THE RAMEN_LORD BOOK OF RAMEN

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INTRODUCTION

Thank you for reading this book! This has been a long time coming. Over the last several years I have tinkered with the idea of making a book, to help everyone - from hardcore ramen-lovers to those simply intrigued by interesting food - find an all-inclusive resource of recipes and ideas on how to make ramen. I felt like it would make sense to make this as widely accessible as possible. An e-book format made the most sense, free for anyone to view at any time.

Many of you probably have never had ramen beyond the dry noodle packages found regularly at your local grocery store. This book is not about that kind of ramen, which is more akin to instant noodles. While tasty in its own right, instant noodles aren't quite the same thing as the dish discussed in this book. Ramen, a dish originating from Japan, is a complex soup that is challenging to make and, even to this day, still has quite a bit of mystery. I'm hoping I can at least break apart the ambiguity a little, primarily through the discussion of appropriate concepts rather than solely relying on recipes.

As for the rest of you, I know what you are thinking. A book on ramen? That sounds awfully specific. Who is this guy? Why should I even care? Why is an American making ramen? Is this a poor man's Ivan Orkin?

Not exactly.

My name is Mike. I'm a food nerd who lives in Chicago, and I am particularly obsessed with ramen. Most folks know me by the name "Ramen_Lord" on Reddit, which is pretty ostentatious, I know. The username was tongue-in-cheek at first. I thought I might post some of my creations to the ramen subreddit, /r/ramen, have some fun in the process, and learn along the way. I did not, however, expect my posts to catch on at all. And despite this, people started paying attention.

But what sparked this weird obsession? In all sincerity, it was kind of a coincidence. I had been eating ramen with some mild regularity in Chicago. Usually, this involved going out to a local Japanese market called Mitsuwa and splurging on miso ramen. It was cool, but nothing that sparked my interest. It wasn't until I lived in Japan that I tried the real stuff. I lived in Sapporo as part of a study abroad program at Hokkaido University, and, coincidentally, miso ramen was designed, created, and invented in that city. I thought I ought to get a taste of the real deal.

I tried a few bowls in touristy destinations like Ramen Yokocho. Felt fine. Packed it up.

But it wasn't until a friend suggested I try out a shop named Sumire that my total worldview on ramen changed. I remember the experience vividly: I climbed some shambly metal stairs to the side of an office building in the drinking district of Sapporo known as Susukino. I walked past the hanging curtain over the door, and selected "miso ramen" from a ticket machine, sitting down, oblivious to what would happen next.

What arrived was ethereal. A scalding hot bowl of rich, intense miso and pork soup, with punches of garlic and ginger and a slight tinge of spice. A blanket of melted lard floating on top, trapping the soup's heat in the bowl. The aggressively chewy, crinkly yellow noodles, the delicate sprinkling of thinly sliced green onion, tender slices of braised pork. This was unlike anything I'd ever had. Prior, ramen was tasty junk food. With Sumire, this whole idea of “kodawari”, or obsession with quality, became obvious to me.

All I could think was, “THIS is Sapporo’s legacy!” I had to find more of the stuff.

For the next year, I basically went out for ramen whenever I could in Sapporo. I bought guide books, rented textbooks from the library on food culture, and asked friends for recommendations. I even asked a teacher if I could do an independent study on the dish. I started interviewing cooks and writing reviews of places. I made a blog about the best shops. Ramen became my life in Sapporo, the city changed me.

After I’d left Sapporo, I had no choice. I had to start making ramen to satisfy this craving I had built up. Most of my first bowls were just awful. The broth, normally rich and complex, was a putrid mess. The noodles, complete mush. The toppings, a bland and overcooked waste of ingredients. I expected something different and was massively disappointed. Still, I persevered. I continued making ramen for years after, desperately chasing the proverbial dragon, trying to recreate something I had tasted that had transformed me.

When I started posting to /r/ramen, I felt compelled to make ramen more often and share what I could. The community inspired me, as I kept running into other ramen nerds who loved noodles, tiny shops, the broth's fat glistening on their faces as they slurped to their heart's delight. I wanted to grow that community and share that love. Over time, my ramen got better. I got better at plating. I developed a better understanding of the dish. Through it all, I found my voice and the direction I wanted to take my craft. Without the support from people in the subreddit, to keep pushing myself and my knowledge, I wouldn't know half of what I know today.

Today, ramen has effectively exploded with new recipes everywhere. Over the years, I've developed more than 20 different recipes for various styles. Although many of these recipes have been posted to Reddit, it's clear that Reddit isn't an effective platform for consolidating all of the information available.

So, here we are.

What can you expect from this book? Let's start with what this book is not. This is not a history or anthropology book on ramen. Although I find the history of ramen fascinating, several books have already been written on it to a level of detail I couldn't realistically add to. (Some good ones worth reading are "Slurp, a Social and Culinary History of Ramen: Japan's Favorite Noodle Soup" by Barak Kushner, and "The Untold History of Ramen: How Political Crisis in Japan Spawned a Global Food Craze" by George Solt[1,2].)

And this isn't a cookbook, per se. There are many cookbooks out there for ramen. Ultimately, this book is meant to break apart ramen into its 5 components and explain them thoroughly, to help amateurs and cooks understand the components of the dish, to better make more thoughtful composed bowls. There are many recipes here, but they're only examples, archives of the work I've done over the last 10 years. They are by no means the be-all-end-all of ramen. I hope that by the reading book, both amateurs and professionals alike will find a better understanding of what ramen is made of so that they can go off and create exceptional bowls.

So, welcome. Let's have some fun.

STARTING WITH THE BASICS: WHAT IS RAMEN?

To understand what ramen is, I find it's easiest to break it down by its components since ramen's broad historical definition is complex. Because each component varies so tremendously, two bowls of ramen side by side might look completely unrelated, but still fall under the same umbrella. Even with the definitions I'll list, there are variations between the 5 components.

Component 1: Noodles are a cornerstone of ramen. Ramen noodles are the most rigid in their definition of the dish. All ramen noodles require some amount of the following ingredients:

1. wheat

2. alkaline salts (kansui)

No dish is truly ramen without these specific noodles. For me, the ratio of these ingredients (and others) may vary, but the actual approach to making the noodle for a home cook is basically the same.

Component 2: Soup is the other cornerstone of ramen. Except for a handful of soupless styles, all ramen has soup. Japanese consumers overwhelmingly taste the soup first when trying the dish, so the importance of balancing it and delivering it correctly cannot be overstated. Soups range in complexity but can be generally broken down into two categories:

1. chintan: these broths are clear, light, and delicate on the palate. This is the standard broth for most common styles. If you imagine a delicate consomme or chicken stock, this is right in line with that, similar to most stocks you'd find in western cooking

2. paitan: these flip western-style stock-making techniques on their head by rapidly boiling the contents in the pot. This process results in a cloudy, almost creamy consistency.

These broths can be broken down further, based on the viscosity, intensity of flavor, additional additives, or ingredient choice, but the point is that soup exists on a host of stages and styles.

Component 3: Tare is a potent sauce or paste that effectively seasons the bowl; without tare, the soup has no salt. Tares often contain flavor compounds to add additional complexity and umami. Tares are numerous and range in style, but they typically fall into three broad categories depending on the primary ingredient used:

1. shoyu (soy sauce): The original tare. Soy sauce was paramount to the proliferation of ramen in Japan, providing not only high levels of salinity, but also glutamic acid, a compound responsible for the illustrious “umami”. Umami, being another one of the tastes our tongues recognize along with salt, sweet, bitter, and sour, is described as having a “savory” or “meaty” quality. Soy sauce allowed umami to be easily incorporated in the dish and was a familiar flavor to Japanese diners.

2. shio (salt): Not to suggest this tare is simply made of salt, but merely that it doesn’t contain soy sauce. It still usually includes a host of other umami-rich ingredients, like dried seafood or kombu, a dried kelp product common in Japanese cuisine.

3. miso: a newcomer to the tare style, miso is a thicker tare using the namesake miso. Unlike the other two tares above, this one tends to add body to the broth. Miso, being a fermented soy product like soy sauce, is loaded with umami.

Component 4: Toppings: Toppings are perhaps the component of ramen with the most versatility. They create the ultimate visual impact of the bowl.

Toppings tend to fall into several categories:

1. proteins: The most common variant of this is chashu (a braised pork roast, typically made from belly or shoulder), but chicken or fish products are also not unheard of. Other non-meat-based proteins, such as soft boiled eggs, are also common. Regardless, virtually all ramen has some form of protein as a topping.

2. aroma boosters: Toppings are often used as an ingredient that boosts aroma, or enhances the flavor of the soup and noodles. Onion, typically some kind of scallion, are used often. Alliums, the family of plants that onions, garlic, and scallions belong to, contain a compound called MMP, which resembles savory and meaty flavors. As a rule of thumb, your ramen should use some onion. Alliums of all sorts will work as aroma boosters, but other fragrant plants, like grated ginger or chilies, can also provide complexity and aroma.

3. texture providers: Without this, ramen is missing texture contrast. Menma, which are cured and sweetened bamboo shoots, is a common example. Texture can also be provided in things like bean sprouts, cabbage, corn, wood ear mushrooms, or any other crunchy things. They are usually vegetables.

Component 5: aroma oil: If tare is the most secretive component of ramen, aroma oil is easily the most overlooked, particularly outside of Japan. Fat is a critical component of ramen's taste; it provides mouthfeel, gloss, visual appeal, and transports fat-soluble flavors. Modern ramen shops diligently control the fat content of their broths, often adding additional fat that has been cooked with aromatic items like alliums or vegetables. Animal fats are most common, though vegetable oils can also be used.

Those are the main components of ramen. In this book, I've dedicated a chapter to each component, and then a final chapter dedicated to particular styles, their assembly, and which components they use. The goal ultimately is to understand the nuances and methods of each component, so that as you get comfortable, you can swap between specific components based on personal preference. Over time I hope you'll be inspired to create ramen that aligns with your style and tastes.

A NOTE ON MEASUREMENT

While there is an element of preference involved in ramen (and in all food), ramen can be an art in precision. Sometimes units like cups and ounces aren't precise enough to consistently create the intended bowl of noodles. So, as a fan of consistency, all of the units for measurement will be in metric (using English units as an occasional backup). As you'll soon discover, grams and milliliters will be precise enough for what's needed for making noodles. Truthfully, the metric system, more formally known as the International System of Units, is king, and I plan to stay true to that mantra. Also metric is just so much easier to deal with. Like, get it together America.

If you're going to be making the recipes in this book, you will need a scale, preferably one that has at least 1 g precision (and for noodles, you'll want one preferably that goes to 0.1 g). I use the OXO good grips 5 lb scale for most measurements, and for noodles, I use a small jeweler's scale that measures within 0.1 g precision [3,4]. Scales have wide-ranging applications in your kitchen, even outside of ramen.

Everything from cookies, pie, cake, bread, and stir-fries are just so much more consistent when you start weighing some of the ingredients you put in your food.

That doesn't mean volumes are pointless though. Volumes play an important role in cooking, like for measuring liquids in large quantities where precision is less important, as well as being helpful when assembling ramen. Mass, by contrast, works much better for measuring more precise amounts of liquids and for measuring virtually any solid. Scott argues that volumes can be measured precisely, and he is right… but am I really going to ask anyone to buy a bunch of (expensive!) pipettes to make ramen? Probably not. Scott thinks it could be worth it anyway. Scientists, I swear.

Common Abbreviations for Units of Measure

mL: milliliter
L: liter
in: inch
cm: centimeter
g: grams
mg: milligrams
lb: pounds
oz: fluid ounces
°F: degrees Fahrenheit
°C: degrees Celsius
tbsp: tablespoon

tsp: teaspoon

NOODLES

Regarding the etymology, the term "ramen" has a vague history, with some claiming it's derived from the Chinese "la-mien" hand-pulled noodles, and others telling folk-etymology stories where a cook in Sapporo called out "Hao-la" when he was done making his noodle soup, to tell waitstaff to get the bowl. Regardless of the origins of the name, ramen noodles are not the same as hand-pulled noodles in how they are produced. Attempting to hand pull a ramen noodle dough will result in some serious frustration.

In terms of definitions, then, ramen noodles must contain both of the following ingredients: wheat, and kansui (the alkaline salts), and this is formally defined by the Japanese government to sell a noodle under the name, "ramen." Udon, rice noodles, pasta, while all delicious, aren't ramen, and the contents of this chapter specifically refers to ramen. Despite what appears to be intense rigidity, plenty of complexity can be incorporated in ramen noodle making, like using additional additives, or playing with the amounts of wheat and kansui. But these two ingredients are pretty set in stone. All of the recipes in this book, therefore, contain both wheat and alkaline salts.

NOODLE INGREDIENTS

Despite the ingredient list being small, the details of each ingredient contribute substantially to noodle quality. In this section, we'll go over the science and importance of each of these ingredients.

WHEAT

Wheat flour is the primary source of starch and protein in all ramen noodles and is a requirement for ramen to exist. This isn't just for definition either. Both starch and protein (gluten) within the flour play vital roles in the design of a noodle.

Wheat starch provides the majority of the structure to the noodle. If noodles could be compared to a brick house, think of the starches as the bricks themselves. They do all of the heavy lifting. As starch is introduced to water, it hydrates, taking on the water and swelling, resisting compression and tension. In close enough proximity with other starch granules, the starch gels, forming a tight network of tough macromolecules that bump into each other. This starch gel has a pleasant texture, particularly if the starch gel is uniform (and more on how to achieve this in the method section of this chapter).

The other component is gluten. Wheat gluten, in particular, is composed of two proteins; gliadin and glutenin. When water is added to flour and the flour is agitated (mixing, kneading, stretching, etc.) these two proteins combine by a chemical reaction known as crosslinking to form the elastic mesh of gluten. Gluten, in the brick house analogy, is the mortar, gluing the load-bearing starches together in a matrix of protein. Those air bubbles you see in bread? They were trapped by a gluten reinforced starch matrix. Without gluten, noodles, let alone most wheat-based foods, would have a very different appearance. Different levels of protein in the flour will change how much or how little gluten is developed in the noodle.

Gluten's structure both allows the starches to gel properly, and gives the noodles additional tensile strength, and hydrophobic properties. Extremely developed gluten will dramatically increase the cooking time of noodles as a result, and result in firm, difficult to work with noodles.

Other components of flour that impact ramen noodles are:

1. ash content: Ash content describes the mineral content of flour. Typically, the majority of the minerals in flour come from the bran or germ, which is one of many reasons why whole wheat flour, which includes all the bran and germ, is touted as healthier than white flour. Ash is typically described as a percentage of total mass and is often less than a full percentage point. Ash has a few effects on noodles, but generally speaking, the higher the ash content, the harder the flour will be to make ramen with, without adding water. These minerals indicate trace pieces of bran and germ are leftover, which impact gluten formation. Luckily, most bread flours and all-purpose flours in the US have a low ash content, and it's much more likely that you'll have a tough time finding high ash flour (if you so choose) than low. Most white flour in the US is around 0.5% ash, which is suitable for ramen making. Advanced, ramen-specific flours, can often go as low as 0.35% ash. Conversely, that doesn't mean that high ash flour can't be used for ramen; sometimes it can. But the lower ash helps with making the noodles easier to work with.

2. moisture content: Flour absorbs moisture from the surrounding air, meaning that the amount of water you can add to it can change depending on the humidity and time of year. Flour also contains some natural moisture as a plant-derived product. This has to be accounted for when making noodles. More on this later.

3. wheat varietal: Different strains of wheat have different characteristics, the biggest of which is the protein content. Most varieties of wheat fall into either "hard" or "soft" categories, which means essentially high protein and low protein, respectively. For ramen, I prefer hard wheat-based flours. If you're trying to be particular about the protein percentage, it should be available as well. When in doubt, contact the manufacturer to understand how good a particular flour is at developing gluten. As a rule of thumb, flour with available protein is often called "bread flour" because it provides strong, extensible protein.

