CAMPARI ACADEMY
— TRAINING —

BOURBON & BRANCH

SESSION OVERVIEW

It's hard to argue that water, while being critical to our survival, contributes so much more to life and our industry than we care to think; from sprits production or playing an integral role balancing flavours in tasty cocktails!

In the US, before the birth of the cocktail and other mixed drinks, it was common to enjoy the simple & delicious delights of quality Bourbon mixed with pure still water... in a drink affectionately known as Bourbon & Branch.

Have you ever wondered if your water was hard or soft? What is reverse osmosis water, or are minerals a must?

BOURBON & BRANCH will look at the most important facilitator of life & flavour; water.

We'll check out several types of drinking water we consume daily and specifically look at the influence and contribution of water in the production of American Whiskey, while talking our favourite WILD TURKEY Bourbon.

We'll also take a flow through the history of water and ice in cocktails and when to apply a different type of water (or ice) for the best outcome.

As always, we hope this program sparks your curiosity for this wonderful world and inspires you to start your new adventure behind and beyond the bar!

CHEERS

The Campari Academy Team

BOOKLET CONTENT

WATER & LIFE

FUNCTIONS OF WATER

SOFT VS HARD WATER

DRINKING WATER SOURCES

BOURBON

WATER IN WILD TURKEY

WILD TURKEY BOURBON

WATER IN DRINKS

CASE STUDIES

COOL READS

WATER & LIFE

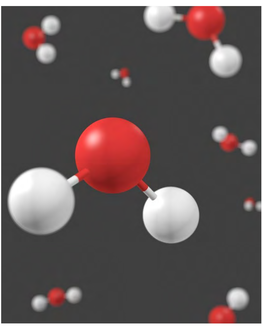
Water, a simple molecule containing two Hydrogen atoms connected to one Oxygen atom.

In its purest form, it's odourless, colourless and tasteless. It's in your body, the food you eat and the beverages you drink.
You use it to clean yourself, your clothes, your dishes, your car and everything else around you. You can travel on it or jump in it to cool off on hot summer days.
Many of the products that you use every day contain it or were manufactured using it.

All forms of life need it, and if they don't get enough of it, they die. Political disputes have centered around it. In some places, it's treasured and incredibly difficult to get.
In others, it's incredibly easy to get and then wasted.

What substance is more necessary to our existence than any other?

Water.



It is the only substance on Earth to naturally occur in all three states:

SOLID (ICE),

LIQUID (WATER) &

GAS (STEAM)

Interestingly, in our industry we make the most out of these three states as they play an important role in the distillation of spirits.

DID YOU KNOW?

According to National Geographic only 3 percent of the world's water supply is freshwater, and 77 percent of that is frozen.

Of the 23 percent that is not frozen, only a half a percent is available to supply every plant, animal and person on Earth with all the water they need to survive.

FUNCTIONS OF WATER

Water has numerous functions that directly benefit our health. Some of these include, but not limited to some of the following;

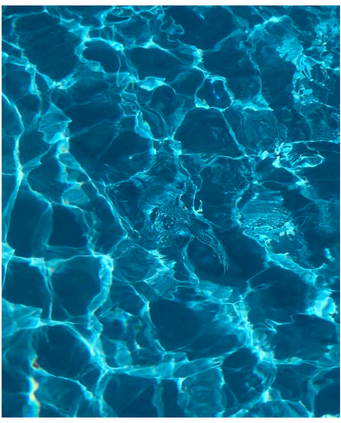
It facilitates the **absorption of nutrients** through food.

Lubricates the muscles, joints and organs of the body.

Facilitates the **removal of toxins** from the body.

Is necessary for optimal **brain function** & it facilitates **digestion**.

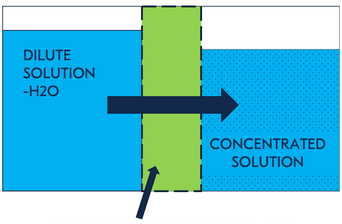
The phenomenon that allows all these things to happen is **osmosis.**



Osmosis occurs when pure water flows from a dilute solution through a membrane into a higher concentrated solution.

Illustrated below. A semipermeable membrane is placed between two compartments.

