries.
PRODUCTION	<ul style="list-style-type: none"> Scottish template: <ul style="list-style-type: none"> Malted barley (sometimes imported from Scotland) and often peated Distillation in pot stills for single malts Continuous distillation for grain Key difference: clear worts fermented for longer with specific yeasts => no malty whisky + clean flavours
MATURATION	<ul style="list-style-type: none"> Usually US old oak + small amount of Japanese oak for light incense flavours
BUSINESS	<ul style="list-style-type: none"> Mainly blend dominated but single malts gaining popularity abroad Kabukin: #1 brand w 3m cs/yr Hakushu: largest malt distillery in the world

AMERICAN WHISKIES

HISTORY	<ul style="list-style-type: none"> 18th: large arrival of Scots & Irish Maryland / Pennsylvania -> rye-based spirit for liqueur Kentucky -> corn-based spirit for whiskey shipped in barrels branded 'Bourbon county' 19th: Bourbon + rye grow in parallel with Temperance movement against alcohol 1914: no Whiskey in Tennessee & Kentucky 1920: Volstead act -> no whiskey for 13 years + rebirth stopped by WWII 1945: new tastes => rye disappeared in favour of lighter spirits 1980s: flavours back in fashion and rise of premium brands e.g. Wild Turkey + rye comeback.
BOURBON (JIM BEAM, WILD TURKEY, MAKER'S MARK)	
LEGAL REQUIREMENTS	<ul style="list-style-type: none"> Legally -> 'Straight' Bourbon is made: <ul style="list-style-type: none"> - from mash bill containing min 51% corn + grains (most commonly rye) + malted barley - be produced in the US - Max 80% abv distillate & aged at no more than 62.5% abv in new charred oak barrels (max 200l) for min 2 years - No colour adjustment Small Batch bourbon: Bourbon from selected barrels and Single Barrel bourbon (both subject to master blender selection)
RAW MATERIALS	<ul style="list-style-type: none"> Mash bill ingredients are: <ol style="list-style-type: none"> Malted barley -> enzymes + biscuit sweetness flavours Corn -> for soft sweetness Rye -> gives attack. Aromatic, lemon-scented – dusty when young + spicy lift on finish Wheat (rare) -> gentle roundness + notes of honey The less corn, the fuller the flavours
PREPARATION	<ul style="list-style-type: none"> Cooking & mashing <ol style="list-style-type: none"> Corn ground + cooked @ high temperatures with little portion of malted barley to help liquefy corn Corn mash cooled + addition of rye/wheat Once rye cooked, the rest of malted barley is added to convert the starches into fermentable sugars Backset <ol style="list-style-type: none"> Mash pump into fermenters (steel/wood) with backset (i.e. acidic liquid residue at bottom of beer column) Backset changes the pH of mash to make it more acidic + help yeast devt + lower bacterial infection risk <p>NB: backset = min 25% of total mash. If too much -> dilute + acidic -> loss of flavours. If too little -> mash too thick</p>
FERMENTATION	<ul style="list-style-type: none"> 3 days Yeasts: major contributor to flavours + house secret
DISTILLATION	<ul style="list-style-type: none"> All Bourbons + Tennessee: 1st distillation in single column ('beer still') made of copper/stainless steel with: <ol style="list-style-type: none"> Mash pumped at the top, zigzags downwards, meeting live steam from bottom of still Alcohol stripped off from collection plate at different levels and passed down worm condenser. NB: non alcoholic residue at bottom of column used as back set for next mash. 2nd distillation: Low wines put in basic pot still (the doubler) to remove impurities & boost abv. Alternatively: use of thumper for 2nd distillation with hydroselction column New spirit collected = white dog
MATURATION	<p><u>Wood</u></p> <ul style="list-style-type: none"> White dog must be filled in new charred oak barrels (200l max) US white oak => colour, vanillin, coconut, pine, chocolate, tobacco and cherry Heavy char removes any aggressive element in white dog. <p><u>Warehousing</u></p> <ul style="list-style-type: none"> Traditionally: rack houses in Kentucky 7 to 9-storey building with large temperature differences between top & bottom Premium brands usually from middle floors. Blends between floors to achieve house styles.