Note: It's worth noting that protein percentage doesn't completely predict how readily gluten will form (all other things equal), as different cultivars of wheat can create different protein compositions. Some wheat varietals form more or less gluten than others because their composition of gliadin and glutenin isn't equal. So, protein makeup can be different between varieties even if the protein percentage is identical. For example, a hard red winter wheat flour may have the same protein percentage as a hard red spring wheat, but the hard red winter wheat will develop gluten more readily because its composition permits it.

4. milling size: The actual size of the granules of flour has an impact on how quickly and easily a flour will absorb water. As an example, a common form of flour in Italy is "00" (double-0) flour, which is an extremely finely milled flour. Using this flour in place of all-purpose flour, you'll notice that you need upwards of 20% less water to hydrate. For simplicity's sake, I use standard milled flours in the US, but the milling size does have an impact.

As you get more accustomed to making noodles, it's a good idea to consider the above components when selecting which flour you'd like to use. But to start, keep it simple; a bread flour will do you fine. I like to use *King Arthur bread flour* because the protein content is around 12.7% the weight of the flour, and the flour gives consistent results. Most of the recipes for noodles in this book will use this flour. As you get more comfortable, feel free to adjust flours.

KANSUI

KANSUI IS a catchall term for the alkaline salts used to increase the pH of the water and impact the gluten and structure of the noodle[5]. Gluten's structure is impacted by the pH of the environment it's in. This interaction is not entirely understood in the food science community, but from an empirical standpoint, the effect is well known. As alkaline (or higher pH) environments are introduced, gluten's rigidity and tensile strength increases[6], leading to noodles that need more force to snap, but also aren't able to stretch as much. Kansui, therefore, contributes to the difficulty in making noodles, as the alkaline environment may make the noodles more difficult to roll and press. Kansui also aids in changing the color of the dough from white to slightly yellow, as the alkaline environment causes unique compounds in the flour called "flavonoids" to detach, turning yellow[5]. Yellow color and brightness of noodles have been shown to increase with higher pH, however introducing pHs that are too high may compromise the noodle quality by making them tough and less enjoyable[7]. Kansui also gives ramen noodles their characteristic taste, a sort of eggy, slightly sulphuric flavor (which sounds off-putting, I know, but it works).

Several different salts can be considered kansui. In American kitchens, the most common salts are sodium carbonate and potassium carbonate. While these might sound intimidating, they're pretty easy to get, particularly sodium carbonate. Apart from buying sodium carbonate under the name, "soda ash", you can make sodium carbonate at home by throwing some baking soda into a saucepan and cooking it over medium heat, stirring occasionally. This method also works for potassium bicarbonate. The full method I use goes as follows:

Ingredients:

- 500 g sodium bicarbonate (baking soda) or potassium bicarbonate

Steps:

1. In a small saucepan, dump in the powder and heat over medium heat, stirring constantly

2. The contents of the pot may initially become liquid-like, as it flows easily. While it heats, small geysers of gas will erupt from the surface. It will look like it's boiling.

3. Eventually, this action will subside after around 15 minutes, and the powder will become difficult to stir. At this stage, remove the pot from the heat, cover, and allow it to cool.

4. Transfer the powder to a container and store indefinitely in the pantry.

What's happening here: the heat causes the sodium bicarbonate to become sodium carbonate, water, and CO_2, where the latter two evaporate off. The gas you're seeing is mostly water like you'd see when boiling water, except it's also being created by a chemical reaction, not just by adding heat to water. Eventually this stops and the texture changes once all of the bicarbonate is converted.

Conversely,Harold McGee has discussed creating sodium carbonate in the oven, baking the powder on a sheet tray at 121 °C/250 °F for an hour[5]. This method takes longer and is harder to judge when it is complete but can be effective.

Sodium carbonate and potassium carbonate have different effects on the dough at a subtle level. Typically in my experience:

• sodium carbonate results in a chewier texture in the final noodle

• potassium carbonate results in a firmer, more taut texture

Both improve gluten's structure but in different ways. Though this interaction isn't very well understood (much like how we don't quite know why a high pH impacts gluten positively), I spoke with Dr. Eric Schulze, the Senior Scientist at Memphis Meats on the matter. Here's what he guesses might be the reason for this effect:

"Flour with removed cations hydrates rapidly, so the gluten network forms rapidly too. The potassium ions, being more reactive than sodium ions, would then proceed to further "protect" the gluten network from other negative charges, allowing for it to scrunch up tight and stiff."

In other words, potassium does a better job of latching on to gluten molecules than sodium. This is JUST a possibility, not proven beyond evidence from my kitchen and some discussion from manufacturers. But the rule seems to apply: If you want a less firm noodle, use more sodium, if you want a more firm noodle, use more potassium.

Kansui can be found in both liquid and dry forms. To me, dry is both easier to use and easier to come by. It also gives you flexibility in adjusting the alkaline content without having to fiddle with how much water you need to add. Basically, it makes the math easier. I don't have to do algebra to understand the relative water content of the liquid alkaline solution. I simply add a weight percentage to the ingredients. My all-purpose sweet spot is to use around 1-2% the weight of the flour in the recipe, but your taste may differ, and changes in hydration or flour type may warrant different kansui amounts.

WATER

Pretty much all noodles use water in some capacity, and ramen noodles are no exception. Water is the basis by which the starches in the wheat flour hydrate, it develops gluten (gluten doesn't form in dry environments), and it allows the alkaline environment to be introduced to the flour. There's a problem though. Most tap water in the United States is loaded with dissolved minerals (i.e. it's considered "hard"). These minerals impact the dough's ability to hydrate and can impact pH adjustment. For ultimate control, **use distilled water when making the dough**. Some manufacturers, like Sun Noodle, use pure water in their processing for this very reason[8].

Ramen noodles are distinctly different from other doughs in that the amount of water added to them (described as the "hydration" or "hydration percentage"), is noticeably low. In most ramen applications, hydration spans anywhere from 22% to 42% the weight of the dry flour solids. By contrast, most bread doughs start at about 60% hydration. This means that the treatment of the dough is noticeably different (and we'll discuss this more thoroughly in the actual method section) because the dough is much more difficult to work with.

What does water actually hydrate then? Other resources discuss this in more detail if you want to go down the rabbit hole[9], but I'll only mention the most important ones here.

- **Gluten**, the foundational protein in wheat that develops much of the structure of the noodle, does not develop without water, and so water is critical for the noodle.

- The **starches** in the flour. These starches take up additional water as they cook, but much like all starches, the water causes them to swell and become malleable.

- **Pentosans**. Similar to starches, these molecules are polysaccharides. However, they differ in that they are made up of only five-carbon sugars (i.e. pentoses), not six-carbon sugars like glucose. They also take up some of the water. These tend to be found in very small quantities, and are usually controlled by manufacturers, but they can dramatically increase the thirstiness of the dough. In my experience, I have not paid much attention to these.

Broad effects that water has on the dough as hydration increases include:

1. more workability of the dough: As flour is hydrated, the dough becomes softer, more supple, and easier to work with. Ramen noodles with more water will be easier to roll and cut than those with less water. In this book, I err on the side of caution with higher hydration doughs.

2. rapid development of gluten: Gluten forms more readily in higher-hydration environments. As ramen noodles are low hydration, however, it's unlikely that full gluten development occurs (not all of the gluten is hydrated). This means, paradoxically, that to develop a sufficient amount of gluten in a ramen noodle, you need less initial gluten in a dough with a lot of water, than one with less. As an example, the tsukemen recipes in this book are so well hydrated that the gluten forms long tensile chains very readily, and so the recipe doesn’t require high gluten flour at all. This developed gluten, as mentioned in the flour, also improves the noodle’s ability to maintain its structure in the hot soup.

3. more likely to hold a curl: because the gluten in higher hydration doughs is more hydrated and active, the gluten is more prone to developing structure and in turn denaturing during cooking.

4. more even cooking: as the starches hydrate, they essentially give a jumpstart during the cooking process, allowing for a more even starch gel and a less noticeable starchy core.

Broadly, a general rule of thumb is that as noodles become thicker, hydration increases, and as noodles become thinner, hydration decreases. A summary of this relationship provided by Yamato[10] is also worth referencing. In their opinion, thicker noodles tend to have more water, and less protein, while thinner noodles tend to have less water, and more protein.

I also mentioned earlier that flour also has moisture. Despite being "dry," all flour contains some small amount of water. And that isn't surprising. Water has a high affinity for lots of different compounds. It's often nearly impossible to scrub all of the water from plant and animal products, and flour isn't an exception. This can make things tricky too. Flour's water content differs significantly by season, as dry climates will have less water readily available in the atmosphere for the flour to absorb. Conversely, humid climates will have more water in the air. In most baking, this distinction isn't very noticeable, but in ramen making, because the amount of water you add to the dough is relatively low and precise, each percentage point matters. Of course, an easy way to limit variability is by storing your flour in a cool, dry, place, as often as possible, limiting its exposure to air. But, if you find yourself making a lot of baked goods (and hopefully noodles!), a good rule of thumb is to add 1-2 percentage points more water in dry climates than you would normally. All that considered, If you find your dough still isn't quite coming together, add a few additional grams of water. Won't hurt the final dough.

SALT: That's right, good old sodium chloride. Salt performs a similar, but different, function to an alkaline salt on the structure of the dough. Sodium ions from the salt help the gluten retain rigidity, prevent overhydration, and increase your ability to mix the dough without over-developing gluten[11]. Salt also adds flavor to the dough. In all recipes I use, I add 1% the weight of the flour/dry solids in salt.

egg white: The albumen of egg whites contains a mixture of protein that denatures (that is, it changes shape and physically weaves with other albumen molecules to form a sturdy matrix) These proteins only denature under intense shearing (like whipping with a whisk) or through heat (like when cooking an egg in a pan). Technically the action between these two examples is different, but the main point is that egg white protein is harder to link up than gluten.

Egg whites, therefore, help with the texture of the noodle by providing some chewiness, but without creating elasticity when raw. Egg white also increases the cooking time of the noodle, as egg white absorbs additional energy when it undergoes a phase transition from uncooked to cooked. For ultimate control, I prefer powdered egg white, since the amount here is consistent, but fresh egg white can also be used, you'll just need to adjust the water in your dough accordingly (Egg white is comprised of around 75% water, so using the weight of the egg white, decrease your water by 75% of the weight of your egg white. Assume the 25% is the weight of the solids).

additional gluten (in the form of vital wheat gluten): While vital wheat gluten (that is, gluten isolated from the wheat) isn't quite the same as the gluten found naturally in flour, it can still provide extra structure. For really chewy noodles, I prefer to add some form of gluten, in addition to using high-gluten flour, to get the total gluten content even higher in the dough. Most vital wheat gluten is approximately 75% protein, so I make my substitutions accordingly. (Adding a gram of VWG adds .75 grams of protein).

yellow food coloring (typically riboflavin or gardenia based pigment): Kansui does change the color of the dough somewhat, but for more color, I add a food dye. Riboflavin in trace amounts dissolved in the water amps up that yellow color. Several manufacturers use riboflavin as a dye to change the color of their noodles, and you can see this on the back of the packaging as part of the ingredients. You can use other dyes (some manufacturers use gardenia-derived dye), but this is pretty much optional. If you want extra color, this is the way to go.

tapioca starch: Much like gluten and egg white, some ramen manufacturers add Tapioca starch to their dry ingredients. I find the texture to be more snappy than chewy, so I tend to avoid using it. But some shops hinge on the usage of tapioca, especially shops in Kitakata. I find that no more than 10% replacement of flour is acceptable.

rice flour: Rice flour is an interesting addition in that it increases slipperiness on the palate. I find that no more than 10% replacement of flour is acceptable.

flavor enhancements: Some shops will add flavoring agents directly to the noodle dough, such as spices or powders. Green tea, chili powder, cumin, there are many options for creativity. This book doesn't give specific recipes for these, but in general, an addition of 1% or less is usually sufficient to enhance the flavor of the noodle without changing its texture or impacting gluten development.

adjunct grains: some noodle makers opt to add various grains to introduce new flavors. Whole wheat, rye, and buckwheat are all options, though spelt and ancient grains can also be additions, depending on the chef's creativity.

Ivan Ramen is famous for using rye in particular. In general, these grains inhibit gluten formation and can be detrimental to the final structure of the noodle. I opt for no more than 10% replacement of flour with these additions for this reason. You may be noticing a pattern here.

malt: traditionally in bread baking, some amount of malted barley is added to the flour to promote rapid fermentation; the malt provides readily available sugars that yeast can munch away on. As a result, some flours, particularly bread flours, include specific amounts of malt to be used during fermentation. This has less of an impact on ramen, which is not fermented, but the resulting noodle can have a slight slippery quality due to the higher amylose content, which feels slippery on the palate (rice flour also provides amylose, and therefore has a similar effect). Malt also gives the noodles a tanner appearance.

Having said all of that, the ratios you use for these ingredients can greatly impact the noodle. An adjustment of 1-2 percentage points in weight can have a measurable impact, something I've found when comparing results done with different types of flour, water, and kansui. Precision is important in the noodle-making process. As mentioned earlier, a scale is really important for accurate ramen noodle-making. All noodle recipes in this book will use weight measurement. While other recipes in this book will contain weights of some kind, they're much more flexible in interpretation, but noodle making probably needs the scale the most. Unlike measuring cups and tablespoons, the amount of error here is reduced dramatically when using a scale. Factors like how airy your flour is (was it sifted before? Has it been sitting around awhile?) can change how much a "cup" of flour is. Don't believe me? Measure out a cup of flour, then tap the cup on a table a few times. Notice how the cup of flour sinks below the lip of the cup? What you measured can differ dramatically based on how you fill the cup. Also, the regulation on cup size is extremely loose. A volumetric cup can be up to ±12% in size. So even your different measuring cups may give you different amounts of flour from person to person. By contrast, 100 g of flour weighed today, or next week, will consistently be the same amount of flour.

Finally, there is no one perfect combination of ingredients for every noodle. As an example, noodle thickness can also dictate how much gluten you want to develop. Thicker noodles with a lot of gluten can end up being overly chewy and incapable of cooking fully. Gluten also increases the cooking time of the noodle, which may be problematic for thicker noodles. This can be a process of trial and error. To save on time, I've adjusted the noodle recipes accordingly to my preferences.

Lastly, I would be remiss to say that the Yamato group has done an extensive amount of research on the effects of pressing, cutting technique, and aging of noodles and their scientific approach has shed new light on many of the topics above. Their content is always worth having a look[12].

MAKING NOODLES

Now that we know the main ingredients, how do you combine them to make noodles? The methods are almost if not just as important as the ingredient selection.

To illustrate the method, we'll start by going over the primary steps.

The following process is derived from several methods I've seen, both from professional manufacturers as well as from other amateurs. For noodles with high hydration (above 36% the weight of the flour being used), this method works quite well.

As a side note, as of this writing, I've yet to be able to make a noodle consistently with hydration below 36% at home. Industrial *manufacturers in Japan can buy specialty flours that are milled finer, which can absorb less water and can purchase expensive presses that can apply a very large amount of pressure to the dough. Home cooks rarely have access to this kind of flour or technology. For the sake of the recipes in this book, all hydration amounts will be 36% or more.*

STEP ONE: INGREDIENT PREP

Before we even do any form of mixing, we need to get our ingredients in order. I like to combine all of my ingredients into two separate mixes.

“dry” ingredients:

- wheat
- wheat gluten
- egg white powder or egg powder
- other additives like chili powder, matcha powder, etc.

“wet” ingredients:

- water
- alkaline salts (kansui)
- salt
- riboflavin or food dye (gardenia-based pigment is common in Japan)
- other additives (Some folks add alcohol or sorbitol as a preservative, I don’t. Fresh eggs would also be included here.)

Weigh out and combine the dry ingredients, either in the bowl of a stand mixer with the paddle attachment, or a food processor with the processing blade.

In a separate vessel, weigh out your water.

The way you add the other wet ingredients to the water in the following steps.

• **First, add alkaline salts:** Alkaline salts, particularly sodium carbonate, form small bonds and clump together if added to water quickly[13]. These clumps prevent dissolution. The easiest way to avoid this problem is to add each salt one at a time, slowly, in an even stream, while stirring the water continuously. The water will start cloudy but eventually turns back to fully transparent with enough stirring. If the salts do clump, they'll still eventually dissolve, it just takes longer to stir into solution.