Semipermeable means that the membrane is permeable to some solutes, and not permeable to others. Assume that this membrane is permeable to water, but not to salt. Then, place a salt solution in one compartment and pure water in the other compartment. The membrane will allow water to permeate through it to either side. But salt cannot pass through the membrane.



SOFT VS HARD WATER

Water hardness refers to the mineral content (particularly calcium and magnesium carbonates) within the water.

As water falls from the sky, it is considered soft, this is because it has yet to come in contact with minerals.

As water moves through rocks and other substrates, it accumulates dissolved solids. Water that has higher than normal amounts of dissolved minerals such as calcium and magnesium is considered 'hard'.

Basically, we define hard water as having a high mineral content, which is measured in milligrams per litre.

Anything below 60mg/l is considered soft;

SOFT	below 60 mg/l
MODERATELY HARD	between 60 - 120 mg/l
HARD	between 120 - 200 mg/l
VERY HARD	above 200 mg/l

Since hard water contains essential minerals, it is sometimes the preferred drinking water. Not only because of the health benefits, but also the flavour.

'Nonetheless, the mineral composition can also be responsible for unwanted flavours in water. A classic example is when a high iron content in water, makes it taste 'metallic'.

GENERAL HARDNESS OF TAP WATER AROUND AUSTRALIA (PPM)

DRINKING WATER SOURCES

SURFACE

Surface water is as it sounds. Found on the surface of the Earth and includes lakes, ponds, reservoirs, rivers, streams & wetlands. Typically 'soft' as it starts off as rainwater and due to its exposed nature can be vulnerable to pollution.

GROUND

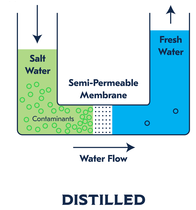
Water sourced from the ground includes aquifers, and underground lakes. Generally 'Hard' as it picks up minerals from the earth. Mineral water is a common example.

TAP

Tap water is ground or surface water that is mechanically filtered and usually treated or disinfected to remove bacteria. It can either be hard or soft depending on the source.

REVERSE OSMOSIS

Removes almost all impurities, but doesn't necessarily remove all bacteria and can be quite slow depending on the equipment used.



DISTILLED

Distilled water mimics the natural water cycle removing almost all impurities and minerals resulting in soft pure water. The process can be quite slow.

BOURBON

Sunshine Rayner

Sunshine Eagle

Now we understand the different types and sources of water that we drink and their contribution to life and flavour, let's zoom in on a category that has a unique source of hard water : Bourbon.

Bourbon is just a specific type of Whiskey native to America & to qualify the following laws in order qualify for the privilege to use the name.

BOURBON LAWS

Kentucky sits on a bed of gorgeous blue limestone, which makes the ideal building block for bourbon. When water flows through the rock, it picks up minerals that add personality to the whiskey. These elements are optimal for distilling & yeast in Bourbon adores those minerals.

Limestone also acts as a filter, removing bitter elements such as iron which make the water taste sweet. A high iron content would turn the mash black & not make for a great tasting Bourbon

It is said that 1% for the same reason that this region produces such high quality racehorses, as the calcium and other minerals in the water and bluegrass give the horses strong bones.

MOUNTAIN STREAM

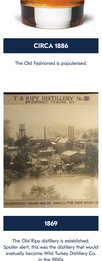
KEY DATES BOURBON HISTORY

LATE 1700's

Whiskey distillation begins in KY.

LATE 1792

Kentucky established as a state.



EARLY 19TH CENTURY

The word 'Bourbon' establishes itself, referring to that 'Red Whiskey from Bourbon County'

1835

James S Crow popularises the sour mash process.

CIRCA 1886

The Old Fashioned is popularised.

1869

The Old Ripy distillery is established. Spoiler alert, this was the distillery that would eventually become Wild Turkey Distillery Co. in the 1900s.

1919-1933

US Prohibition decimates the American Whiskey industry.

1942

Austin Nichols launch Wild Turkey at 101 Proof.

1964

Bourbon is declared a US icon.

NOW

Bourbon is Booming.

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WATER IN WILD TURKEY

In Bourbon & Branch, we wanted to highlight the importance of water in every step of the Wild Turkey production process.

All the way from the non-GMO grains to how we set the proof at bottling, water has an undeniable impact on everything at Wild Turkey.