TENNESSEE WHISKEY (JACK DANIEL'S – 10M CS/YR)

LEGAL REQUIREMENTS	<ul style="list-style-type: none"> Similar requirements: <ul style="list-style-type: none"> - corn not required to be the main grain - Max 80% abv distillate and aged at no more than 62.5% abv in new charred oak barrels (max 200l) for min 2 years - No colour adjustment - Lincoln County process (introduced 1823)
PRODUCTION	<ul style="list-style-type: none"> Difference vs. Bourbon: use of Lincoln County process whereby white dog is filtered through maple charcoal to mellow it & add smoky flavours

RYE WHISKEY (HUDSON, TEMPLETON)

	<ul style="list-style-type: none"> 1st US whiskeys were made from rye in the Monongahela valley. Rye whiskey = 51% of mash bill is rye. Same production as Bourbon. Key brand: Hudson (Manhattan), Templeton.
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CORN WHISKEY

PRODUCTION	<ul style="list-style-type: none"> Minimum 80% corn and no ageing required. Clear Rise of small producers in California and the West Coast
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CANADIAN WHISKIES

	<ul style="list-style-type: none"> Dozen distilleries produce soft, gentle & easy to drink whisky Corn = main cereal but possibility to add up to 9.09% of 'other imported liquors' to the blend e.g. wine, port, etc. Column still distillation + Min 3 years ageing in oak (ex-Bourbon most common). Key brands: Crown Royal (Diageo – 5m cs) and Canadian club (Beam – 2m cs). Other brands follow Scottish template.
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VODKA

HISTORY	<ul style="list-style-type: none"> ▪ 8-9th: first distilled spirits in Russia and Poland. ▪ 1405: 1st written evidence of Vodka production in Poland. ▪ Mid 15th: grain spirit distilled in Moscow (Chudov monastery) after visit in Italy. Initially medicine in both PL & Rus. ▪ 1474: Ivan the Terrible imposed monopoly on production in Russia ▪ 1546: King Olbrecht taxed spirits in PL + distillation open to all Poles. PL: heartland in Krakow, Gdansk & Poznan (distilling capital of PL). Rye considered premium grain in both countries. ▪ 17th: Top Polish & Russian Vodka makers were distilled their spirits up to 4 times. Peter the Great designed a still for triple distilled Vodka which was then redistilled with anise. ▪ 1756: Russian established 2-tier system with 1) hi quality Vodka for & by gentry 2) state distillers for masses ▪ 18th: use of charcoal to filter final spirit in both countries ▪ 19th: use of proto-continuous stills for further purity ▪ 1879: Lars Olsson Smith created iconic Absolut Rent Brannvin ▪ Late 19th: continuous stills with rectifying columns. Smirnoff unsuccessful Russian who started making Vodka in 1861, sold its name rights. Sold on again to Heublein who became very successful in late 1950s ▪ 1950s: rise of 'white whiskey' in US with rise of drinks & cocktails. ▪ 1980s: Vodka became hip again via Smirnoff, Absolut. Grey Goose brand grown by Sidney Frank sold it for \$2bn to Bacardi. 			
LEGAL ASPECTS DEFINITION	<ul style="list-style-type: none"> ▪ Unaged, neutral spirit distilled to a high strength so that little of the base material character remains. ▪ EU Vodka = neutral spirit min 96% abv where rectified alcohol filtered to selectively reduce organoleptic properties ▪ US/CAN Vodka = min 95% abv + min bottling 40% abv ▪ 'Voda' means 'water' in Russian. 			