• **Next, add (sodium chloride) salt**: This salt will take a bit more time to dissolve. Be patient, it will fully dissolve eventually.

- **Finally, add colors or additives:** Riboflavin in powdered form will take even longer to dissolve. It’s just not very water-soluble. Just keep stirring.

Once you’ve combined the wet and the dry, you’re ready to start making the dough!

STEP TWO: PARTIAL HYDRATION

Unlike with Italian pasta, ramen dough is pretty low in hydration. This means it is of the utmost importance that the flour is hydrated evenly, so that the dough comes together easily later on, particularly for the home cook. If you're making the dough by hand or using a standing mixer, splitting the addition of water into parts will help assure that the dough is evenly hydrated.

In a vessel like a bowl or standing mixer, mix the dry ingredients for around 30 seconds to aerate them and make sure the dry ingredients are combined thoroughly. For me, this is "stir" on the standing mixer.

While the mixer is running on this lowest speed, add around 2/3rds of the wet ingredients in a slow and even stream. At first, it's going to look clumpy, messy, and uneven. But stir for around 3 minutes, it'll start to combine into a sandy texture. Sand is good. Sand is great.

STEP THREE: REMAINING HYDRATION

ONCE THE DOUGH has that sandy, even texture, you can add your remaining liquid. As done before, I like to add the remaining liquid in a slow even stream.

At this stage, let the mixer run, but keep an eye on the time. If you mix too much, the gluten will be so active that the dough won't come together easily. So I like to mix for <u>no more than a minute</u>. As the mixer runs, the dough will start clumping together. This clumping will also essentially knead the dough clumps as they spin in the mixer, quickly building dense balls of dough. Once the wet and dry are fully mixed, you'll have a crumbly mess of dough, it will be unlikely to come into a cohesive ball of dough. Folks call this "soboro," a term meaning "shreds" or "clumps." That's ok; ramen dough is crumbly by nature. It doesn't have a lot of water. 1 to 2-inch pieces for most doughs is a good sign. To compensate, we need to go to the next phase.

STEP FOUR: THE FIRST REST

You've added a bunch of water to a dry starch, spun it around, and developed some stringy gluten. You've also incorporated air into the mix by tossing around the starch and water. Now you have to stop doing anything. Leave the dough alone. Don't touch it.

I know, it seems counterintuitive. But this is absolutely required.

Cover the mixing vessel with plastic wrap, or store the dough in an airtight container, and leave it on the counter for a while. At least 30 minutes. Sometimes an hour. If you're short on time, you can stick it in the fridge and leave it there overnight.

Why?

Resting has several major benefits:

1. reduce the rigidity of the gluten in the dough: Because the mixing we just performed partially kneaded the dough, the gluten strands have become “active”. After being exposed to force, the gluten in its current form makes the dough springy, tough, and difficult to roll out. Just like with other doughs, you need to let this dough rest.

2. even hydration: Your dough is low hydration. The water and alkaline salts need time to mingle with the starches and flour, something that, with higher hydration, isn’t as much of a problem. There’s just more water to move around to do the job when you have pizza or bread dough. But for ramen noodles, that isn’t the case, the starches have less available water and therefore won’t hydrate as quickly. You’ll notice when you next handle the dough that it feels wetter than when you covered it as a result of giving it that time to hydrate.

3. degassing of the dough: the dough is filled with both large and small air pockets. These pockets can disrupt a strong, tightly packed gluten network and a rigid starch gel that’s integral to the structure and texture of the dough. If you have way too much air, these pockets also expand in cooking (as heat causes air to expand), creating a spongy texture in the final dough. By resting, you essentially let gravity and capillary action force out small bubbles in the dough. Noodles, as a result, will appear more translucent as air is forced out.

4. begins enzymatic activity in the dough: enzymes in the dough get to work once the flour is hydrated. In ramen, we care specifically about proteases, which start snipping the chains of gluten into smaller pieces. When this occurs, these pieces are effectively primed to be stitched back together into longer, stronger chains of gluten when kneaded. While this might seem counter-intuitive, this enzymatic activity improves the strength of the gluten in the long term.

It's critical either way. Rest your dough!

STEP FIVE: THE FIRST PRESSING

Taking the crumbly dough, it's time to do the first pressing. Get a batch you can handle and press into a thick sheet you can eventually stuff into a pasta machine.

You should have a pasta machine for this. As mentioned earlier, ramen comes from heavy industrial processing, with massive rollers. We don't have this, but we do have pasta machines!

Some manufacturers, like Sun and Yamato, suggest pressing by no more than 30% of the previous thickness. So if your initial dough thickness is 2 millimeters, you should decrease the thickness by no more than 0.6 millimeters per pass. I'm not at all sure where this number comes from, but your pasta machine likely has these ranges built-in. Don't sweat it.

Take the thick sheet, and roll it through your widest setting. Press it between the rollers if you need to. It's going to look ragged and terrible. Don’t worry about it, just try to keep it together. Roll out to the 2nd, and then the 3rd largest setting one by one.

At this stage, fold the dough over itself, and run it through the 2nd largest setting. This is called “compound pressing,” and essentially gives you more bang for your buck. You’ll then repeat this process another time, folding in half, and then running the dough through the largest setting.

The dough needs to go through the machine in the same direction. Folding should always happen through the middle width of the sheet. The reason for this is that, in this rolling technique, you’re aligning the gluten to run horizontally through the sheet of the dough. You’ll notice this effect as you roll, the dough will have white lines running lengthwise as your dough rolls and becomes more cohesive.

This adjustment of the gluten network means that, upon eating the noodles, your teeth bite perpendicularly to the gluten network, rather than along with it. Much like biting into a steak that’s cut with the grain, the dough will feel considerably chewier and more robust. This structure also has the benefit of helping make sure that the starches gel closely together.

Alternatively, for doughs with more water, you can also throw the dough into a plastic bag and step on it a bunch but... that always felt a little too crude for me. Some shops do this believe it or not. But the goal here is to develop gluten fully, get the starches to connect nicely and to have something you can roll out into noodles.

STEP SIX: REST IT (AGAIN)

Remember how I said gluten is really active when you press it? Well, you just made it even more active. You also probably incorporated some small air bubbles. So cover the sheets of dough with plastic and rest them for 30 minutes. This will make it easier to roll and cut later on. For those who have made pasta before, this should be familiar.

STEP SEVEN: ROLL AND CUT

Take your sheets, and starting with the largest setting, roll out setting by setting to your desired thickness. Dust the sheets with cornstarch or potato starch as needed, and then, when the dough is to your thickness liking, cut lengthwise into noodles. I use a noodle cutter attachment, but you can also cut by hand if you like that rustic flair.

Once the noodles are cut, you can do one of two things before storing:

1. Ball ‘em up into portions, you’re done!

2. Knead the noodles into one another. This technique is called “temomi”, or hand pressing, and creates an irregular, wavy texture. I like to dust the noodles with cornstarch, knead them together into a ball, and then detangle them. You can also press the noodles repeatedly into the surface of your workspace for a similar effect.

Some shops will do the kneading right before cooking. I can only hypothesize that the kneading immediately before cooking causes the gluten to become active, resulting in more rigidity and slower cook time when the noodle is finally cooked. When kneading right after cutting, but not before usage, the method is primarily to change the appearance of the noodle.

STEP EIGHT: MATURE NOODLES

Ok, so you have beautiful, cut, perfect noodles. Time to eat?

Not so fast! These noodles need time! Sensing a pattern here?

Maturation is the final phase of ramen noodle making, and it's extremely helpful for developing ramen. In this final resting phase, the noodles… sit around. And as a result, some final effects on the dough occur:

1. Final degassing. Any residual air trapped in the dough will eventually leave. This is where nice noodles become glossy, translucent, and ultra chewy.

2. Hydration redistribution: residual water in the dough evaporates (you might notice some minor condensation in

the container over time). This results in a more consistent product.

3. Enzymatic activity occurs. Enzymes in the flour get to work, developing flavor in the dough, and snipping proteins, which result in a more robust mesh of gluten.

Different noodles need to mature for different amounts of time. Generally though, the more water you have in the dough, the longer the noodles should mature. A good starting point is at least 24 hours for any noodle, but experiment as you get comfortable with noodle making.

Some manufacturers will mature their final cut noodles at room temperature, which rapidly improves the quality of the starch network. In the fridge, the starch gel is much firmer than at room temperature, so the starch gel takes longer to effectively collapse and become dense when cold. Essentially, the room temperature approach is a rapid, faster method. It is a quintessential technique of Sapporo style noodles. However, you need to be careful; at room temperature, there's a possibility for pathogen growth. Noodles with an appropriate level of alkalinity, or preservatives like alcohol or sorbitol, can withstand room temperature better.

While refrigerated, noodles keep for several weeks. For long term storage, noodles can be kept in the freezer for easily 6 months with no reduction in quality.

NOODLE RECIPES

For these recipes, I'll be using the standing mixer approach, which is my favorite. But you can also do them by hand or with a food processor.

TOKYO STYLE NOODLE

THIS IS A GOOD, all-purpose noodle, usable in many different ramen applications. You can cut it with a standard 1.5 mm cutter, or thinner. It can be crinkly or straight. It works with most soups. It's also relatively easy to make compared to other styles.

Ingredients (per portion):

- 99 g King Arthur bread flour
- 1 g vital wheat gluten
- 1 g egg white powder
- 38 g water
- 1 g salt
- 1.2 g baked soda, or powdered kansui (if using powdered kansui, use .5 g sodium carbonate, and .7 g potassium carbonate)
- Optional: pinch of riboflavin (a literal pinch, less than .01 gram is all that's required)

Steps:

1. Add kansui powder and salt to the water (and riboflavin if using), dissolve completely. If using both sodium carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add your flour, wheat gluten, and egg white powder. Turn the mixer to "stir" and run for 30 seconds to aerate the mix.

3. While running the mixer on stir, add two-thirds of your water mixture slowly, in an even stream. Let the mixer stir the flour and water mixture for 3 minutes.

4. Add in the remaining water mixture with the mixer running, run for another minute, until small clumps begin to form.

5. Turn off the mixer, and add the mixture to a sealable bag. Close, and let this rest for 1 hour at room temperature. Don't skip this.

6. Knead it, by using an electric pasta machine to sheet the dough, going through the largest setting, then the 2nd, then the 3rd. Take the dough and fold it, sheeting under the 2nd widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is quite smooth and not ragged.

7. After kneading, put the dough back in the plastic bag, and rest at room temp for another 30 minutes.

8. Pull out your dough. Portion into workable sizes, and roll out to desired thickness, using potato or cornstarch as you go to prevent sticking.

9. Cut your noodles to your desired thickness.

10. Bundle the noodles into 130 g portions and place them in a sealable bag. Put the bag in the fridge and allow it to rest for at least a day.

THIS IS a modification on the Tokyo style noodle, using rice flour to achieve additional slipperiness and texture. Suited well for Shoyu style broths.

Ingredients (per portion):

- 90 g King Arthur bread flour
- 10 g rice flour
- 1 g egg white powder
- 38 g water
- 1 g salt
- 1.2 g baked soda, or powdered kansui (if using powdered kansui, use 4.8 g sodium carbonate, and 7.2 g potassium carbonate)
- Optional: pinch of riboflavin (a literal pinch, less than 0.01 g is all that's required)

Steps:

1. Add kansui powder and salt to the water (and riboflavin if using), dissolve completely. If using both sodium carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add your flour, wheat gluten, and egg white powder. Turn the mixer to "stir" and run for 30 seconds to aerate the mix.

3. While running the mixer on stir, add two-thirds of your water mixture slowly, in an even stream. Let the mixer stir the flour and water mixture for 3 minutes.

4. Add in the remaining water mixture with the mixer running, run for another minute, until small clumps begin to form.

5. Turn off the mixer, and add the mixture to a sealable bag. Close, and let this rest for 1 hour at room temperature. Don't skip this.

6. Knead it, by using an electric pasta machine to sheet the dough, going through the largest setting, then the 2nd, then the 3rd. Take the dough and fold it, sheeting under the 2nd widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is quite smooth and not ragged.

7. After kneading, put the dough back in the plastic bag, and rest at room temp for another 30 minutes.

8. Pull out your dough. Portion into workable sizes, and roll out to desired thickness, using potato or cornstarch as you go to prevent sticking.

9. Cut your noodles to your desired thickness.

10. Bundle the noodles into 130 g portions and place them in a sealable bag. Put the bag in the fridge and allow it to rest for at least a day.

JIRO NOODLES ARE DEFINED by a few main characteristics that are highly unorthodox for ramen making:

1. Jiro noodles are almost entirely made with a specific brand of flour from Nisshin Seifun Group called "Ooshon", a higher mineral flour with high protein content. Chances are you can't get this flour, so we'll use bread flour with a small amount of whole wheat to mimic the effect of a high mineral flour. The resulting noodles will be a light tan hue.

2. Jiro noodles are low hydration, typically 33%, and thick. As I mentioned earlier, anything lower than 36% is often too difficult to work with at home. I found 36% made the dough easier to work with without impacting texture. Add more water as desired. The noodles will be extremely firm, and they will take a long time to cook.

3. Jiro noodles are cut oblong, typically rolling the dough wider than the openings of the cutters. This creates a frayed effect on the exterior of the noodle that is good at picking up soup (but bad for the cutters, so don't do this often!)

Ingredients (makes a small portion, multiply as needed):

- 94 g King Arthur bread flour
    - 6 g whole wheat
    - 36 g water
    - 1 g powdered kansui (60% potassium 40% sodium)
    - 1 g salt

Steps:

1. Add kansui powder and salt to the water, dissolve completely. If using both sodium carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add flours. Turn the mixer to “stir” and run for 30 seconds to aerate the

mix.

3. While running the mixer on stir, add two thirds of your water mixture slowly, in an even stream. Let the mixer stir the flour and water mixture for 5 minutes.

4. Add in the remaining water mixture with the mixer running, run for 3-5 more minutes, or until the crumbly dough does not leave flour residue on your hands when you touch it.

5. Turn off the mixer and add the mixture to a sealable bag. Close the bag, place it on the ground, and step on the dough to compress it into a flat sheet, then let this compressed dough rest in the closed bag, for one hour. This dough is low hydration and hard to work with without stepping on the dough, this jumpstarts some of the structure.

6. Press the dough, taking portions of the dough from step 5 and, using an electric pasta machine, sheet the dough. Start with the largest setting, then the 2nd, then the 3rd. Take the dough and fold it, sheeting under the 2nd widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is smooth and not ragged.

7. After pressing, put the dough back in the plastic bag, and rest at room temp for another 30-45 minutes to relax the gluten.

8. Pull out your dough. Roll out to desired thickness with the pasta machine, using potato or cornstarch as you go to prevent sticking. I roll these to about 3 mm.

9. Cut your noodles to your desired thickness. Given the above, I use a 1.5 mm cutter, standard with a Marcato Atlas. At this thickness, the noodles will fray as they exit the cutters.

10. Bundle the noodles into 180 g portions and place them in the sealable bag. Put the bag in the fridge and allow it to rest for at least a day. This is a LOT of noodles per person. Feel free to adjust as you like.

SAPPORO STYLE NOODLE

THIS IS my favorite noodle (because I'm a Sapporo ramen nerd). The key is to make sure it rests aptly during mixing, and in the fridge. I like them after at least two days in the fridge, but you can go much longer.

Ingredients (per portion):

• 98.5 g King Arthur bread flour
• 1.5 g vital wheat gluten
• 1 g egg white powder
• 38 g water
• 1 g salt
• 1.6 g baked soda, or powdered kansui (if using powdered kansui, use 1.3 g sodium carbonate, and 0.3 g potassium carbonate)
• Optional: pinch of riboflavin (a literal pinch, less than 0.01 g is all that's required)

Steps:

1. Add kansui powder and salt to the water (and riboflavin if using), dissolve completely. If using both sodium carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add your flour, wheat gluten, and egg white powder, Turn the mixer to "stir" and run for 30 seconds to aerate the mix.