GRAINS

We know that in order to be a Whiskey Bourbon is made from grains. The mix of grains is usually referred to as the Mash Bill. The majority must be corn and the rest is made up of what are usually referred to as the 'small grains' and most commonly are Rye, Barley & Wheat.

The proportions of these and how they are treated plays a significant role in the resulting flavour profile of the Bourbon.

Wild Turkey uses only non-GMO grains. Locally sourced "No-till zero till corn", only the best rye from Germany and malted barley from Dakota and Montana ensure Wild Turkey starts with the best raw ingredients to begin with.

Obviously water plays an integral role in the agriculture of these crops, and water really begins to play a role when mashing in, so let's check it out.

MASHING

Once the mash bill is decided on mashing can occur.

Grains are ground or milled into a coarse flour (grist), mixed with water and heat is applied to aid the conversion of starches into simple sugars by natural Amylase enzymes available in the grains.

At Wild Turkey the corn is cooked first (196 degrees, then the temp is lowered to 79 degrees when the rye is added, then lowered again to 67 degrees where finally the barley is added. After the conversion is complete the temperature is dropped to 23 degrees in preparation for fermentation.

It is this individual temperature treatment of grains that allows the high rye flavour to shine through.

The local Kentucky water plays an important role here, as the water comes from a limestone aquifer which acts as a filter removing iron from the water.

High iron levels would turn the mash black and have a slightly bitter or metallic taste.

FERMENTATION

Fermentation is where the magic happens. The cloudy wort, solids and all is pumped in to fermenters and 'sub' yeast is added. This is a portion of the previous ferment that helps lower the pH and prevent unwanted microbial growth. It is commonly known as the sour mash process.

At Wild Turkey the mash and set back go into one of 23 fermenters that are approximately 50,000 litres!

Our proprietary yeast strain is added about 2% of the volume and the fermentation lasts about 80-90 hours. When the beer cap drops the liquid is approximately 10% ABV.

DISTILLATION

Bourbon law prohibits white dog above 160 proof or 80% abv in order to retain the bold flavour of the American spirit.

The Wild Turkey still is 15.8m tall and 1.83 cm wide column still with 19 plates and a bubbler or connected pot still to help polish the spirit. The low wines are collected from the column between 60 and 62.5% ABV and fed into the doubler which bumps it up to approximately 64% ABV.

It should be noted that this final collection of the new spirit is much lower than what is permitted by law. This approach means we don't need to add much water in when lowering the ABV to below the 62.5% requirement for aging. We go into barrel between 55-57% ABV.

AGEING

Bourbon is aged in new charred oak barrels for longer than 2 years to be called Straight Bourbon and more than 4 years to not require an age statement.

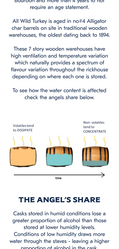
All Wild Turkey is aged in no-#4 Alligator char barrels on site in traditional wooden warehouses, the oldest dating back to 1894.

These 7 story wooden warehouses have high ventilation and temperature variation which naturally provides a spectrum of flavour variation throughout the rickhouse depending on where each one is stored.

To see how the water content is affected check the angels share below.

THE ANGEL'S SHARE

Casks stored in humid conditions lose a greater proportion of alcohol than those stored at lower humidity levels. Conditions that humidity draws more water through the staves - leaving a higher proportion of alcohol in the cask.



BARREL SELECTION & MINGLING

This process is the human touch of selecting different barrels with different characteristics from different areas of the warehouses depending on what product is being bottled.

Often called a barrel dump, the process combines the contents of selected barrels in a larger vessel, allowing them to mingle before proofing and bottling.

It's also referred to as marrying, just don't let Eddie hear you call it blending, because that's what the Scotch guys do!

PROOFING & BOTTLING

Once mingled the liquid needs to be cut or proofed to bottling strength. To do this water is added and depending on the product also filtered before bottling.

All Wild Turkey & Russell's Reserve Whiskies are bottled on site and as the majority of the portfolio is bottled at 45% ABV and above it means there's not much water to add here either.

That being said at this stage we only add reverse osmosis water as no other flavours are introduced and only the best expression goes into bottle.