RAW MATERIAL	<ul style="list-style-type: none"> ▪ Any fermentable agricultural product ▪ Hi quality <- grain / potato ▪ Lower quality <- corn ▪ Sweeter <- molasses 			
PREPARATION	<ul style="list-style-type: none"> ▪ Similar to whiskey: <ol style="list-style-type: none"> 1. Grains ground 2. Mixed with water into mash 3. Cooked under pressure to hydrolyse starch Potential addition of malted barley to help liquefaction during cooking but usually addition of enzymes to help conversion of starches into fermentable sugars. NB: if raw material is cane /sugar beet -> no enzyme added 			
FERMENTATION	<ul style="list-style-type: none"> ▪ Relatively quick - 40h ▪ 6-10% abv depending on yeasts ▪ Key not to blend too many grains for better purity ▪ Bacterial risk can be reduced w deionised water. ▪ Use of demineralised, deionised, softer water to kill nuances of flavours (contrary to whisky) 			
DISTILLATION	<ul style="list-style-type: none"> ▪ Mostly multiple columns but some premium Vodkas use pot stills e.g. Ketel. ▪ Distillation to min 96% abv. Objective: total removal of congeners. ▪ Purity achieved by removing methanol, propanol & butanol to keep ethanol and character of base ingredient. To add character, key options are: <ul style="list-style-type: none"> ➢ % ethanol (the higher, the fewer unwanted alcohols) ➢ Addition of lower strength spirit ➢ Ageing (Absolut) ➢ Addition of glycerol for mouthfeel ➢ Rectify to lower level (PL) for more flavours of base ingredients 			
FILTRATION	<ul style="list-style-type: none"> ▪ Mostly through charcoal to soften spirit via absorption of heavy + coarse characteristics ▪ Filtration ≠ quality. Absolut & Finlandia do not filter thanks to top technology distillation. 			
COUNTRIES & STYLES	<ol style="list-style-type: none"> 1. Russia 2. Poland 3. Sweden 4. Finland 5. Others 	<p>Wheat</p> <p>Rye</p> <p>Potatoes</p> <p>Winter wheat</p> <p>Barley</p> <p>Corn</p>	<p>Vinous texture; Sweet midpalate; Dry finish w hints of anise</p> <p>Soft, clean; More citric nose; Sweet oily texture; Zesty spicy finish</p> <p>Full bodied; Creamy texture</p> <p>Vinous texture ;Sweetest midpalate; Dry finish w hints of anise</p> <p>Clean, crisp (≠ oily); Lightest in style</p> <p>Soft & delicate</p>	<p>Cristal / Charodei / Altai</p> <p>Wyborowa / Belvedere</p> <p>Luksusowa / Chopin</p> <p>Absolut</p> <p>Finlandia</p>
<p><u>Brands</u></p> <ul style="list-style-type: none"> ▪ Neutral -> Smirnoff / SKYY ▪ Characterful -> Grey Goose (Fr), Ketel (NL) from pot still, Circo (made grapes) by Diageo (Fr). ▪ Smirnoff (Diageo) #1 w 25m cs/yr; Absolut (Pernod Ricard) #2 w 11m cs/yr; Grey Goose (Bacardi) 4m cs/yr <p><u>Flavoured vodkas</u></p> <ul style="list-style-type: none"> ▪ Flavouring goes back nearly as far as initial vodkas and depending on countries' fruit. ▪ Best of all: Zubrowka flavoured with grass from Bialowieza Forest (grass high in coumarin) <p>Production methods:</p> <ol style="list-style-type: none"> 1. Maceration at room temperature 2. Addition of natural flavouring 3. Zubrowka: Vodka passed through dried grass 4. Addition of artificial essences (cold compounding) 				