3. While running the mixer on stir, add two thirds of your water mixture slowly, in an even stream. Let the mixer stir the flour and water mixture for 3 minutes.

4. Add in the remaining water mixture with the mixer running, run for another minute, until small clumps begin to form.

5. Turn off the mixer, and add the mixture to a sealable bag. Close, and let this rest for 1-2 hours at room temperature. Don't skip this.

6. Knead it, by using an electric pasta machine to sheet the dough, going through the largest setting, then the 2nd, then the 3rd. Take the dough and fold it, sheeting under the 2nd widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is quite smooth and not ragged.

7. After kneading, put the dough back in the plastic bag, and rest at room temp for another 30 minutes.

8. Pull out your dough. Portion into workable sizes, and roll out to desired thickness with the pasta machine, using potato or cornstarch as you go to prevent sticking.

9. Cut your noodles to your desired thickness.

10. Take the noodles and compress them together, sort of like making a snowball, then detangle them, to create a wavy, crinkled pattern.

11. Bundle the noodles into 140 g portions and place them in a sealable bag. Put the bag in the fridge and allow it to rest for at least two days. You can, conversely, rest these noodles

at room temperature for one to two days for additional density in the starch gel and a slightly translucent look.

MAKESHIFT-HAKATA STYLE NOODLE

These are "makeshift" because most Hakata style noodles are very low hydration (<30%), something most home cooks can't do. But they'll still have some similarity to the real deal; they're very toothsome and cook quite quickly. These noodles are particularly hard to make, so try them out once you're more comfortable with a Tokyo approach.

Ingredients (per portion):

- 99 g Bread flour
- 1 g vital wheat gluten
- 35 g water
- 0.5 g baked soda, or powdered kansui (if using powdered kansui, use 0.1 g sodium carbonate, and 0.4 g potassium carbonate)
- 1 g salt

Steps:

1. Add kansui powder and salt to the water, dissolve completely. If using both sodium carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add your flour and wheat gluten. Turn the mixer to “stir” and run for 30 seconds to aerate the mix.

3. While running the mixer on stir mode, add two thirds of your water mixture slowly in an even stream. Let the mixer stir the flour and water mixture for 5 minutes.

4. Add in the remaining water mixture with the mixer running, run for 2 minutes.

5. Turn off the mixer, and add the mixture to a sealable bag. Close, and let this rest for 2 hours at room temperature. Don’t skip this.

6. Knead it, by using an electric pasta machine to sheet the dough, going through the largest setting, then the 2nd, then

the 3rd. Take the dough and fold it, sheeting under the 2nd widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is quite smooth and not ragged.

7. After kneading, put the dough back in the plastic bag, and rest at room temp for another 30 minutes.

8. Pull out your dough. Portion into workable sizes, and roll out to desired thickness with the pasta machine, using potato or cornstarch as you go to prevent sticking.

9. Cut your noodles to your desired thickness.

10. Bundle the noodles into 120 g portions and place them in a sealable bag. Put the bag in the fridge and allow it to rest for at least a day.

KITAKATA STYLE NOODLE

Ingredients (per portion):

- 100 g King Arthur bread flour
- 43 g water
- 1 g salt
- 1.9 g baked soda or powdered kansui (If using powdered kansui, use 0.4g potassium carbonate and 1.5 g sodium carbonate)

Steps:

1. Add kansui powder and salt to the water, dissolve completely. If using both sodium carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add your flour, Turn the mixer to “stir” and run for 30 seconds to aerate the mix.

3. While running the mixer on stir, add two thirds of your water mixture slowly, in an even stream. Let the mixer stir the flour and water mixture for 3 minutes.

4. Add in the remaining water mixture with the mixer running, run for another minute, until small clumps begin to form.

5. Turn off the mixer, and add the mixture to a sealable bag. Close, and let this rest for 1 hour at room temperature. Don’t skip this.

6. Knead it, by using an electric pasta machine to sheet the dough, going through the largest setting, then the 2nd, then the 3rd. Take the dough and fold it, sheeting under the 2nd widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is quite smooth and not ragged.

7. After kneading, put the dough back in the plastic bag, and rest at room temp for another 30 minutes.

8. Pull out your dough. Portion into workable sizes, and roll out to desired thickness using the pasta machine, using potato or cornstarch as you go to prevent sticking.

9. Grab a sheet around 12 inches long, and cut into noodles approximately 3 mm wide. You can do this by hand, or by a cutter.

10. Take the noodles and compress them together, sort of like making a snowball, then detangle them, to create a wavy, crinkled pattern.

11. Bundle the noodles into 140 g portions and place them in a sealable bag. Put the bag in the fridge and allow it to rest for at least a day.

THIS NOODLE USES a bit of whole wheat flour in addition to bread flour. This whole wheat accomplishes a few things:

1. adds more wheat flavor: A lot of the flavor of wheat is captured in the bran and germ, rather than the clean endosperm. In normal white flour, the bran and germ are excluded, resulting in a clean, simple profile that is versatile. But for wheat flavor, sometimes it's good to add a bit of the brown stuff. We're not looking for full-on whole wheat noodles, but this will add flavor no doubt.

2. changes the color/appearance: The bran and germ contain the majority of the mineral content in the wheat berry. In flour milling, this mineral content is called "ash," and higher ash flours tend to have a browner hue. For this tsukemen, I wanted to increase the ash content of the dry ingredients slightly, just from a visual perspective. Rather than searching for high ash flour, this move gets you pretty close (and some nice flecks too).

3. reduces some gluten formation: Because tsukemen noodles are so thick and so hydrated, you don't want a large amount of gluten. Developing the gluten too much will cause the noodles to be extremely, unpleasantly chewy, and require extensive cooking time.

Ingredients (per portion):

- 95 g all-purpose flour (10.5% protein by weight)

- 5 g whole wheat all-purpose flour

- 40 g water

- 1 g salt

- 1 g baked soda or powdered kansui (60% potassium, 40% sodium)

Steps:

1. Add kansui powder and salt to the water, dissolve completely. If using both sodium carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add your flour. Turn the mixer to “stir” and run for 30 seconds to aerate the mix.

3. While running the mixer on stir, add two thirds of your water mixture slowly, in an even stream. Let the mixer stir the flour and water mixture for 3 minutes.

4. Add in the remaining water mixture with the mixer running, run for another minute, until small clumps begin to form.

5. Turn off the mixer, and add the mixture to a sealable bag. Close, and let this rest for 1 hour at room temperature. Don’t skip this.

6. Knead it, by using an electric pasta machine to sheet the dough, going through the largest setting, then the 2nd, then the 3rd. Take the dough and fold it, sheeting under the 2nd widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is quite smooth and not ragged.

7. After kneading, put the dough back in the plastic bag, and rest at room temp for another 30 minutes.

8. Pull out your dough. Portion into workable sizes, and roll out to desired thickness using the pasta machine, using potato or cornstarch as you go to prevent sticking. For this noodle, rolling to around 3mm thick is ideal.

9. Bundle the noodles into 180-200 g portions and place them in a sealable bag. Put the bag in the fridge and allow it to rest for at least a day.

THIS NOODLE USES different flours to achieve a unique, slightly translucent appearance. It pairs well with lighter broths.

Ingredients:

- 30 g King Arthur high protein flour (14.7% protein by weight)
- 70 g Swan's Down cake flour (9% protein by weight)
- 40 g water
- 1 g salt
- 1 g baked soda or powdered kansui (60% potassium, 40% sodium)
- optional: pinch of riboflavin (a literal pinch, less than 0.01 gram is all that's required)

Steps:

1. Add kansui powder and salt to the water (and riboflavin if using), dissolve completely. If using both sodium

carbonate and potassium carbonate, add them one at a time. Go slowly, stir constantly until clear. This will take a while, but eventually, the contents will dissolve. You can make the solution several days before to get a jumpstart, just hold the liquid in an airtight container.

2. In a standing mixer with a paddle attachment, add your flour. Turn the mixer to “stir” and run for 30 seconds to aerate the mix.

3. While running the mixer on stir, add two thirds of your water mixture slowly, in an even stream. Let the mixer stir the flour and water mixture for 3 minutes.

4. Add in the remaining water mixture with the mixer running, run for another minute, until small clumps begin to form.

5. Turn off the mixer, and add the mixture to a sealable bag. Close, and let this rest for 1 hour at room temperature. Don’t skip this.

6. Knead it, by using an electric pasta machine to sheet the dough, going through the largest setting, then the 2nd, then the 3rd. Take the dough and fold it, sheeting under the 2nd

widest setting, then fold it again and sheet it under the widest setting. Repeat this until the sheet is quite smooth and not ragged.

7. After kneading, put the dough back in the plastic bag, and rest at room temp for another 30 minutes.

8. Pull out your dough. Portion into workable sizes, and roll out to desired thickness using the pasta machine, using potato or cornstarch as you go to prevent sticking.

9. Bundle the noodles into 180 g portions, and place them, in the sealable bag, in the fridge and allow them to rest for at least one day.

SOUP

Within ramen, there are two routes a soup can go. It can either be made from fresh meat products that require long cooking times, or dried fish products that require short cooking times. Each of these soups on their own has various applications.

Ramen is, historically, a meat-based dish. Chinese cooks were making meat soups in the early 20th century and, depending on your historical source, some number of industrious Japanese business owners adapted those soups to local tastes by adding soy sauce to the final dish. Meat and ramen are quintessential pairs, it's hard to imagine ramen's popularity without meat-based soup.

So the focus of this chapter will be primarily on meat-based soups though fish-based soups are discussed later. When I refer to soup in this chapter, I specifically mean one that uses some amount of animal bones or tissue to achieve its flavor and viscosity.

Soup often seems like an extremely complex part of the process. The soup lore is astounding, with some shops cooking their soup in big vats for years, continuously adding new bones and water. There are stories of tonkotsu shops that boil their soup for over 40 hours. Some chefs meticulously monitor their soups, making sure the temperatures hover in each specific degree, no more no less. And none of this covers the recent growing popularity of other cooking techniques, like sous vide and pressure cooking, which can both be used in soup making (more on that later!).

But the reality is, soups are easy. Seriously. All soups made with meat products can be divided into two categories, and the method for making them is very straight forward, virtually all recipes you will find are simply variants of the method we will describe.

The two categories of soups in ramen are:

1. chintan soups, or clear soups

2. paitan soups or cloudy soups

There are endless variations on these two, but all soups (yep, all of them) fall into one of these two categories. Admittedly, it’s more like a continuum than a pure categorization, some soups are slightly cloudy, others less so. But this is all soup is.

In my experience, this means the variation by soup is rarely on technique and much more by ingredient selection. The process for meat soups, in almost all cases, goes as follows:

1. Cook animal parts in water to extract flavor and convert collagen to gelatin, which adds thickness and mouthfeel.

2. Add aromatics for complexity and to provide water-soluble flavor compounds (this includes dashi elements).

So, what happens when you make soup? Let's discuss in detail.

COLLAGEN CONVERSION TO GELATIN

Connective tissue within an animal is made up of a molecule called, “collagen.” Collagen is a tight mesh protein that is not water-soluble that gives structure to this tissue. Connective tissue is found in virtually all animal meats in varying proportions. Under normal circumstances, collagen is rigid and unpleasant to eat in large quantities; think the gristle in your steak, as an example.

But when collagen is introduced to prolonged heat, it undergoes a chemical change where it effectively breaks down into gelatin. Gelatin, unlike collagen, is water-soluble. Through cooking pieces of meat with collagen in water, that collagen converts to gelatin and dissolves.

Items that are collagen-rich tend to be muscles and parts of the animal that serve multiple purposes: they can act as a barrier of some sort, need to move often, or connect different tissues together. Feet, bones, tendons, ligaments, skin, these items have loads of collagen. This does not mean you want to make a soup entirely from these ingredients; you can certainly have too much gelatin in your soup.

When gelatin dissolves into water, several things happen:

1. The gelatin molecules increase the viscosity of the liquid, as they attract water molecules and prevent their movement. Too much, and the gelatin causes the soup to almost feel sticky on the palate. Too little, and the gelatin doesn't attract enough water, making the soup feel thin and watery.

2. When cold, the gelatin molecules link up to form a mesh of protein, entraining water. In ample quantities, this mesh can resist forces like a solid and retain its shape. It's meat Jello, basically.

Controlling the gelatin content of soup is done by cooking the bones/tissue appropriately to ensure full extraction and conversion, and that the right amount of water is present in the soup before finalizing. You can also control the gelatin content by using an appropriate amount of ingredients that are high in collagen.

Essentially, if your soup feels too watery, you simply need to reduce it or include more bones/connective tissue in subsequent cooks. And if it feels too thick, you can add water to it, or increase the ratio of water to bones in subsequent cooks.

MYOGLOBIN DENATURATION AND SCUM FORMATION

Myoglobin is a protein that gives the muscle its red color. Unlike other proteins found in blood, myoglobin is water-soluble. You'll notice when soaking bones or at the initial cooking of bones that the water turns a pinkish-ish hue. This is myoglobin, not necessarily hemoglobin. All bones and tissue in the animal parts contain some level of blood, so some hemoglobin will be there, but most of what you're seeing is myoglobin.

As the temperature of the water increases, myoglobin undergoes denaturation where the protein unwinds and links up. This linked up mesh of myoglobin combines with other denatured proteins and conveniently floats to the top of the soup. Chefs call this mix of proteins "scum," and often choose to skim it away. Admittedly, skimming the scum may or may not be necessary. Most chefs I've spoken to suggest that keeping scum can lead to an off appearance, darkening the soup, and an off, almost metallic flavor. On the other hand, Daniel Gritzer at Serious Eats suggests that by leaving the scum, it improves the clarification of the final soup, as debris invariably gets trapped in the mesh of proteins floating on the surface[14], and has minimal impact on color.

In some applications, skimming the scum helps improve color. Over a long enough time, particularly in a scenario where the soup is boiling vigorously, the scum will turn brown and solubilize. Removing the scum can help preserve the color of the final soup. For pork bones, you may wish to blanch or soak the bones overnight, to remove myoglobin before cooking, as these bones produce more myoglobin to skim than chicken parts.

I almost always skim the scum. But there isn't a hard and fast rule here.

FAT RENDERING

Meat products contain fat, even in trace amounts. Animal fat melts at a temperature much lower than boiling, though the specific melting temperature depends on the fat in question. As the soup is cooked, rendered fat rises to the top of the water and stays there until it is skimmed off or emulsified. You can use this fat for later cooking purposes (see the Aroma Oil section), or discard. The fat rendered in the soup making process contains all of the fat-soluble flavor compounds extracted, so it will have a markedly different flavor than a fat rendered on its own, which may or may not be desirable in the final bowl of ramen.

THE PRIMARY PURPOSE of cooking ingredients in water, aside from dissolving gelatin to improve body, is to add flavor to the liquid. Animal tissue has a TON of trapped flavor. Flavor extraction from meat is directly related to the temperature and time on which it is held. As meat and bones cook, the protein within them denatures, squeezing out water and water-soluble flavor compounds, which then solubilize surrounding soup. For many of these compounds,the speed and quantity of this extraction increase with increasing temperature[15]. Chemical reactions generally increase in speed with temperature, so this is not surprising.

Other aromatics, which generally refers to vegetables and herbs, also follow this rule. Aromatics, however, do not take as long to release their flavor into the liquid as meat-based ingredients do, as their cells generally break down faster under conditions found in cooking. This is why onions and carrots will be very soft after a few hours of cooking. Applying heat also creates new chemicals, or releases existing chemicals, that produce aromas. These aroma producing compounds are only detected by our noses because they are volatile, evaporating from the soup over time. Aromatic compounds don't really stop being released (otherwise what would you be able to smell?), and they continue to volatilize while the soup cooks. Unfortunately, there are only so many aromatic compounds that can be released from the ingredients added. Release too much of them, and you won't have much left to enjoy in the soup. A soup with onions cooked for 6 hours will be far less oniony than one cooked for only an hour.