WILD TURKEY IN A NUTSHELL

100% **NON-GMO** GRAINS

HIGH **RYE** MASHBILL

LOW-PROOF DISTILLATION

AGED LONGER IN **ALLIGATOR CHAR** BARRELS

MORE BOURBON IN OUR BOURBON

CONTENT BY DIGEST

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WILD TURKEY BOURBON

WILD TURKEY 101
(101 PROOF / 50.5% ABV)

THE **ORIGINAL** WILD TURKEY BOURBON RELEASED IN 1942

HIGH RYE & AGED FOR APPROX 7 YEARS

PERFECT BOURBON IN CLASSIC & MODERN COCKTAILS

JIMMY'S FAVOURITE COCKTAIL IS 101 ON **THE ROCKS**

WILD TURKEY LONGBRANCH
(80 PROOF / 40% ABV)

LAUNCHED IN 2018 IN COLLABORATION WITH OUR CREATIVE DIRECTOR **MATTHEW MCCONAUGHEY**

SAME **WILD TURKEY DNA** WITH A TEXAN TWIST

AGED MINIMUM 8 YEARS

CHARCOAL REFINEMENT WITH AMERICAN **WHITE OAK & MESQUITE**

WILD TURKEY RARE BREED
(116.8 PROOF / 58.4% ABV)

WILD TURKEY BOURBON WITH **NO WATER** ADDED AFTER AGEING

LAUNCHED IN **1991**

A BLEND OF **6, 8 & 12YO** BOURBONS AT BARREL PROOF

JIMMY'S FIRST BOURBON **INNOVATION** AT WILD TURKEY

WILD TURKEY KENTUCKY SPIRIT
(101 PROOF / 50.5% ABV)

THE FIRST **SINGLE BARREL** RELEASED BY WILD TURKEY IN **1994**

JIMMY RELEASED THIS SHORTLY AFTER ELMER T. LEE'S BLANTON'S RANGE

N.A.S BUT AGED AROUND **8 YEARS**

SOMETIMES CALLED '101 IN A TUXEDO'

WATER IN DRINKS

A BRIEF HISTORY

C.A 1000

Since distillation was perfected, we ALWAYS diluted Spirits for human consumption.

1630's

First written record of Punch in the British Navy, as evidence of Grog (rum & water). Evolution of spirit ration.

1800's

Throughout history, ice was only accessible if carved out of glaciers and frozen lakes, transported at night and stored underground. In the 1800s it became a sort after commodity.

1845

John Gorrie, M.D., from Florida (1803-1855) was granted the first U. S. Patent (No. 8080) for mechanical refrigeration in 1850 for his invention of the first ice machine in 1845.

LATE 1800's - EARLY 1900's

Ice becomes a standard in cocktails making and service at different stages throughout the (western) world.

TODAY

The concept of 'premium' ice, with crystal clear blocks, spears, sphere, diamonds, became a point of difference. Also, we brought back the practice of pre-diluting and chilling boozy cocktails, so we are not anymore bound to the directly proportional relationship between ice chilling and dilution.

APPLICATIONS

WHY DO WE 'WATER' COCKTAILS

As we see, water plays a very important role in spirit making and in the delivery of flavour, but 'How and Why do we water cocktails?'

What we recognise as outcomes are:
DILUTION, CHANGE IN TEMPERATURE, AERATION & MIXABILITY.

DILUTION

Considerations on the ratio between Surface Area and Volume – the more surface (of ice) is in contact with the liquid, imagine a small ice cube, the more and quicker it'll melt.

There are momentarily exceptions; to this i.e. in the Julep, when at its peak, it reaches a perfect balance between temperature and dilution, until it starts melting again (because of external forces, i.e. ambient temperature of the room).

Dilution also contributes to 'water' flavour, often making them more approachable and palatable, until they by-pass to be overdiluted, when the main characteristics start wearing off.

Increase of dilution also lowers the perception of sweetness.

TEMPERATURE

There is always an exchange of temperature between two bodies. Water is a good conductor of temperature (hot or cold).

When we are using ice to lower the temperature of the drink, this will inevitably result in its dilution (the melted water will lower the temperature of the diluted liquid).

At a low temperature, it's harder to smell perfume and as smell is a huge component of the tasting experience, many flavours will be lost. On the other hand, hot water can enhance perfume, allowing us to perceive some more light ones too.

MIX & AERATE

Addition of water will change the texture of the end liquid, usually to a thinner one, unless a very low temperature is applied.