RUM

HISTORY	<ul style="list-style-type: none"> 17th: Caribbean sugar rush for the 'white gold'. Remainders of sugar molasses distilled to maximise return 18th: Rum fashionable in smart UK as equal to Brandy. Europe increasingly dependent on sugar 18th-mid 19th: Barbados then Jamaica then Haiti and finally Cuba each dominated sugar & rum production 1862: Don Facunado Bacardi produced the 1st light rum in Santiago (Cuba). At that time: Jamaica -> intense & pungent ; Guyana -> Rich & sweet ; Barbados -> slightly more delicate 20th: Cuba dominating with boost from Prohibition but didn't build on success until recent resurgence.
RAW MATERIAL	<ul style="list-style-type: none"> Cane either hand or mechanically cut and then crushed to extract juice. Juice then boiled down to sugar crystals. Black residue = molasses. 2.5kg molasses => 1L of rum 57% abv Cane juice / concentrated cane juice or molasses.
PREPARATION	<ul style="list-style-type: none"> Molasses have a v. hi concentration of sugar so yeast would not survive Molasses after first diluted with water before fermentation. The more dilution, the less sugar, the lighter the rum. Usually 50/50
FERMENTATION	<ul style="list-style-type: none"> Addition of yeasts, usually own strains from producers. 24h for light rums / up to 14 days for dark rums Short fermentation for light rums and longer fermentation for heavier rums with more congeners devt.
DISTILLATION	<p>Light / white rums (Coffey stills single or multiple linked)</p> <ul style="list-style-type: none"> Column stills allow to collect spirit at lower strength w fruitier flavours (e.g. Havana Club / Bacardi) White rums usually unaged <p>Medium bodied / Golden rums: often pot / column or both. Colour from oak or spirit caramel</p> <p>Heavy / Dark rums (pot stills)</p> <ul style="list-style-type: none"> Usually made from longer ferments. Use of retorts to produce higher strength spirit after 1 distillation Use of hi and low wines from previous distillation: <ol style="list-style-type: none"> Alcohol vapour from pot into low wine retort that contains low wine + water Second retort (hi wine retort) where vapour is condensed Heart of spirit collected @ 85% abv. Rest used for redistillation.
MATURATION	<ul style="list-style-type: none"> White rums: no time in oak with some exceptions e.g. Bacardi first aged and then filtered to remove colour Light rums: only a few months to avoid oak dominated flavours Pot still rums: longer maturation to develop rich tropical aromas. 1 yr ageing in Caribbean = 3 years in Scotland due to tropical conditions. Angel's share: 6% of evaporated abv/year. Oak: mainly US from bourbon industry excl. rhum agricole (Cognac French oak barrels).
STYLES OF RUM	<p>1-LIGHT - Cuba & Latin America</p> <ul style="list-style-type: none"> Bacardi (#1 brand w 20m cs/yr) <ul style="list-style-type: none"> Light bodied, clean, floral, delicate rum. Undisputed leader in volume. 1st produced in Cuba by Don Bacardi. Fermentation with own yeast strains. Made from molasses + distilled in linked columns. Charcoal filtering after distillation + ageing even on whites Latin America: mainly light styles Havana Club (#4 brand): Mix of 75% abv aguardiente & 96% abv spirit after ageing for more complexity <p>2-LIGHT - Trinidad</p> <ul style="list-style-type: none"> Close to Latin American style despite proximity to Guyana Dominated by Angostura. Use of molasses + hi tech multiple columns for 6 different styles of rum. <p>3-MEDIUM - Barbados</p> <ul style="list-style-type: none"> Historically, 1st major volume rum producer. Medium-weight, sweetish, elegant perfumed rums. Typical use of rich pot-stilled distillate in the blend. 3 distilleries: 1. Mount Gay 2. West Indies rum distillery (rum for Malibu + Cockspur) 3. Foursquare (Field's #1 white rum) <p>4-RICH - Guyana</p> <ul style="list-style-type: none"> Rum distilling since 1650 (UK colony). Traditional 'Navy blends' i.e. richer, heavier, darker style e.g. Demerara. Pot & column stills. Recent rise of El Dorado brand and now wide breadth of styles. <p>5-RICH - Jamaica</p> <ul style="list-style-type: none"> Long heritage of rich, aromatic rums, mostly produced in pot stills where fermentation as long as 14 days. Specific process with use of dunder to boost acid and flavour creation -> Home of high ester rums pungent (e.g. Wray & Nephew). Appleton Estate distillery's Appleton extra -> notes of leather, honey spices tobacco & dried fruits <p>6-Rhum agricole (Guadeloupe, Martinique)</p> <ul style="list-style-type: none"> Made from cane sugar juice (≠molasses). 1st made in early 20th. Juice extracted from cane sugar straight to fermenters. Short fermentation => vesou (wash) 4.5-9%abv. Distillation in single column still (// Armagnacais still) => lower strength distillate. AC Martinique -> 65% < distillate < 75%abv Different styles according to: 1. Fermentation time 2. Sugar levels in wash 3. Shape & config of column Whites -> unaged & often mixed w lime & sugar for ti'punch cocktail. Ambre/Paille: min 18mths ageing. Vieux: min 3 yrs Pungent w aromas of unripe banana, apple & vegetal notes (grass)+ slightly oily texture. <p>7-Rhum industriel (Guadeloupe/Martinique/La Réunion)</p> <ul style="list-style-type: none"> Use of molasses. Mainly from La Réunion. Soft style. <p>8-Navy blends</p> <ul style="list-style-type: none"> Captain Morgan (Diageo - #2 brand) from Jamaica. Light column still rum blended with Demerara-style rum + Jamaican rum + sweet caramel. Slight treacle finish. <p>9-Other rums: Philippines (Tanduay - #3 brand worldwide), India, South Africa & Australia.</p>

CACHACA

- Raw material:** cane juice (largest cane producer in the world) & sometimes use of corn starter
- Distillation:** pot still, linked pot stills but **usually column still**. **Ageing w different woods but mostly sweetened (max 6g/l)**.
- Traditionally lower abv (for more vegetal notes) vs. modern Cachaca (more like Vodka). In Caipirinha w lime & sugar.