Depending on what you'd like your final soup to taste like, you can increase or decrease the aromatics' cooking time accordingly. For brighter vegetable flavors, cook them in the soup for less, for muted ones, cook them more. For most applications, I've found that an hour at 88-93 °C (190-200 °F) is sufficient to extract the aromatics' flavor compounds into the soup, though chopping or dicing the aromatics further will rapidly increase the speed in which your extraction occurs. Typically, I find large pieces, cooked in the soup for an hour, is sufficient (and my recipes will mention the size desired for the ingredients).

One additional comment on aromatics: garlic is a unique ingredient in that, depending on how the clove is prepared before cooking, the pungency of the flavor in the final soup changes[12]. As garlic's cell walls are ruptured via crushing or cutting, an enzyme in garlic called "alliinase" is released, which converts alliin (the foundational flavor of garlic) into allicin. Allicin is the compound that gives garlic its sharp, sulfuric quality. Heat stops the activity of this enzyme, so you can effectively control the sharpness of the garlic's flavor in your soup depending on the treatment of the cloves before adding them to the soup. Put in whole, the enzyme will have almost no activity, and so the flavor of the garlic will be much milder. Crushed with the heel of a knife, the clove will experience some enzymatic activity, and some sharpness will remain. If you completely obliterate the garlic into a paste, the flavor will be sharp and intense. Getting the right amount of garlic punch can be tricky though, as it's balanced by not only how it's prepared, but how long it's cooked. Much like I mentioned earlier, cooking aromatics like garlic for a long time causes many of their flavor compounds to volatilize, making them gone for good.

In western cooking, particularly in French methods, flavor generation also usually involves browning aromatics and meat first, then covering with water, allowing the browned flavor to permeate the liquid as it cooks. In ramen making, browning of aromatics and bones is extremely rare. To be honest, I don't know why this is, but I feel that unbrowned soups tend to pair better with ramen noodles. As a matter of preference, browning could be okay as a part of your soup-making process. I just don't personally do it.

Soup, therefore, represents one component used to create the flavor profile in ramen, primarily from water-soluble flavors. All done primarily through boiling. Soup might sound like it isn’t doing anything very important at first, but it is. Without soup, a lot of the potential water-soluble flavors produced by vegetables and meats would be completely absent.

EMULSIFICATION

I’ve been deliberately quiet about the difference between cloudy paitan and clear chintan soups. It’s all for a good reason, as there’s a simple but big difference: emulsification. Paitans are emulsifications, and chintans are not. That’s the key difference between the two. Mineral content, bone granules, none of these explain why paitans are cloudy. It’s purely due to the emulsified fat.

In most cases, the fat separates from water, but in ramen soups, it can be effectively emulsified if the right compounds are there. When making ramen soups, emulsification of the fat and water is allowed due to two classes of ingredients: gelatin extracted from the animal products, and other additives not added from cooked ingredients.

GELATIN IS the primary emulsifier in ramen. We've extracted a ton of it from the animal parts, and thankfully it's a really good emulsifying agent. The fat in paitans is dispersed into small, tiny, microscopic globules that the gelatin can then latch onto and hold into solution. Because these globules of fat are so small, they refract light, turning the soup opaque.

Gelatin is not going to aggressively emulsify fat on its own. Rather, we need to do something to generate the emulsion. This is not a simple task. Fat and water are immiscible, as fat is hydrophobic as a non-polar liquid, so it attempts to reduce its surface area in the presence of water. To achieve an emulsion, the globules of fat need to be small enough that the attractive forces between fat droplets are smaller than the repulsive forces caused by an emulsifier like gelatin. That requires some energy.

There are two common methods to get the droplets small enough to emulsify:

1. rapid boil. The most traditional method of achieving an emulsified paitan soup is to rapidly boil the contents of a pot. This rapid boil creates agitation, which, over time, turns the fat into tiny globules that can be suspended in the liquid.

2. using a blending device: Hand blenders or jar-style blenders accomplish the same emulsification approach by ripping up the bubbles of fat into tiny, tiny sizes, that the gelatin can then latch onto.

It's worth noting that, contrary to many recipes found online for paitans, you do not need to whip the cooking liquid for the entire duration of the cooking time. Gelatin, when given small enough droplets of fat and in ample enough quantity, emulsifies the fat very quickly (in as little as 30 seconds in a blender). So a slow-cooked soup that is relatively clear can be turned into a paitan very quickly simply by whipping it with its fat in a blender.

Gelatin is so good at emulsifying that soups meant to be clear, if accidentally boiled, can become slightly cloudy very quickly. As a result, chintan soups maintain more clarity when the contents of the pot are not agitated. I recommend a temperature of around 88-91 °C/190-195 °F to avoid rapid bubbling that may accidentally emulsify fat (more on the temperature in a moment).

OTHER EMULSIFIERS: STARCH AND PROTEIN BLENDING

For some soups, the stabilization of an emulsion, particularly at home, is challenging because there isn't enough gelatin. Poorly emulsified soups can result in a thick layer of fat on the surface of the soup, which can congeal when cooling or sitting in the serving bowl.

A blender does a wonderful job at emulsifying, but if you don't have enough emulsifier, then no amount of agitation is going to get the emulsion you want. Adding an emulsifier can help stabilize the emulsion without additional tools. There are tons of these, from modernist ingredients like lecithin or gums that trap residual water, to simple ones, like starches and protein sources.

The easiest of these for home cooks to acquire is white rice. Rice is great because it's cheap, readily available, and doesn't add flavor to the final dish. The method itself is simple: add a few tablespoons of rice to your soup an hour before blending. As the rice cooks, it releases starch, which traps residual fat globules and helps suspend them in the water-based soup. But blending any vegetable with some amount of starch can yield similar results. Potato is another common addition, though the flavor is more noticeable.

Protein slurries, such as blended meat scraps, can also provide similar emulsification. Tenkaippin is known for this technique where they take cooked, shredded, chicken thigh meat, and blend it into the soup until it’s viscous and emulsified. The tsukemen recipe listed here uses this technique.

Maybe you're unsure if you've reached the desired amount of emulsification and gelatin extraction. Fear not, you can measure the quantity of gelatin in your soup via a few methods and tweak the results from there:

1. the empirical test. Taste the soup. Does it feel full-bodied? Do you like the texture of it on your tongue? That's the gelatin and fat increasing the viscosity.

2. the chill test. After cooking, let a sample of your final soup chill completely in the fridge. How firmly does the gel hold? A firmer gel is the result of more gelatin in solution. The downside is that this requires time for chilling.

3. check the dissolved solids using a refractometer. This is a method used by large ramen chains and meticulous chefs to maintain consistency of the final soup. A refractometer effectively checks the amount of dissolved and emulsified solids in solution by measuring how much a solution refracts light. As the water becomes more viscous, it refracts more light. The most common scale of the measurement of dissolved solids in ramen is called “Brix,” and most refractometers use this scale. It can be helpful, then, to check the viscosity of the solution in Brix, because the measurement scale is commonly used, and you can gain reference points for the degree of Brix you enjoy. This is the most accurate approach, but it requires expensive equipment.

I prefer the first approach, simply because I like to cook in the moment. But if I'm feeling particularly scientific, below are some Brix levels I like to hit, based on the type of soup I’m making. This is all personal preference:

Soup Use Case	Chintan/Paitan	Brix
Sapporo Miso	Chintan	2
Tokyo Shoyu	Chintan	4
Chintan for Double Soup	Chintan	5
Tonkotsu	Paitan	6-8
Chicken Paitan	Paitan	6
Tsukemen	Paitan	11+

You’ll notice that the paitans above have a higher Brix than the chintans. This is because you require a sufficient amount of gelatin to create the emulsion in a paitan. In a chintan, too much gelatin can be detrimental to the clarity (more on this in a moment).

COOKING SOUP: MANY APPROACHES

For soups, the most common approach is to use a large stockpot to hold the contents, and completely cover them with water, cooking over a burner at the desired temperature, until the soup is complete. For chintans, this soup is held at a very delicate simmer, and for paitans this is done at a rapid boil. In most restaurants, this is usually how the soup is created. Scaling soup to large quantities is a not-so-trivial endeavor, and these methods work for making lots of soup.

Using the knowledge mentioned earlier and this little bit of information, you can make soup. However, it’s not the only option, especially for home cooks.

SOUS VIDE

Sous vide is a relatively new and exciting option for some soup applications, as the precise temperature controls ensure a very specific extraction. Particularly for dashi, where some chefs demand specific temperatures, it can be useful. But this comes with some limitations. Namely, wand-style circulators are not designed to circulate soup, only water. Doing so can damage the device and void the warranty. Other temperature-controlled technology, such as thermometer assisted induction cooktops, are also valid approaches, but the equipment can either be expensive (like the Breville Control Freak, currently at $1,500)[16], or inaccurate. But they are intriguing.

Sous vide is very useful for a lot of other components in ramen, not just soup. I'll describe how this technique can be useful for those applications later in this book. While all of the recipes that use sous vide here will have the details you need to get cooking, gaining some background knowledge on the technique may also be helpful here and elsewhere. There are plenty of resources out there. However, in my opinion, the best source of fundamental info on sous vide can be found in Douglas Baldwin's book, "Sous Vide for the Home Cook[17]." Baldwin is a friend and former colleague of Scott's, so there is just a tinge of bias, but seriously it's absolutely worth a read. Baldwin's website is also packed with useful information[18].

Recently, **pressure cookers** have become popular in the ramen scene to make soup. I use a pressure cooker in almost all of my soup making. Pressure cookers build pressure in a vessel via trapping the water vapor that is created during boiling. As pressure rises in the pot, the boiling point of the water within increases, and as this boiling point increases, the contents within the pot cooks faster. Most pressure cookers hit around 15 psi of pressure or about one additional bar. The general rule of thumb is that this amount of pressure decreases cooking time by around 8-fold (this is just a rule of thumb, things are actually more complex than this). This results in a substantial savings in time.

There is some dogma by ramen purists against pressure cooking due to the speed in which soups can be completed in them. Shops that would slave away at a tonkotsu all day can now complete these soups in a matter of hours. In my experience, soups made in a pressure cooker are indistinguishable from those made on the stovetop. I won't say they're perfectly identical, they probably aren't. But I'm not sure if the difference is all that big.

Pressure cooker substitution approach: For recipes in this book, you'll need to replace the time spent cooking the meat before adding aromatics with a reduced time under pressure. Pressure cookers release pressure two ways, either through opening a valve and venting, which is called a fast release, or by allowing the soup to cool with limited venting, called a natural/slow release. Fast release introduces a negligible amount of extra cooking time, but this isn't true during a slow release. If using a natural/slow pressure release, the time spent during the release needs to be included in the total cooking time, even though it isn't as impactful to the cooking time as the cooking time under pressure. This might sound complicated, but I've used a simple relationship between normal cook time, time under pressure, and the pressure release time produces consistent results:

$$\textit{Normal cook time} = 8 \times \textit{Time under pressure} + 4 \times \textit{Pressure release time}$$

The release time depends on the manufacturer of the pressure cooker and can be anywhere from 30 minutes to an hour. You'll need to experiment with your pressure cooker to figure this out, but I assume that 30 minutes is pretty standard. Using the formula is otherwise pretty simple. For instance, a soup that takes 8 hours to cook will take 1 hour to cook under pressure using a fast release, or 45 minutes under pressure with a 30-minute natural release. This works well for both stovetop models and instant pot/electric models. Despite the electric models holding slightly less pressure than stovetop models, I've found similar results using both.

Pressure cooking is a great alternative to making soup via traditional stovetop methods. As shown here, there are massive time savings. A tonkotsu that would normally take 18 hours now only takes as little as three hours, turning an arduous project into an afternoon one. The only major consideration with pressure cooking is how to avoid emulsification. Pressure cookers are prone to create emulsions in two ways:

1. During pressure buildup, pressure cookers boil the contents of the pot. If this buildup phase takes time, the contents of the pot can boil, and this boiling can suspend some amount of fat in the liquid.

2. Once the cook is done, if a fast release mechanism is applied, the contents of the pot will boil rapidly, also resulting in an emulsion.

In some instances, such as with paitans, you may want this, because emulsion is necessary. So the general rule of thumb is, for chintan soups, a natural release is preferred over a fast release. For paitans, a fast release can jumpstart the emulsion.

Once the soup is complete, it's important to either hold it hot or chill it thoroughly and quickly. Soups are protein-rich aqueous solutions that bacteria absolutely love, and can become prime places for pathogen growth. If the soup sits in what the FDA calls "the danger zone" or a temperature between 5 and 60 °C (41 to 140 °F), bacteria have the opportunity to grow. During cooking, you'll be far above 60 °C, but eventually, you'll need to cool the soup, and it will cross into this threshold as it cools. If you're only making small batches of soup, this isn't usually a problem, but for large volumes, cooling the soup fast enough requires some extra thought.

Modeling how the heat is removed from a container of soup relies on a lot of factors, including the material the pot is made out of, the size of the pot, and the amount of liquid in the pot, how the pot is covered, the surface it's sitting on, etc. Even with all of those differences, we can find some good strategies to cool soups quickly with a little science. Newton's law of cooling helps with this understanding as an approximation of what's going on, and is described by the following equation:

$$\frac{\partial Q}{\partial t} = -hA(T(t) - T_{env})$$

No need to pull out the textbooks for this equation, we won't be solving it for soup! You just need to know what the equation means. First, let's define the variables. The left side of the equation represents the rate of heat transfer from the soup to the environment. Meanwhile, on the right side of the equation, h is the heat transfer coefficient (a property affected by the materials used), A is the surface area, T(t) is the temperature of the soup over time, and T_{env} is the temperature of the environment. Looking at this equation, we get a few important concepts.

1. The larger the difference in temperature is between the soup, T(t), and the environment, T_{env}, the more rapid heat will transfer. An ice bath is therefore an effective method to rapidly get the soup to cool without staying in the danger zone very long. So is using a freezer if you're being careful.

2. Dividing soup into smaller volumes will increase the surface area exposed (increasing A). You can do this by pouring the soups into small quart style deli containers instead of keeping the soup in a single large container. Just

dividing the soup into two containers instead of one will more than double the surface area, and therefore halve the cooling time.

3. Keeping soup in conductive containers, as long as they're stored in cold places, will also allow them to cool faster (by increasing h). Stirring the soup in a cold environment will also cause the soup to cool more rapidly by increasing h as well, though this might be less practical in the area you're trying to cool the soup in.

4. Containers should be cooled in temperatures that are significantly lower than 5 °C. The soup temperature, T(t), is a function of time. As it decreases, so does the rate that heat is removed. If the temperature isn't sufficiently low enough, the soup will stay warm long enough to promote bacterial growth. It's a really good idea to keep your refrigerator lower than 5 °C anyway[19].

Once the soups are cooled completely they're ready for use after reheating. So far, I've found virtually no loss in quality after the soup has been reheated. You can keep soups for up to a week in the fridge, or up to 6 months in the freezer.

COOKING TIMES BY INGREDIENT

In general, the bones of birds are more porous than those of other land animals, and thus they require less cooking. Below is a time table for making soups.

Ingredient	Stovetop (At 88 °C/190 °F or higher)	Pressure Cooker (at full pressure, 15 psi, assuming 10 quarts max capacity)
Chicken (whole, backs, feet, all chicken)	6 hours	45 minutes (or 30 minutes with 30-minute natural release)
Pork neck bones	8 hours	1 hour (or 45 minutes with 30-minute natural release)
Pork femur bones	18 hours	Up to 2 hours
Fish	1 hour	10 minutes

DASHI

Before we dive into styles of soup, there's a critical soup component that needs a little more detail and needs to be made ahead of time. Ramen chefs often add liberal quantities of this ingredient to their soups, and that is also true for the recipes in this book. I'm talking about that subtle but umami amplifying stock, used in all sorts of other Japanese soups, dashi.

Dashi is a cornerstone of Japanese cooking and it would be a disservice to not mention it in some capacity in this book. The term "dashi" is often used as a catchall term in modern Japanese for soup, but most typically refers to a soup made from kombu and dried fish products. An entire book could be written on dashi. In fact, one by Heston Blumenthal has already been written[20]. Dashi has been the subject of intense discussion, debate, and research, due to its importance to the Japanese lexicon of food, and it’s remarkable ability to add a meaty sensation on the palate.