When at a lower ABV, alcohol also increases solubility.

ON ICE & DILUTION

As previously mentioned, dilution increases potability, as the human body is not accustomed to drinking pure alcohol (at least yet!). It'dehes, it burns!, but at the same time alcohol is also deliverer of flavour, so it's all about training our taste to find the right balance of us or our guests.

Once again, when using ice to lower a cocktail's temperature, you will have more dilution as a result.

The size and temperature of the ice will affect how well and how quickly it will do its job. A small ice cube will melt faster than a big block, and a frozen cube will do a better job, but all about how & why they are used.

When it comes to flavour delivery, water can enhance flavour perception. Scientists like Dave Arnold state that regardless from how that dilution and temperature are achieved (if by stirring with ice, or by batching with water and chilling), the end results deliver the same flavour.

Others, like Geshophysicist Charles Spence, consider the role of the expectation when exposed to the preparation (mixing and stirring over ice) and the effect this point of view that flavour is affected by it.

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CASE STUDIES

WE EXAMINED FIVE COCKTAILS 'FAMILIES' AND THE ROLE THAT WATER AND ICE PLAY WITHIN THEM.

#1 HIGHBALL

Water in highballs is added through ice and a non-alcoholic carbonated drink.

Once a large amount of ice is used to control dilution (as we said, more ice, creates a colder environment and allow a slower dilution), the balance is achieved through ratio of the ingredients.

Highballs are often spirit based and as a good starting point, a 1:2 ratio between spirit and carbonated drink, usually delivers a pleasant result.
Depending on the ABV of the alcoholic base, said ratio can change.

RARE BREED

HIGHBALL

INGREDIENTS

60ml Wild Turkey Rare Breed
120ml Soda H20

METHOD

Pour all ingredients into a highball glass, over ice.

GARNISH

Lemon Zest

CARBONATION

Naturally carbonated water has been used in mixed drinks, especially where it's readily available underground, like Southern Germany or Austria.

Force carbonated water was perfected in the UK in the mid 1700s and then taken to new heights in the US with the craze of the Soda Fountains in the 1900s. In the cocktail world, chilled Seltz soon became a 'fancy' touch, used to both mix and chilled down the ingredients.

Today, thanks to the influence of Japanese techniques in bars all over the world and the versatility of its service, the Whiskey Highball, considered as a premium Whiskey and Soda, is coming back in popularity.

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#2 OLD FASHIONED

In an Old Fashioned the balance of the ingredients is achieved through the addition of water, but in contrast to the highball where water is added, dilution in the Old Fashioned is achieved through the controlled melting of the ice in the drink itself.

Water coming from the melted ice softens the edges of the spirit, allows the sugar to be well incorporated and the bitters to shine through elegantly.

DID YOU KNOW?

The addition of ice was what made the Old Fashioned a premium cocktail and set it apart from its predecessor, the Whiskey Cocktail. (If you want to know more, check the Spritz Explained booklet on Campari Academy website).

For a classic Old Fashioned, you need a classic Bourbon, with a robust character and a high ABV, to allow a gentle stirring and dilution, achieving the end result in a slow, elegant way.

The Bourbon we recommend for an Old Fashioned, for those exact reasons is Wild Turkey 101.

101

OLD FASHIONED

INGREDIENTS

60ml Wild Turkey 101
10ml Sugar Syrup (1:1)
3 dashes of Aromatic Bitters

METHOD

Pour all ingredients into a old-fashioned glass, over ice. Stir to mix, dilute and chill.

GARNISH

Orange or Lemon zest

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#3 BOULEVARDIER

BATCHED

At the time of batching, the one thing to consider is if you'll need to add dilution or not. If you'll serve your Boulevardier over ice and you are just batching it for speed of service, no extra dilution will be needed, as you can stir the ice in your rocks glass to incorporate water to the cocktail.

If you want to serve your Boulevardier straight up and you want to skip the process of stirring, you'll need to add dilution to your cocktail in order to make it palatable.

There are different approaches to dilution in batched cocktails. You could calculate the dilution as a straight percentage of the drink, for example 15% for a bold Boulevardier. Otherwise, you could batch a single, undiluted cocktail, slir it over ice as you'd normally do, then pour it and calculate the difference between the end result and the liquid you initially poured. You'll then have to multiply that amount for the number of drinks you are batching...