TEQUILA

HISTORY	<ul style="list-style-type: none"> Nahuatl tribe from pre-Colombian Mexico => Agave = personification of fertility goddess into versatile plant. Tequitl: 'the working place'. 1608: Mezcal wine mentioned during Spanish occupation. 1636: Mezcal wine legalised. 1795: Modern Tequila industry born with distiller's license given to José Maria Cuervo. 19th: Boom in Mezcal wine around the town of Tequila ~1948: invention of Margarita which helped boost sales in the US Now: resurgence of Tequila via premium brands.
BORDERS & REGULATIONS	<ul style="list-style-type: none"> Tequila must be made from min 51% blue agave grown & distilled in Jalisco state, Nayarit, Guanajuato, Michoacan or Tamaulipas (since 77) 2 types of Tequila: <ol style="list-style-type: none"> Puro de Agave (100% Agave) Tequila regular (mixto): up to 49% non agave fermentable sugars allowed during fermentation 5 classifications: <ol style="list-style-type: none"> Plata / Blanco / Silver: white unaged Gold: blanco + caramel tinting Reposado: 2-12mths in 10-30,000l oak VATs (pipones) Anejo: min 12mths in 600l barrels Muy anejo: min 3 years
RAW MATERIAL	<ul style="list-style-type: none"> Agave: succulent related to the amaryllis (≠cactus). Grown throughout Jalisco but those for Tequila around village of Tequila and the highlands. Takes 6 years to mature and most are harvested between 7-10 years. Pina: starchy heart. Quality of plant = key influence on final spirit Terroirs: <ul style="list-style-type: none"> Highland Tequila -> fruitier aromas w green mango + poire William flavours Lowland Tequila -> earthier & more robust Tamaulipas -> more vegetal w lime zestiness
PREPARATION	<p>A. Cooking</p> <ul style="list-style-type: none"> Leaves taken off to leave only pinas (core/heart) which is full of carbs. Heating in halves naturally to encourage creation of sugar. 2 methods: <ol style="list-style-type: none"> Horno: brick oven for 36-48h + caramelised pinas left in oven for 2 days to let distiller collect liquefied sugars (<i>aguamiel</i>) NB: Roasting gives the final Tequila a more smoky flavours Autoclave: pressurised cookers for 6h. Quicker but can be aggressive and lead to excess methanol in final spirit. <p>B. Milling</p> <ul style="list-style-type: none"> Ovens emptied. Soggy fibrous matter from cooking crushed into aguamiel juice <i>Aguamiel</i> juice + optional other fermentable sugars (usually molasses or corn-based syrup) for <i>mixto</i>
FERMENTATION	<ul style="list-style-type: none"> Commercial yeasts (for mixto) or own yeast strains (for puro) or wild yeasts (Tapatio Tequila maker) – Key for flavours 24-72h normally and up to 10 days for wild yeasts ferments. 5-7% abv wash
DISTILLATION	<ul style="list-style-type: none"> Mostly stainless steel continuous stills. Otherwise, double distillation: 1. copper/stainless steel pot (20% abv) 2. Pot/continuous still (-> 55% abv) Max 55% abv v pungent distillate. Never highly rectified to retain vegetal, earthy character
MATURATION	<ul style="list-style-type: none"> Majority esp. whites/blanco -> reduced & bottled Reposados: in <i>pipones</i> for 2-12mths Anejos: less than 3 years ex Bourbon barrels mostly. NB: wood can easily overtake agave flavours so most anejos are less complex vs. reposado. Muy anejo (since 2006): min 3 years in oak barrels max 600l
BRANDS	<ul style="list-style-type: none"> #1 Jose Cuervo w 4.4m cs/yr #2 Sauza – 3m cs/yr #3 Patrón – 2m cs/yr
TASTING NOTES	<ul style="list-style-type: none"> Waterwhite colourless to golden Vegetal (agave, bell pepper, grass), smoky, peppery, citrus. Some coconut, vanilla if aged. Light to medium bodied

MEZCAL

DEFINITION	<ul style="list-style-type: none"> Spirit from any type of agave (wild, Silvestre, tobala, espadin) and from anywhere in Mexico. Most famous: Oaxaca. Name means 'oven-cooked agave'
PRODUCTION	<ul style="list-style-type: none"> Relatively small scale (6m litres produced each year in Mexico). Production: <ol style="list-style-type: none"> Pinas first roasted in pits or clay ovens, then crushed in a mill and placed in fermenters. Usually wild yeasts so fermentation up to 30 days. 1 distillation for most rustic and 2 for better ones w separation of heads, heart & tails. Mostly unaged and to drink neat. Best quality brand: Del Maguey Oaxaca state tend to have a worm in the bottle. NB: worm not required and has no hallucinatory properties.