Ajinomoto, a prominent supplier of ingredients used in cooking, credits dashi as the source of inspiration for the discovery of umami, and in turn, the various components that create umami (which we’ll cover in the tare section more fully). Specific temperatures, times, and approaches are touted by various chefs and scholars on how to extract the most umami and flavor from core ingredients, but they vary considerably. One study by Mouritsen et al. showed that holding kombu in water at a temperature of around 60 °C/140 °F for 45 minutes extracted the same amount of umami producing compounds as boiling the kombu[21]. Others claim that soft water improves the extraction[22], while Mouritsen et al. did not show that this was true. David Arnold’s work with kombu suggests that steeping kombu in cold water before cooking using sous vide can also provide ample extraction of umami ingredients, though he used an operating temperature of 65 °C[23]. Other recipes, such as Ivan Orkin’s, insist on using 80 °C/176 °F as the optimal cooking temperature[24].

This can be very confusing. Who is right here? In general, I don’t fuss about the specifics, I think you can make good quality dashi even with tap water. Excessive heat does impact the final result considerably, so I try to avoid boiling dashi ingredients. Much like tea, extremely high temperatures can extract unwanted flavors from these ingredients, and it’s best to err on the side of caution (even if Mouritsen et al. are correct). But I don’t think you need to constantly monitor the temperature, especially in ramen applications.

Dashi can be added to soup directly, but I find that it’s easier to add the ingredients used in dashi to soup directly. The ingredients used in dashi add fantastic complexity to ramen. Katsuobushi is smoky, niboshi is fishy and pungent, clams are briny and sweet, and kombu is oceanic. For simplicity, I often just add these ingredients at the end of the cook, much like with other aromatic components. By the time these ingredients are added, the soup is no longer boiling and is an appropriate temperature for most extractions. Still, you’ll have to play around with what works for you.

Alternatively, if you’d like to add dashi to soup, rather than adding just the ingredients, below are a few dashi recipes. They are by no means exhaustive (again, dashi is inherently complex stuff with many variations). Dashi can also be used to thin out thick soups in a pinch or will be used as part of the soup technique known as “double soup” (more on this one later).

THIS IS AN ALL-PURPOSE DASHI. If you're not sure where to start, this is a safe bet. It's simple but versatile.

Some variants of dashi also suggest an overnight soak before cooking can increase the amount of flavor extracted. To do this, simply combine the kombu (and niboshi or shiitake, if using) and water, and place in the fridge for 12-24 hours before cooking. Then proceed with step 2.

Ingredients:

- 1 L cold water
- 10 g kombu
- 25 g katsuobushi (or replace with niboshi, or shiitake, as desired)

Steps:

1. Add the cold water and kombu to a pot (if using niboshi or shiitake, add with the kombu).

2. Heat over medium-low heat until just below simmer, around 80 °C.

3. Turn off the heat and allow it to steep for 10 minutes.

4. Remove the kombu, add the katsuobushi (if using).

5. Bring up to a simmer, then turn off the heat again, cover, and allow to steep until flavored to your liking, anywhere from 5 minutes to 30 minutes.

6. Strain through a fine-mesh strainer and reserve until needed.

Dashi degrades quickly in flavor, so it only keeps for a few days in the fridge if you decide to make it in advance. Luckily, it’s relatively simple to put together.

CLAM DASHI

Clam in ramen is becoming more popular and this is a simple soup that can be combined with others to create complexity. This dashi is clam forward, containing only 3 ingredients, but some additional steps are needed to treat the clams appropriately. This dashi can also have dashi elements like katsuobushi or niboshi steeped in it after it is complete, should you choose to do so. If you'd like to use the clams for eating after, you'll need to remove the grit from them first (see the first steps of this recipe).

Ingredients:

- 1 L cold water
- 20 g sake
- 500 g clams (manila or cherrystone)

Steps:

1. To remove the grit from the clams, place them in cold water and allow them to sit undisturbed for one hour.

2. Wash the clams and scrub their exteriors to remove any residual dirt on the outside.

3. Combine 1 L cold water, sake, and cleaned clams in a pot.

4. Heat over high heat until reaching a simmer.

5. Cook the clams at a simmer for 10-15 minutes, or until the shells have opened and the clams are completely cooked.

6. Strain through a fine-mesh strainer and reserve until needed. You can then harvest the meat for alternative purposes.

Much like the previous dashi, this only keeps for a few days in the fridge should you choose to make it in advance.

BACON DASHI

THIS IDEA IS BLATANTLY RIPPED off from David Chang and Peter Meehan's cookbook, "Momofuku: a Cookbook[25]." I won't even pretend to have come up with the idea. It's excellent for those who struggle to find Japanese ingredients, the bacon providing smoke.

Ingredients:

- 1 L cold water
- 10 g kombu
- 100 g bacon

Steps:

1. Add all ingredients to a pot.

2. Heat over medium-low heat until just below a simmer, around 80 °C/176 °F.

3. Turn off the heat and allow it to steep for 10 minutes.

4. Remove the kombu.

5. Bring up to a simmer, then turn off the heat again, cover, and allow to steep until flavored to your liking, around 30 minutes.

6. Strain through a fine-mesh strainer and reserve until needed.

These dashi recipes will pop up on occasion in the next soups. But onto the main methods for Chintan and Paitan.

BASIC CHINTAN METHOD

Ingredients:

1. Animal parts (such as chicken backs, pork neck bones, femurs, or other bones of your liking)

2. Some amount of water (starting at equal parts, and going up to two parts, by weight, depending on the result and amount of connective-tissue laden ingredients).

3. Aromatic vegetables and ingredients for complexity

Steps:

1. Submerge the animal parts with water.

2. Heat over high heat until the pot begins to boil.

3. Skim the scum that rises to the top.

4. Reduce the heat to below sub-simmer (around 88 °C/190 °F) to preserve clarity.

5. Cook for the recommended time based on ingredients.

6. In the last hour, add the aromatics.

7. Strain the soup.

From this framework, you can make a host of different soups. Want a beef soup with caramelized onions? Cook the beef bones for 8 hours, then toss in those onions at the last hour. Want a super fishy, really rich, but clear chicken soup? Cook the chicken parts, being sure to include some feet, for 6 hours, adding in dashi elements like bushi products or niboshi, at the last hour.

Below are some common recipes I use for chintan, depending on need.

THIS RECIPE IS a combination of chicken and dashi elements. It's simple and effective with many different ramen tares.

Ingredients:

- one stewing hen (approximately 3 kg/6.6 lb), broken down into primal sections (legs, wings, breasts, frame)
- 1 kg/2.2 lb chicken feet
- 6 L water
- 1 onion
- 10 cloves garlic
- 1 5-cm/2-in piece of ginger
- 20 g kombu
- 20 g niboshi
- 20 g katsuobushi

Steps:

1. Add the chicken to a stockpot, cover with water.

2. Bring the soup up to a boil briefly, skim any scum. Hold here for 5-10 minutes, or until scum subsides.

3. Reduce heat back down to below simmer (around 88 °C/190 °F), hold for 5 hours.

4. Add your onion, garlic, ginger, niboshi, and kombu. Cook for an additional 45 minutes.

5. In the last 10 minutes, add the bonito flake and steep.

6. Strain the soup and hold it until needed.

“DOUBUTSU KEI” STYLE CHINTAN

THIS RECIPE COMBINES chicken and pork products to produce a more round amino acid profile. Lighter in body, this soup is excellent in Miso, it’s also good with shoyu applications. I like to blanch the pork neck bones to remove some of the myoglobin and preserve clarity, but this is optional.

Should you desire, you can also use all chicken backs, or all pork bones, for this recipe.

Ingredients:

- 2 kg/4.4 lb pork neck bones
- 2 kg/4.4 lb chicken backs
- 6 L water
- 1 onion, peeled and halved
- 10 cloves garlic, peeled.
- 1 2-inch piece of ginger

Steps:

1. Blanch the pork neck bones briefly by covering them with cold water in a pot, bringing them to a boil, and cooking for 15-20 minutes, or until the scum subsides. Strain the bones and reserve.

2. Add neck bones and chicken backs to new water in a stockpot, bring to a simmer, and skim any scum that rises, for around 5-10 minutes.

3. Reduce heat back down to below simmer (around 88 °C/190 °F), hold for 7 hours (additional time to account for the pork bones).

4. Add your onion, garlic, and ginger. Cook for an additional hour.

5. Strain the soup and hold until needed.

THIS RECIPE IS VERY similar to the doubutsu kei soup mentioned before, but excludes the ginger and pork, making this an overarchingly all-purpose soup, even in non-ramen applications.

Ingredients:

- 4 kg/8.8 lb chicken backs
- 6 L water
- 1 onion, peeled and halved
- 10 cloves garlic, peeled.

Steps:

1. Add neck bones and chicken backs to freshwater in a stockpot, bring to a simmer, and skim any scum that rises, for around 5-10 minutes.

2. Reduce heat back down to below simmer (around 88 °C/190 °F), hold for 5 hours

3. Add your onion and garlic. Cook for an additional hour.

4. Strain the soup and hold it until needed.

NEW WAVE CHICKEN CHINTAN

THE NEW WAVE of shoyu ramen emerging in Tokyo is based on a very specific trend of using only chicken, and nothing else. The method is effectively the same as other chintan applications.

Ingredients:

- 4 kg/8.8 lb chicken backs (or two small chickens, broken down, breasts removed)
- 4 L water

Steps:

1. Add the chicken to a stockpot, cover with water.

2. Bring the soup up to a boil briefly, skim any scum. Hold here for 5-10 minutes, or until scum subsides.

3. Reduce heat back down to below simmer (around 88 °C/190 °F), hold for 6 hours.

4. Strain the soup and hold it until needed.

BASIC PAITAN METHOD

The only major difference between the paitan and the chintan method is the rate of boil needed to emulsify the fat. And even this isn't necessary if you'd like to use a blender, the churning action of the rapid boil isn't required.

Ingredients:

- Animal parts (such as chicken backs, pork neck bones, femurs, or other bones of your liking)
- An equal part by weight of water. (Add more water for thinner result)
- Aromatic vegetables and ingredients for complexity

Steps:

1. Submerge the animal parts with water. If using pork bones, you may wish to soak the bones overnight to remove some of the myoglobin.

2. Heat over high heat until the pot begins to boil.

3. Skim the scum that rises to the top. If using pork bones, you may opt to discard the water and start again with fresh water, bringing up to a boil.

4. Continue to boil over medium/medium-high heat for the recommended time based on ingredients. **Add water to maintain sufficient coverage of the bones** (as evaporation occurs as the bones cook).

5. In the last hour, add aromatics, and continue to boil.

6. You may optionally mash the contents of the pot to promote emulsification and full extraction.

7. Strain the soup and reserve or chill thoroughly. If not fully emulsified, blend the desired amount of fat into soup until the emulsion level desired is achieved.

Virtually all paitans in this book will follow this approach. The last step, in particular, is noteworthy because it is unorthodox, and typically only conducted in a home setting. You could theoretically emulsify all of the soup with all the fat, resulting in something not unlike milk or cream. You may not want this level of emulsification. Ultimately you as the cook decide how far you'd like the emulsion to go.

Below are some specific recipes I use regularly.

TONKOTSU IS a paitan of pork bones. This is the basic tonkotsu approach that most restaurants essentially use. You may find in your research that some restaurants add in new bones midway through cooking, or use different bones like heads or ribs, but overall, the method is effectively the same: cook bones to death, and emulsify everything.

Ingredients

- 2 kg/4.4 lb neck bones
- 2 kg/4.4 lb femurs, split to expose the marrow
- 6 L water
- optional (to add additional fat): 0.5 kg/1.1 lb fatback
- optional aromatics: 1 onion, halved, and 10 peeled garlic cloves

Steps:

1. The night before, or at least 6 hours before cooking, soak your neck bones and femurs in water in a cold, non-reactive vessel. I use a big Tupperware container.

(Technically this is optional, but I find the resulting tonkotsu is whiter in appearance).

2. When ready to cook, add your neck bones and femurs to a pot with fresh water. Bring to a boil, then down to a simmer, and skim the scum that rises to the top of the pot. Do this for 15-20 minutes, or until little scum is rising. The scum goes through several phases here, you'll know when the scum is pretty much done rising. This blanch is integral for a white tonkotsu, don't skip it, and don't end it prematurely.

3. Strain the bones from the blanching liquid. Discard the liquid.

4. Scrub and clean the bones under running water, removing any black or dirty looking particulate that may be on the outside of the bones or in crevices.

5. Add your now clean bones to a pot.

6. Cook at a medium boil for 18 hours, stirring frequently.

7. If using, add aromatics to the broth in the last hour.

8. Strain the soup.

9. To finalize the emulsion, add the soup to a blender and blend on high for 30 seconds, being careful to gradually bring the blender to high to avoid splashing yourself, as the soup will rapidly expand when it blends. You can also use a hand blender, blending for 5 minutes, though the emulsion won’t be as strong.

10. Reserve the soup as needed.

ROASTED BONE TONKOTSU SOUP

In my desire to stop having to skim and manage scum and funk in tonkotsu, I opted to try roasting all of the bones in the ingredient bill. The resulting broth is slightly darker, but with a blend, it turns quite creamy regardless.

Ingredients

- 2 kg/4.4 lb neck bones
- 2 kg/4.4 lb femurs, split to expose the marrow
- 6 L water
- optional aromatics: 1 onion, halved, 10 peeled garlic cloves, 1 2 inch piece of ginger, peeled and sliced

Steps:

1. Preheat the oven to 230 °C/450 °F

2. When heated, place the bones on a sheet tray, and roast for 45 minutes to an hour, turning the bones halfway, until they look brown and caramelized.

3. Add the bones to a pot with water to cover. You may opt to also deglaze the roasting tray with more water, and add this water to the pot.

4. Cook at a medium boil for 18 hours, stirring frequently.

5. If using, add aromatics to the broth in the last hour.

6. Strain the soup.

7. To finalize the emulsion, add the soup to a blender and blend on high for 30 seconds, being careful to gradually bring the blender to high to avoid splashing yourself, as the soup will rapidly expand when it blends. You can also use a hand blender, blending for 5 minutes, though the emulsion won't be as strong.

8. Reserve the soup as needed.

TONKOTSU GYOKAI SOUP

THIS IS a riff on tonkotsu that incorporates fish elements. Packed with umami, it's also decadently rich.

Ingredients:

- 2 kg/4.4 lb neck bones
- 2 kg/4.4 lb femurs, split to expose the marrow
- 6 L water
- Half of a pig trotter
- 1 onion
- 10 garlic cloves
- 1 2 inch piece of ginger
- 20 g kombu
- 30 g niboshi
- 30 g katsuobushi
- 30–50 g gyofun (fish powder)

Steps:

1. The night before, or at least 6 hours before cooking, soak your neck bones and femurs in water in a cold, non-reactive vessel. I use a big Tupperware container. (Technically this is optional, but I find the resulting tonkotsu is whiter in appearance).

2. When ready to cook, add your neck bones and femurs to a pot with fresh water. Bring to a boil, then down to a simmer, and skim the scum that rises to the top of the pot. Do this for 15-20 minutes, or until little scum is rising. The scum goes through several phases here, you'll know when the scum is pretty much done rising. This blanch is integral for a white tonkotsu, don't skip it, and don't end it prematurely.

3. Strain the bones from the blanching liquid. Discard the liquid.

4. Scrub and clean the bones under running water, removing any black or dirty looking particulate that may be on the outside of the bones or in crevices.

5. Add your now clean bones to a pot.

6. Cook at a medium boil for 18 hours, stirring frequently.

7. Add the onion, garlic, ginger, kombu, niboshi, and katsuobushi to the soup, turning off the heat, letting it steep for one hour.

8. Strain the soup.

9. Add one-quarter of the soup to a blender with the gyofun and blend on high for 30 seconds, being careful to gradually bring the blender to high to avoid splashing yourself, as the soup will rapidly expand when it blends.