HAPPY BATCHING

A word of warning. There are very few things worse than an overdiluted drink or a warm one...trial and test in small batches first and make sure the drink is always kept very chilled. We recommend drinks like Boulevardier, to be kept in the freezer at max -4 °C.

RUSSELL'S RESERVE

BOULEVARDIER

INGREDIENTS

30ml Russell's Reserve 10YO
30ml Campari
30ml 1757 Rosso Vermouth do Torino

METHOD

Stir all ingredients in a mixing glass, with ice. Strain in chilled coupette.

GARNISH

Orange zest

CAMPARI ACADEMY

#4 MINT JULEP

The Julep exists in a world of its own; a very boozy drink, that through ice, becomes extremely refreshing.

Here, temperature and dilution are kings. The size of the ice, using it crushed, will allow a quick dilution as there's a lot of ice surface in contact with the liquid.

Interesting to note in the Julep, is that the large amount of ice will chill the drink quickly, soon creating a very cold, balanced environment that slows down the dilution.

That's also why silver and metals are preferred to glass in this kind of serve.

The role of ice is so important in this drink, that a special tool was created to allow drinking it: the Julep Strainer allows to keep the ice pressed towards the bottom of the cup, away from the mouth and out of your moustache.
Straws are also recommended for this drink (perhaps non-plastic ones).

KENTUCKY SPIRIT

JULEP

INGREDIENTS

60ml Wild Turkey Kentucky Spirit
10ml Sugar syrup
10× Mint leaves

METHOD

Press mint leaves at the bottom of a julep cup with Whiskey and sugar.
Add plenty of crushed ice and churn with a spoon to mix, dilute and chill.

GARNISH

Mint spring and straw

CAMPARI ACADEMY

#5 TODDY

The case of the hot Toddy we can see how water, in this case hot water, is not only used to dilute but also to enhance perfumes and aromas.

Smell is a very important component of the tasting experience, and with this technique the scent of the drink is carried through the air in form of vapours.

Opposite to a low temperature, a warm drink can open up to more dark and charming flavour. That's why it's ideally mixed with a dark spirit.

AUTUMN

WILD TODDY

INGREDIENTS

45ml Wild Turkey American Honey
5ml Raw honey
5ml Fresh lemon juice
5ml Fresh mandarin juice
180ml Mandarin earl grey tea (hot)

METHOD

Pour all ingredients into hot toddy glass & stir.

GARNISH

Essential oils of a mandarin peel, discarded & toasted biscuit.

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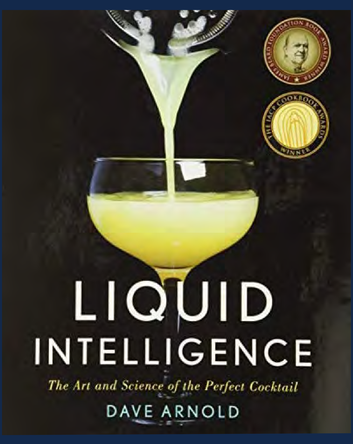
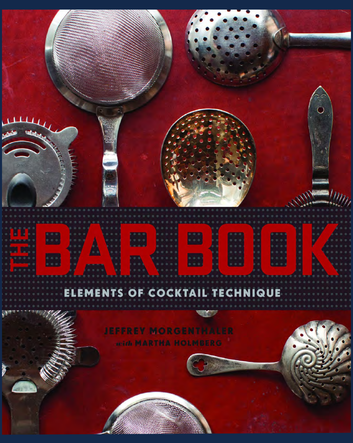
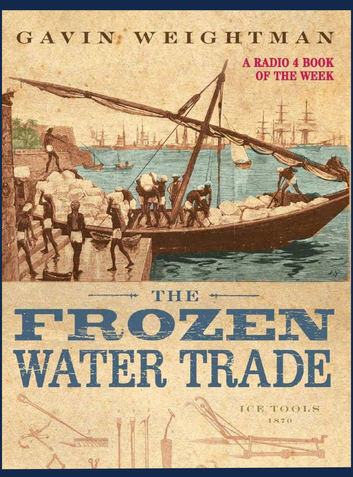
COOL READS







GRAZIE.

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