GIN

HISTORY	<ul style="list-style-type: none"> 14th: juniper berries believed to cure stomach problems + effective vs. Black death 1572: Franciscus Sylvius of Leiden (Flanders) made the first recorded eau de vie de genievre. 1575: 1st distillery by Lucas Bols. Genever is born. 17th: Juniper distillates = NL speciality. UK preferred anise-based spirit at that time. UK's William of Orange encouraged distillation to modernise agriculture + replace brandy (due to war vs. Fr) 1720: 90% of English spirits distilled in London. Gin craze in first half amongst workers. 1761: gin production granted only to large distillers to curb proletariat's consumption. 1803: 9 producers control 90% of London's distilling capacity incl. Booth, Burnett, Gordon & Tanqueray. Rise of 'dry' style. 1827: Coffey still => devt of more complex recipes. Gin becomes more acceptable and rises amongst middle class. Early 20th: the alcohol for cocktails in the US before Vodka in 60's Now: mini revival thanks to brands like Bombay Sapphire and resurgence of cocktails.
DEFINITION	<ul style="list-style-type: none"> EU Gin: done 'by flavouring a neutral spirit made from agricultural base of min 96%abv with natural (or natural identical) flavouring so that the taste is predominantly of juniper' . Distilled gin: neutral spirit redistilled in stills in the presence of juniper & other botanicals. Possibility to add further flavourings post redistillation. London Gin: style of distilled gin with all flavours from botanicals added during redistillation + water + minute amount of sugar (sugar being the only allowed added additives). Can come from anywhere. Compounded gin: done by adding essences or flavourings to ethyl alcohol ≠ gin Min bottling strength 37.5%abv (US: 40%abv). Plymouth gin must come from Plymouth. Use of sweet botanicals only.
RAW MATERIALS	<ul style="list-style-type: none"> Base spirit: usually wheat or rye-based redistilled to high abv and then reduced to 60% abv with demineralised water. Botanicals: <ul style="list-style-type: none"> - Junipers: legally only botanical necessary for gin. Italy + ex-Yougoslavia -> pine like notes + leather + lavender hints - Coriander seed: for premium gin. Moroccan -> peppery; East EU+Rus -> spicy, citric; India -> citric - Angelica root -> musty, earthy, dry, woody - Orris root -> scented, earthy aromas of violet roots & leaves. - Dried citrus peels: not all gins, 1st aromas released when gin diluted. Beefeater: Sevilla oranges for bitter edge. Plymouth: sweet oranges for fresh zestiness - Cinnamon, almonds, liquorice, angelica seeds, etc.
DISTILLATION	<ul style="list-style-type: none"> Base spirit: pH neutral (≠whisky's mash) which means that the spirit will not interact with copper pot still. Key influences: shape & size of still + rate of distillation Process: <ol style="list-style-type: none"> Spirit reduced to ~60% abv with demineralised water Addition of botanicals Distillation in pot still with botanicals' essences mingling with alcohol vapour before condensation Essences evaporate in the following order: 1. Citrus 2. Juniper 3. Spices (e.g. coriander) 4. Orris / rooty notes Spirit cut usually before roots' essences overtake spirit. The heart is collected at 80-85% abv. Key quality considerations: <ol style="list-style-type: none"> Quality of botanicals Recipe mix + balance use of reflux cut point Beefeater: 24h maceration of botanicals in spirit before distillation Gordon's / Tanqueray: almost immediate distillation Bombay Sapphire / Hendrick's: carterhead stills with basket suspended in the still
MATURATION & BOTTLING	<ul style="list-style-type: none"> No ageing. Aromas held together by alcohol so dilution will create loss of aromas. Research has shown that 40% abv is ideal to retain most aromatics. Legal minimum 37.5% abv
OTHERS	<ul style="list-style-type: none"> Compounded gin is made by adding steam distilled or industrial essences to a neutral alcohol Fruit gins are liqueurs. They are made by adding fresh fruits or fresh fruit essence to a gin e.g. sloe gin. Plymouth gin: any gin distilled in Plymouth. Nowadays, only Black Friars distillery (Pernod Ricard) left. More roots in the botanical mix -> more earthy notes and less dry vs. London Gin. 41.2% abv bottling strength.
BRANDS	<ul style="list-style-type: none"> Gordon's (Diageo) #1 w/ 4m cs/yr; Bombay Sapphire (Bacardi) #2 w 2.5m cs/yr and Beefeater (Pernod Ricard) #3
TASTING NOTES	<ul style="list-style-type: none"> Water-white colourless. Usually medium intensity aromas w Juniper, coriander, orris root, angelica, citrus peel.

GENEVER

PRODUCTION	<ul style="list-style-type: none"> Base: malt spirit 'moutwijn' (i.e. mash of wheat, barley & rye) redistilled with juniper + other botanicals in pot stills Moutwijn diminishes aromas of juniper and gives it a richer texture. Styles: <ul style="list-style-type: none"> - Oude genever: no ageing. Min 15% Moutwijn - Jonge genever: max 15% moutwijn - Graanjenever: no moutwijn - Korenwyn: aged in casks (max 700l) + min 51% moutwijn. German Genever -> Wacholder (double distilled).
KEY BRANDS	<ul style="list-style-type: none"> Bols (1575) and de Kuyper (1695).