10. Combine with the remaining soup, and reserve the soup as needed.

CHICKEN PAITAN

A SIMPLER APPROACH for making a creamy soup at home, chicken paitan is full-bodied and rich in chicken flavor.

Ingredients:

- 3 kg/6.6 lb chicken backs
- 1 kg/2.2 lb chicken feet
- 6 L water
- 1 onion, split in half
- 10 garlic cloves
- 1 2-inch piece of ginger
- Optional: green onions, carrot, etc

Steps:

1. Add the chicken parts and water to a pot.

2. Bring to a boil, then down to a simmer, and skim the scum that rises to the top of the pot. Do this for 15-20 minutes, or until little scum is rising.

3. Cook at a medium boil for 6 hours, stirring frequently.

4. Add aromatics, boil thoroughly for one hour.

5. Strain the soup.

6. To finalize the emulsion, add the soup to a blender and blend on high for 30 seconds, being careful to gradually bring the blender to high to avoid splashing yourself, as the soup will rapidly expand when it blends. You can also use a hand blender, blending for 5 minutes, though the emulsion won't be as strong.

7. Reserve the soup as needed.

Despite the name, this style specifically refers to the color of the soup, which is a greyish/greenish hue. The color comes from blending in whole niboshi and niboshi powder before straining, a slightly unorthodox but effective technique for adding additional flavors. This is a popular but admittedly polarizing style, heavy on fish notes, and can be daunting. But the soup is a fish lover's delight. The blended fish helps to stabilize the emulsion.

Ingredients:

- 2 kg / 4.4 lb pork femurs, split to expose their marrow
- 4 L water
- 1 onion, halved
- 1 two-inch piece of ginger, peeled and sliced into thin coins
- 8 cloves of garlic
- 300 g niboshi, medium-sized
- 20 g kombu
- 35 g niboshi, small sized

Steps:

1. Combine medium-sized niboshi and kombu, cover with 2 L water, place in the fridge to soak overnight (This overnight soak is to help save time, over traditional dashi. You can also follow the dashi method shown here).

2. Soak pork bones in water overnight.

3. Take soaked pork bones, discard soaking water, and add to new water in a pot. Bring to high heat and blanch to remove scum, around 5-10 minutes at a rolling boil.

4. Strain, discard blanching liquid. Cover with 4 L of new water. Boil for 18 hours.

5. After 18 hours, add aromatics and boil for 1 hour.

6. Strain. You should have around 2-3 L.

7. Add steeped niboshi and kombu mix to strained soup. Bring to a boil. At 80 °C/176 °F, discard kombu.

8. Reduce heat to lowest on the stove, simmer the niboshi for 1 hour.

9. Strain soup, reserving niboshi.

10. In a blender, blend the small niboshi to form a powder.

11. Add reserved niboshi from step 9 to the powder-filled blender jar, and enough soup to cover (including as much un-emulsified fat as possible). Blend on high until grey/green slurry is formed. The niboshi should be quite soft at this stage.

12. Add slurry back to the soup, mix to incorporate.

13. Strain one more time to remove the residual pulp, pressing on pulp to achieve full extraction.

14. Reserve soup until needed.

TSUKEMEN "THICK" SOUP

Unlike previously mentioned paitan soups, this soup blends essentially all ingredients together to create an extremely thick and rich soup, similar to a gravy.

This soup is extremely difficult to make, so I've included a recipe specifically for a pressure cooker. Like all soups, you can choose to make it via the stovetop, but you'll need to multiply the cook times in steps 3 and 7 by 8.

Ingredients:

- 4 L water
- 1.5 kg/3 lb pork bones, a mix of femurs and necks
- 1.5 kg/3 lb chicken backs
- 0.5 kg/1 lb chicken feet
- 1 kg/2.5 lb belly and skin and ribs, or 0.5 kg/1 lb ribs, and a 1 kg/2 lb pork belly roast, with skin included
- 1 yellow onion, peeled and quartered
- 1 5-cm/2-in piece of ginger, peeled and sliced into 0.5 cm/0.25 in coins

- 10 garlic cloves
- 20 g kombu
- 80 g niboshi
- 50 g thick-cut katsuobushi
- 50 g thick-cut sababushi
- 30 g gyofun (fish powder)

Steps:

1. Add your water and pork bones to a pressure cooker, at least an 8-quart size cooker, but preferably 10-quart.

2. Bring to a boil, and skim the scum, until little to none rises, around 20 minutes.

3. Cover, bring to high pressure, cook for 1 hour.

4. Meanwhile, deskin the pork belly, roll into a cylinder. If attached to the ribs, cut along the ribs to remove the belly first.

5. While cooking, remove the toenails of the chicken feet.

6. Open the pressure cooker using the fast release setting, add the chicken backs, chicken feet, tied pork belly, ribs, and

pork belly skin.

7. Close the pressure cooker, bring to high pressure, cook for 1 hour.

8. Fast release again, open the pressure cooker, remove the pork belly roll, and reserve for chashu.

9. Add the onion, ginger, and garlic. Boil for 1 hour uncovered. Add water as needed to keep things submerged, but some evaporation is expected.

10. Strain the soup, reserving the pulp of bones and meat and vegetables. Do not discard pulp.

11. Dig through the pulp to remove large bones, like femurs, or extra chunky neck bones. You’ll notice at this stage that the bones are quite brittle and can break under pressure. Any bones you can crumble in your fingers are good to keep.

12. Blend 2/3rds the bones, meat, vegetables, in a blender, with enough soup to make a slurry.

13. Add the slurry back to the strained soup. Mix to combine. Yields 3.5 L, add or boil water to get to this level.

14. Add the slurry to a large pot, and add kombu and niboshi. Heat to below simmer (around 80-90 °C/176-194 °F), and allow it to steep for 20 minutes.

15. Discard kombu, bring the soup to a simmer, and add remaining ingredients (katsuobushi, sababushi, and gyofun).

16. Remove from heat, steep 15 minutes. Stir frequently to prevent burning on the bottom of the pot, as the sludge can settle and scorch.

17. Strain soup through a porous strainer to remove fish, pressing on pulp to ensure full extraction.

The final yield is around 2.5 L, which is around 10 generous servings.

ADDITIONAL TECHNIQUES FOR SOUP

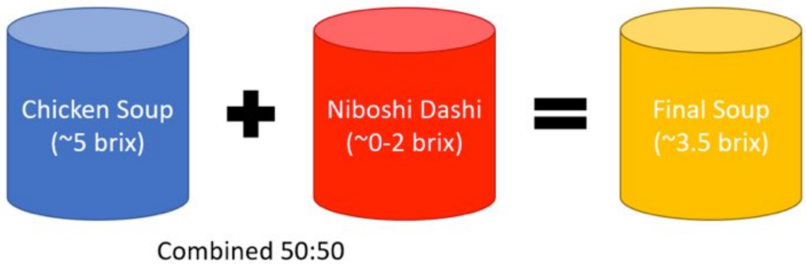
Most of the recipes shown were done in one pot, or don’t remove any impurities beyond skimming and straining. Sometimes you may want to combine flavors from two differently cooked products, or you may want to further clarify the soup. I’ll discuss techniques for both interests next.

DOUBLE SOUP

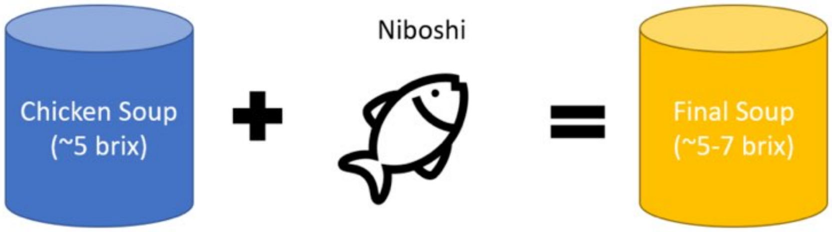
Around the turn of the 2000s, a relatively new method of combining separate soups just before serving emerged, called the "double soup" method. This approach is unique in that it takes essentially two soups that have been cooked separately, and combines them.

The theory behind this technique is that by cooking different ingredients separately, and then combining, you have more control over the specific outcomes of each part. A vegetable soup can be cooked at a specific temperature and time, a meat soup at different conditions, a dashi at different conditions, etc. Then they're chilled and combined once reheated. The main consideration for any cook with this approach is just dilution. When combining dashi with meat soup, as an example, the amount of water dramatically increases, reducing final gelatin content. This also grants a cook a lot of control if they've prepared a lot of parts to work with.

Consider the following example:



The above soup declines in Brix due to the dilution from the dashi. This can be compensated for by increasing the relative gelatin content of the Chicken Soup, either by reducing the amount of water used or increasing the amount of chicken. But this may not be possible if the water doesn't cover the bones. At home, this is mitigated easily by just combining all ingredients in one pot. So this tends to be my approach:



In my opinion, the double soup method is better suited for restaurants than home cooks, primarily because it allows for separation of complex tasks in a busy kitchen, and to help scale down the volume of soup made. Rather than making a 40-quart singular pot, a restaurant can make multiple smaller batches of concentrated soup, which are then easier to strain, and can be held cold, combined when needed. The soup is then diluted accordingly. A home cook may not have this problem (unless they're eating a lot of ramen of course!).

In some instances, you may accidentally over boil the soup and create some emulsification you didn't originally anticipate or desire, or you may wish for your soup to be even clearer than what you’ve wound up with. Clarification is the process of removing those emulsified components and in turn, making the soup clear again.

Clarification as a technique in ramen is rare, most likely due to the amount of effort required at the volume most shops need and the relatively low payoff for doing so. The level of clarity achieved through clarifying is extremely high, almost to the point of the soup being alarmingly crystal clear. However, the process can also remove some flavor compounds, and most guests will still respect a “very” clear soup vs one that is completely clear. Visually though, completely clear soup is definitely appealing.

The easiest method is the “raft” method, which uses a combination of egg whites and ground meat to create a floating raft on the surface of the liquid. As the soup boils, it rises and falls through the raft, and the network of coagulated proteins traps globules of fat and debris, clarifying the stock. The negative of this approach, as mentioned earlier, is that it can flavor the soup. Some methods use acidifying agents to improve the clarification, but again, this will add further flavor to the soup.

Ingredients:

- 5 egg whites, and their shells, crushed, lightly whipped together
- 0.5 kg/1.1 lb of ground chicken (or ground pork if you'd like)
- Soup for clarifying (quantity should be at least 4 L), all fat removed

Steps:

1. Combine the egg whites and ground chicken, set aside

2. Bring the soup to a simmer

3. Add the egg white and ground chicken mixture to the soup, whisking thoroughly to allow the mixture to disperse.

4. Once dispersed, stop whisking and bring the soup back to a simmer. Allow a raft of coagulated meat and egg to form.

5. Allow the soup to cook for 15-30 minutes at a simmer, or until desired clarity is reached

6. Carefully strain the soup, ideally without disturbing the raft. Some opt to line a strainer with cheesecloth to discard the raft first, others use a ladle to scoop the soup from the top of the raft bit by bit.

Ultimately, while this approach results in a great, clear soup, it falls into the role of diminishing returns in my opinion. Most ramen soups are not this clear. Don’t sweat it.

TARE

Tare is the secret sauce of ramen, and I'd argue it's more important than soup. Tare (pronounced "tah-reh") means "dipping sauce" in Japanese, but, it's a lot more than just sauce in the ramen world. It's, well, secret sauce!

Seriously, tare is extremely secretive, so much so that most chefs hide their ramen making secrets in their tare. I know a few chefs who still make all of the tare themselves, just to prevent their cooks from ripping off their recipes. This has given tare an illustrious reputation, something that is coveted and difficult to replicate. Many chefs, troubled by the perceived complexity and depth to tare, don't even bother making it, opting to purchase tares from third-party manufacturers instead. And all of this is unknown to customers, and even some cooks in the same shops are left out of these details. Layers and layers of secrecy. It's sort of like BBQ sauce, in that a pitmaster may take an immense amount of pride in their sauce, or they might doctor up some Sweet Baby Rays.

Tare provides three things to ramen, all of which are important:

1. salinity (absolutely essential)

2. flavor (very important)

3. umami (very important)

Each of these will be discussed in depth as part of this chapter. But tare is probably the biggest fundamental difference between ramen and other soup techniques: mainly, the separation of seasoning and soup cooking until the final assembly of the dish.

Much of this is because it provides flexibility to a ramen shop. The business model makes this approach more accessible since one soup can become multiple dishes with different tares, which, due to their salt level, are often stable in the fridge for many weeks/months/years. At home, this may be less of a concern, but I like to keep tares and soups separate until serving for the same reason shops do; it gives me incredible flexibility. A chicken soup can become a fish bomb with the right tare. But if you only have a fishy chicken soup, that's all it will ever be.

Much like in cooking in general, it's easier to add than it is to take away. And tare is the ultimate foundational method to accomplish this. I would argue that tare is, single-handedly, the most important thing you can focus on as a ramen cook. Tare radically changes the flavor of the dish.

SALT

The main function of tare is to season the soup. Before the addition of tare, a ramen broth has essentially no salt (as you've seen in the soup chapter, none of these recipes contain any salt).

I hear this comment often from those starting their ramen journey. They've spent the last 18 hours boiling away a tonkotsu, and when they try the soup, they are immensely disappointed. It's bland. It has no flavor. It's decidedly boring. It might even be gross.

99% of the time, this is because it has no salt.

I cannot stress how important this is. THE SOUP NEEDS SALT. Which is what tare is for. Without salt, this soup is just not going to be very good.

Now, I could go and tell you that an optimal addition of salt is 1.5% the volume of the broth in grams (so for 350 mL of broth, add enough tare to make the total bowl be 1.5% salt, meaning most tare falls into 10-20% salt by weight), but the truth is, this is entirely down to taste. Some folks like a salty punch in each sip of the broth, others like a bowl with a little more subtlety. Only you can decide. For finished bowls, I've included recommended tare amounts (in either weight or volume depending on the tare style), but ultimately your palate guides the experience here. Taste, adjust as needed, see what works for you.

As a side note, I want you to ignore anything you might have heard about specific types of salt. Tare is normally a liquid or paste, which means that the salt's crystal size or shape doesn't affect the flavor. And since the salt comprises a small amount of the total bowl, the salt's additional minerals aren't going to affect flavor. Those shops that tout using five different salts in their tare? It's mostly marketing. But the addition of salt as an ingredient is immensely important for ramen, let alone cooking in general. And tare is the primary way salt is added to ramen.

Tare provides flavor, no question. Tares are chock full of intensely flavored ingredients. Kombu, shiitake, soy sauce, miso, these are not subtle ingredients, they can massively adjust the way a dish feels when you eat it. So tares are flavor bombs. If you've ever tried a tare, you've undoubtedly noticed that it is complex and contains a wealth of flavor. That is 100% intentional.

However, it's also worth noting that, like other aromatics used in soup, many of the foundational tare ingredients contain flavor compounds that also volatilize when exposed to heat over prolonged periods. Should these ingredients be included in the soup initially, they would effectively "cook out" and their flavor would be diminished. By separating the tare from the soup, you can effectively control the degree of intensity of your seasoning ingredients. This, again, is noticeably different from western soup, where seasoning agents are generally added early in the process.

BEYOND SALT AND FLAVOR: ADDING UMAMI CONCEPTS

In the introduction, I suggested that you could also add umami to ramen by adding tare. While the meat-based soups described in this book provide some umami, tare increases the umami way more than anything else in ramen. There are two ways that ingredients can provide umami: through the addition of glutamic acid directly or the addition of ingredients with "synergistic nucleotides" that improve the sensation of glutamic acid on the palate. We'll cover each.

UMAMI FROM GLUTAMIC ACID

Glutamic acid is what your tongue tastes when you taste "umami". It pops up in a lot of ingredients like parmesan cheese, tomatoes, and grilled meats. Ajinomoto's Umami Information Center has put together lists of glutamic acid-rich ingredients[26] should you wish to explore further. Including these ingredients in your tare will increase the amount of glutamic acid in your final dish, and therefore umami.