ANISE & OTHER ANISE-FLAVOURED SPIRITS

HISTORY	<ul style="list-style-type: none">Anise-extracts originally used as a medicine for stomach aches and circulatory problems.18th: absinthe produced by Mme Henriod in Switzerland. Her Elixir d’Absinthe share a lot of ingredients with the Chartreuse and was used as a medicinal spirit.1787: recipe passed on to Henri Dubeid and Henri Louis Pernod that commercialised it.19th: big success of Absinthe boosted by antimalarial properties in foreign legion + artistic world’s endorsement.1860: L’heure verte: accepted bourgeois ritual. Absinthe craze.Late 19th: anti-absinthe movement started => 1915: Absinthe banned in France.1928: launch of Pastis by Pernod following Absinthe’s ban1932: launch of Ricard. Top selling spirit brandNow: some Absinthe allowed in France.
DEFINITION	<ul style="list-style-type: none">EU = must take their flavours from star anise, green anise and / or fennel and should be the most dominant aroma when mixed with neutral alcohol
PRODUCTION	<ul style="list-style-type: none">Base spirit: neutral alcohol obtained from column still distillation.Flavours obtained by: a. Maceration b. Distillation c. Addition of aniseed-flavoured extracts d. Combination of these <p>A. Absinthe</p> <ul style="list-style-type: none">Ingredients:<ol style="list-style-type: none">Grand wormwood – ancient medicinal herb recommended by Pythagoras to aid childbirth for musty floral notes & bitternessStar anise for flavourGreen anise for flavourFennel for flavourPetite wormwood for colour (jade)Process:<ol style="list-style-type: none">24h maceration of botanicals in hi abv alcohol (traditionally wine based)Flavoured spirit diluted and redistilled to 80% abvColouring plants added for short maceration<p>NB: most new absintnes made by adding extracts to alcohol. Only real Absinthe will ‘louche’, not those made from extract.</p><i>Thujone</i> levels: max 10mg/l. Thujone: terpene contained in wormwood with hallucinogenic properties. <p>B. Pernod & pastis</p> <ul style="list-style-type: none">Ingredients: liquorice added to botanical mix.<u>Pernod</u>: Neutral alcohol macerated with liquorice + distilled and rectified star anise & fennel blended with neutral alcohol and distillates of other botanicals. Combination blended, sweetened, coloured and bottled.<u>Pastis</u>: Liquorice roots must be part of the botanical mix<ol style="list-style-type: none">dry ingredients (mugwort + star anise + cardamom + sage and 40+ other botanicals) macerated for 3 monthsblending with distillates and left for a monthMax sugar 100g/l<u>Ricard</u>: Anethol extracted from anise + fennel and blended with alcohols infused with liquorice root. Blend left to macerate in alcohol flavoured with other botanicals. <p>C. Ouzo, raki and other anise drinks</p> <ul style="list-style-type: none"><u>Ouzo</u> (Gr): similar to Pastis. Made with a neutral alcohol redistilled with anise + optional other botanicals & mastic. Max 50g/l sugar Must be produced in Greece<u>Raki</u> (Turkey): raisin/sultanas spirit redistilled with anise. More subtle & mellow.<u>Raki</u> (Lebanon): pomace-based => drier vs. Turkish Raki<u>Pacharan</u> (ES): sloe-berry infused anise. From dry to semi to sweet. <p>D. Akvavit (Scandinavia)</p> <ul style="list-style-type: none">Spirit flavoured with spices and herbs of which caraway must dominate.Blend of caraway + neutral grain spirit redistilled with other botanicals incl. dill, fennel, cumin, coriander & orange peel.Some aged in oak.Know as Snaps in Denmark & Sweden.

LIQUEURS

HISTORY	<ul style="list-style-type: none"> ▪ Most ancient liqueurs: linked to folk medicine ▪ 1575: 1st commercial liqueur by Lucas Bols. ▪ 16-17th: dominance of NL on distillation + spice trade => dominance of liqueur market too. ▪ Mid 19th: liqueurs change to post meal, cocktail-making drinks ▪ Now: different consumption again with cocktails
DEFINITION	<ul style="list-style-type: none"> ▪ <i>Liquifacere</i> = dissolve in latin -> production involves extraction of flavouring ingredients within alcohol ▪ EU: spirit drink with: min 100g/l sugar <ul style="list-style-type: none"> - obtained by flavouring ethyl alcohol of agricultural origin / distillate of agr. origin / spirit(s) with cream, milk, fruit, wine or flavoured wine ▪ Liqueur = alcohol + sugar + flavouring material + water.
PRODUCTION	<ol style="list-style-type: none"> 1. Base spirit mixed with flavouring ingredients via maceration / percolation or infusion for days / weeks / months 2. Distillation either in pot still (most common to extract flavours) or via steam distillation (for delicate components) 3. Compounding: blending in of essences and/or concentrates 4. Finishing/colour adjusting: <ul style="list-style-type: none"> - Many liqueurs settle in large old wooden casks for better integration. - Sweetening is done once spirit is flavoured and reduced in strength for the sugar to better dissolve in alcohol. Can be sucrose or liquid glucose. - Colouring done towards the end of the process from natural sources or food colourings.
STYLES	<p>A. Cream liqueurs</p> <ul style="list-style-type: none"> ▪ Composition: 40% solids i.e. butterfat, caseinate, sugar & non fat milk solids ▪ Process: 1. Cream sugar + alcohol added to solution of sodium caseinate <ol style="list-style-type: none"> 2. Homogenisation @ 55C + 300 bar pressure twice 3. Mixture cooled, coloured and flavoured ▪ Bailey's: created in the 70s and now largest selling liqueur brand. <p>B. Herbal liqueurs</p> <ul style="list-style-type: none"> ▪ Chartreuse liqueurs: hi alcohol natural distilled flavour extraction as base. Use of up to 100+ flowers, herbs. No artificial colouring. Green, yellow Chartreuse or VEP. ▪ Bénédictine: blend of 5 batches of 27 botanicals macerated, distilled, aged separately and blended + sweetened. ▪ Cuarenta y tres (ES): 43 herbs used ▪ Izarra (ES) ▪ Strega (I): 70 botanicals macerated, redistilled, aged in VATs and coloured w saffron. ▪ Galliano (I) 40 herbs with anise and honey notes <p>C. Fruit liqueurs</p> <ul style="list-style-type: none"> ▪ Citrus/Curacao: made from orange peels + other citrus + leaves + roots. Mixed, redistilled + blended w spirit ▪ Citrus/Triple sec: double distilled curacao using sweet orange peel ▪ Citrus/Cointreau: Triple sec mixed with bitter orange + citrus ▪ Citrus/Grand Marnier: bitter orange peel macerated in brandy, redistilled, blended with Fine Champagne Cognac + sugar syrup and herbs and aged ▪ Citrus/Mandarine Napoleon (Be): tangerine essential oils + mature Cognac ▪ Citrus/Limoncello: lemon ▪ Cherry/Maraschino: 1. marasca cherry stones crushed & distilled 2. Distillate macerated with cherry pulp 3. Double distillation 4. Filtering 5. Ageing in ash VATs 6. Finish with sugar syrup 7. More ageing. ▪ Cherry/Heering: same as Maraschino but aged in solera + botanical ingredients ▪ Fruit brandies: crushed fruit macerated in spirit + sweetened. <p>D. Whisky liqueurs</p> <ul style="list-style-type: none"> ▪ Drambuie: whisky + cloves, nutmeg, herbs + honey ▪ Glayva: whisky + orange peel, herbs and heather honey ▪ Loch Fyne: whisky + sloes + honey ▪ Southern Comfort: whisky flavoured w peach extracts + botanicals <p>E. Seed, nut & kernel liqueurs</p> <ul style="list-style-type: none"> ▪ Seeds/Kummel: based on caraway seeds. Oldest liqueur (1575). Caraway seeds macerated in alcohol, distilled in pot stills and sweetened. ▪ Seeds/Goldwasser: caraway + aniseed + citrus peel + flakes of gold ▪ Seeds/Anise liqueurs e.g. Sambucca produced from infusion of elderberries, anise + other herbs ▪ N&K/Amaretto: based on infusion of bitter almond oils, crushed apricot pits & botanicals macerated in neutral alcohol ▪ N&K/Malibu: coconut flavoured rum ▪ N&K/Kahlua: coffee based mix of can spirit + Mexican coffee + vanilla ▪ N&K/Tia Maria: Jamaican coffee + spices infused w Jamaican cane spirit (not rum) and chocolate. <p>F. Creme liqueurs</p> <ul style="list-style-type: none"> ▪ Produced by adding flavour concentrates e.g. crème de menthe (min 250g/l sugar) and crème de cassis (min 400g/l)

BITTERS

HISTORY	<ul style="list-style-type: none"> ▪ Going back to the Greek and Roman empire.
PRODUCTION	<ul style="list-style-type: none"> ▪ Addition of a natural bittering agent (e.g. cinchon bark, gentia, bitter orange, etc.) either distilled or macerated with neutral alcohol and aromatised with clove, vanilla, coriander, etc. and potentially sweetened.
STYLES	<ul style="list-style-type: none"> ▪ Aperitifs: Campari (68 ingredients incl. bitter orange, rhubarb, cinchon), Cynar (artichoke & quinine), Génépi (gentian) ▪ Digestifs: A. Sweet: Averna (mix of herbs, barks & botanicals) B. Bitter for digestive aid: Fernet Branca, Jägermeister. ▪ Cocktails: bottled at hi strength e.g. Angostura (bitter barks + tropical botanicals) used as a cure for Malaria.