In ramen, the commonly used ingredients that contain glutamic acid are soy sauce, kombu, and miso. These are all used extensively in tare (and indeed, I include them in several recipes). There are other ingredients of course that include glutamic acid, and much of the modern ramen making thought involves pushing the content of glutamic acid forward.

But we can cheat a little beyond just using natural umami sources. Tare can also improve the umami of ramen because it's where the addition of a certain infamous ingredient happens, that ingredient being MSG. Monosodium glutamate. The beast itself. MSG and ramen go hand in hand, and often shops brag about not using it, because of how rare a lack of MSG actually is. If you've eaten ramen in Japan, you've probably had MSG. Much like how salt is often necessary for food to taste good, MSG can play an important role in elevating a dish by providing glutamate.

A Personal Note on MSG

I have no problem with MSG. I love MSG actually. In small amounts, it greatly increases the savory characteristics of dishes, amplifies flavors, and makes ramen taste more cohesive. It also can help balance off-flavors, which is why most Tonkotsu shops in Kyushu rely heavily on MSG in their ramen.

But if you want to challenge the use of MSG because of health risks, then I need to be a little more critical. Beyond the fear being rooted in a controversial history associated with slander against Chinese restaurants, the science behind the health scare is bad. Glutamate is a naturally occurring amino acid we make and use in our bodies. It's found in most animal products and many fermentation products, like soy sauce, are also loaded with it. What happens to glutamate when we eat it? Glutamate is regularly consumed in cellular metabolism in our bodies. Specifically, glutamate is easily converted to alpha-ketoglutarate by an enzyme known as glutamate dehydrogenase. I won't dive too deep into the biochemistry, all you need to know is that alpha-ketoglutarate acts as an essential compound found in our cell metabolism that they all use to stay alive. I find it hard to believe that most glutamate sources, given that they feed right into our metabolism, would be much of a risk to our health.

The most critical position I've seen suggests MSG can cause headaches, but how this relates to the quantity of MSG consumed is ambiguous, and most of the cases are anecdotal. With some more investigation, these claims fall apart. Scientific studies suggest that there is no strong correlation between headaches and MSG[27]. Ultimately, there is nothing remarkable about the glutamate in MSG, and certainly, sodium isn't dangerous, so I don't think there should be a problem using a little MSG here and there.

Now, I don't think MSG is required to make ramen. Tare adds complexity in the form of new flavors and aromas, and that complexity is important for making a good bowl of ramen. But I sometimes include MSG in my tare. MSG helps make food delicious, and my goal is always first and foremost to make delicious ramen.

UMAMI FROM SYNERGISTIC NUCLEOTIDES

The other way to improve umami is through the addition of ingredients that contain compounds called *synergistic nucleotides*. These compounds don't directly add glutamates, but they still provide or increase umami. There are a bunch of these nucleotides[28], far more than I'll cover here. Synergy is important here, in that when synergistic nucleotides are combined with glutamates, they increase the sensation of umami more than they would independently. When it comes to taste synergies, 1 + 1 = 3, or at least it can appear that way. How much umami boosting is possible? Well, one study determined that the intensity for tasting glutamic acid increased by nearly 8-fold when the synergistic nucleotide inosinic acid (IMP) was added at an equal weight percent with MSG[29].

These nucleotides aren't artificial either, they're naturally found in all sorts of foods. IMP, for instance, is found in seafood (particularly niboshi and katsuobushi), chicken, and pork. Another synergistic nucleotide, Guanosine monophosphate (GMP), is commonly found in tomatoes and mushrooms. Older ramen cooks were using these compounds to their benefit, they just didn't know it. Japanese chefs essentially stumbled upon the combination of synergistic nucleotides and glutamic acid through trial, error, and good luck by developing dashi. For instance, they found that combining kombu with bonito created a soup that was exceptionally full of umami. Much of this is because the IMP in the bonito and glutamates in the kombu are extracted in dashi.

Modern ramen chefs, many in direct response to glutamate's ancient use and the newfound scientific research, are now actively seeking out ingredients with high amounts of both glutamate and these nucleotides for the ultimate umami blast in their tares. This is especially true for shio tares, which only use salt as the core source of the tare's salinity. These tares tend to have fish products high in glutamate and synergistic nucleotides. For a more in-depth view of umami that expands on these ideas, I recommend the book "Umami, Unlocking the Secrets of the Fifth Taste[30]."

There are admittedly other grey areas when it comes to tare. Some shops blend tares. Some shops make a shio tare, but use soy sauce in it. Is that really a shoyu? Who knows! These are just terms to help explain the style of a tare. And style is just a framework to help understand complex concepts, you can ultimately make a tare however you like as long as it provides salinity and umami.

Tare exists on a continuum in terms of its presence, and how you use the tare will depend on the final bowl you're trying to make. On one end of the spectrum, tare's are used for very simple seasoning. Tare's main goal in these varieties is to just add salt and umami. For this style of tare, it should exist as a backdrop to the soup. On the other end of our tare spectrum, tare becomes the focal flavor of the dish, being more complex in composition and character. Here, the tare is meant to be the main aspect of the soup you wind up tasting, with the broth playing a very minor role flavor-wise. Which side of the spectrum you'd like to use in your tare is up to you. You may want an intense, soy-sauce punch of flavor in your ramen. You may be more interested in subtle aromatics. Your tare should be designed around that.

The three core tares and some example recipes are listed next.

SHOYU TARE

Shoyu, or soy sauce, is the oldest style of tare. Ramen doesn't exist without this one, because the origins of ramen lie in Japanese cooks re-imagining Chinese soups with local tastes in mind. It was the late 19th century in Japan, and meat was rarely consumed by locals. You have an influx of immigrants, many Chinese, who cooked meat-based dishes. According to Slurp! A Social and Culinary History of Ramen, the story goes that Japanese cooks, put off by the smell of meat and garlic found in these foreign soups, wanted to adopt these Chinese noodle soups for a more local audience[1]. To temper those unfamiliar and unsavory meat scents, they used soy sauce—and thus the first iteration of ramen was born.

There are many variants of shoyu tare because often it is the most multi-purpose seasoning. Typically I follow a baseline ratio of:

- 450 g soy sauce
    - 50 g mirin (for sweetness)
    - 30-45 g umami building ingredients (kombu, fish, etc)

I enjoy doing a cold soak with the umami ingredients to extract as much flavor as possible from them. The tare needs punch, so a prolonged steep is helpful in my experience.

If you'd like something less soy-forward, simply swap the soy sauce with some amount of water, and add salt. For every 20 g of soy sauce you remove, add 1-2 g salt (depending on preferences). This assumes Soy sauce is around 14% salt by weight.

Sake and sugar can be added to further provide complexity and sweetness, but the idea, in my opinion, is to find a template you enjoy for your tare, and stick with it when designing new recipes. Adjusting too many variables can result in difficulty in understanding what works and what does not.

STANDARD SHOYU TARE

THIS IS AN ALL-PURPOSE SHOYU TARE. Great for light chicken broths, it also works well to make shoyu tonkotsu or other shoyu-forward recipes. Make it, keep it in the fridge for months, and use it when you feel like having a clean bowl.

Ingredients:

- 450 g soy sauce
- 15 g kombu
- 50 g mirin
- 40 g sake
- 15 g niboshi
- 15 g katsuobushi
- 30 g brown sugar

Steps:

1. Combine the soy sauce, mirin, kombu, niboshi, and sake in a sealed container.

2. Place in the fridge and rest at least 6 hours or up to 2 days.

3. When ready, heat the contents to 71 °C/160 °F and hold for 10 minutes.

4. Remove the kombu and discard.

5. Add the niboshi, bring to 82 °C/180 °F (or just below a boil) and hold for 15 minutes.

6. Add the katsuobushi, hold at 82 °C/180 °F for 5 more minutes.

7. Add the sugar, whisking to dissolve.

8. Strain the tare, and reserve the tare as needed and keep refrigerated. This stores in the fridge for up to 6 months.

Add 30 mL of tare per 350 mL soup.

TOASTED SHOYU TARE

THIS IS a variant on the Standard Shoyu Tare. For those who like those caramelized, fish forward flavors, this is a good option, as the rapid heating of the niboshi here amplifies their flavor in the final tare.

Ingredients:

- 450 g soy sauce
- 15 g kombu
- Vegetable oil (15 mL or so)
- 20 g niboshi
- 15 g katsuobushi
- 50 g mirin
- 40 g sake

Steps:

1. Combine the soy sauce and kombu into a sealed container.

2. Place in the fridge and rest at least 6 hours or up to 2 days.

3. When ready, heat a saucepan over medium heat.

4. Add your niboshi and vegetable oil, toast for 30-45 seconds, or until fragrant and starting to brown.

5. Add your soy sauce and kombu to the pot with the niboshi.

6. Heat the contents to 71 °C/160 °F, hold for 10 minutes.

7. Remove the kombu and discard.

8. Bring 82 °C/180 °F (or just below a boil) and hold for 15 minutes.

9. Add the katsuobushi, hold at 82 °C/180 °F for 5 more minutes.

10. Strain and reserve liquid on the side.

11. In a new clean pot, add your mirin, sake, and brown sugar. Bring to a boil, and simmer for 5 minutes.

12. Add this mixture to your mixture from step 9. You can store this in the fridge for up to 6 months.

Add 35 mL of tare per 350 mL soup.

NEW WAVE SHOYU TARE

THE NEW WAVE shoyu tare style is denoted by primarily focusing on soy sauce as the flavoring of the dish, but using exceptionally high-quality soy sauces. Look for soy sauces that are traditionally made. Cheaper soy sauces use artificially induced hydrolysis to assist in breaking down the beans to speed up production. Although the fermentation process is faster, this step also prevents other secondary flavors from being produced that otherwise occur in traditional methods. Some soy sauces are fermented in large barrels, adding complexity. When in doubt, look for Japanese soy sauces, or soy sauces made with “marudaizu” (i.e. whole beans). These soy sauces undergo longer fermentation times and therefore have additional complexity.

Ingredients:

- 450 g soy sauces
- 50 g Mirin

Steps:

1. Combine in a container and let sit in the fridge for 24 hours before using.

Add around 35 mL of tare per 350 mL soup.

LIGHTER SHOYU TARE

When you want to keep the color of the broth lighter in appearance, this tare is the one to go for. It uses a light soy sauce (usukuchi soy sauce) in place of more commonly found dark soy sauce. It isn't as flavorful as a standard shoyu, but it has nice elements, and the color is lighter.

Ingredients:

- 225 g water
- 225 g usukuchi soy sauce
- 15 g kombu
- 20 g niboshi
- 15 g katsuobushi
- 20 g sake
- 30 g mirin
- 30 g brown sugar

Steps:

1. Combine the soy sauces, kombu, and niboshi in a sealed container.

2. Place in the fridge and rest at least 6 hours or up to 2 days.

3. Add the mixture to a small saucepan.

4. Heat the contents to 71 °C/160 °F, hold for 10 minutes.

5. Remove the kombu and discard.

6. Bring 180F (or just below a boil) and hold for 15 minutes.

7. Add the katsuobushi, hold at 82 °C/180 °F for 5 more minutes.

8. Strain and reserve liquid on the side.

9. In a new clean pot, add your mirin, sake, and brown sugar. Bring to a boil, and simmer for 5 minutes.

10. Add this mixture to your mixture from step 9. You can store this in the fridge for up to 6 months.

Add 30 mL of tare per 350 mL soup.

MUSHROOM SHOYU TARE

For a vegan option, this variant is nice. The mushrooms contain guanylate, which helps improve the sensation of umami on the palate. A small addition of tamari helps round out the richness of the mushroom flavor, but is otherwise optional.

Ingredients:

- 450 g soy sauce
- 5 g tamari (optional)
- 50 g mirin
- 20 g dried mushrooms (such as shiitake, morel, porcini. I like to use a combination)
- 15 g kombu
- 15 g brown sugar

Steps:

1. Combine the soy sauce, mirin, dried mushrooms, and kombu in a sealed container.

2. Place in the fridge and rest at least 6 hours or up to 2 days.

3. When ready, heat the contents to 71 °C/160 °F, hold for 10 minutes.

4. Remove the kombu and discard.

5. Bring the contents to a boil.

6. Add the sugar, whisking to dissolve.

7. Strain out the mushrooms, reserve the tare as needed. Hold in the fridge for up to 6 months.

Add 35 mL of tare per 350 mL soup.

EASY MEAT SHOYU TARE (AKA JIRO-STYLE TARE)

Jiro ramen uses a pretty simple tare, where they take some cut of pork that is cooked in the broth, and soak it in a sauce that eventually turns into tare. The meat becomes seasoned and can be used as chashu, and the sauce becomes the tare that seasons the bowl. I love this approach, even for shoyu, although the tare is a little sweet, so much that it isn't as applicable to other bowls.

Ingredients:

- Chashu, cooked in broth until tender (see Jiro Broth Recipe for examples)
- 450 g soy
- 100 g mirin
- 15 g MSG
- 15 g brown sugar

Steps:

1. Combine the soy sauce, mirin, sugar, and MSG in a saucepan. Bring to a boil, then remove from the heat

2. Place the chashu into the liquid, reserve in the fridge for 4-12 hours.

3. Remove the chashu, use it for eating or other purposes. Store the tare in a sealed container for up to 2 months.

Add 45 mL of tare per 350 mL soup.

THIS RECIPE COMES FROM SHICHISAI, who uses extremely high-quality soy sauce, that you or I probably don't have. Just use the best soy sauce you have, and blend accordingly. The steps itself are incredibly simple, but this tare is less flavor-forward than other variants due to the boil and additional salt content.

Ingredients:

- 200 g dashi
- 300 g soy sauce
- 20 g small niboshi (such as iriko)
- 40 g sugar
- 40 g salt

Steps:

1. Combine the above in a small saucepan, and bring to a boil to dissolve the salt and sugar.

2. Once fully dissolved, allow tare to cool, then strain.

3. If not used immediately, store in the refrigerator for up to 6 months.

Add 30 mL of tare per 300 mL soup.

I DEVELOPED this recipe as part of a popup with Flat and Point. I don't expect anyone to make it, but I'm documenting it here in the off chance you have a smoker and want to give it a shot.

Ingredients:

- 300 g smoked soy sauce (add soy sauce to a pan, place in a smoker at 110 °C/225 °F, and smoke until reduced by half)
- 250 g smoked mushroom liquid (smoke mushrooms in a deep pan at 110 °C/225 °F, until withered)
- 50 g mirin
- 20 g brown sugar
- 15 g salt
- 20 g msg

Steps:

1. Combine the above ingredients in a small saucepan, and bring to a boil to dissolve the salt and sugar.

2. Once fully dissolved, allow tare to cool, then use it as needed.

Add 30 mL of tare per 300 mL soup.

In the desire to remove some of the common Japanese ingredients from ramen, I decided to swap Katsuobushi with Bacon. The bacon dashi provides smoke and some fermented tang but does not provide inosinic acid, so some supplementation of MSG is helpful.

Ingredients:

- 225 g soy sauce
- 50 g mirin
- 20 g brown sugar
- 225 g bacon dashi
- 40 g salt
- 5 g msg

Steps:

1. Combine all ingredients in a pot.

2. Bring to a boil to dissolve the salt, sugar, and MSG.

3. Allow tare to cool, then use it as needed.

4. If not used immediately, store in the refrigerator for up to a month.

Add 30 mL of tare per 300 mL soup.

This is a recipe I played with on and off before my first popup at Ramen Lab. The team I worked with wanted something unique in addition to spicy. It has moderate heat, but complex chili flavors. It works excellently with chicken broth, or in tsukemen variants, but it's a weird one for sure. The ingredient list may seem daunting but the process overall is quite simple.

Ingredients:

- 70 g onion, pureed in a food processor or grated finely (around ¼ an onion)
- 28 g mulato chilis, seeded (around 2 chilis)
- 16 g ancho chilis, seeded (around 2 chilis)
- 22 g guajillo chilis, seeded (around 2 chilis)
- 3 g dried Chinese chilis or whole togarashi
- 120 g water or chicken broth from ramen
- 6 g chipotle powder, or 1 canned chipotle
- 2 g cinnamon
- 0.5 g ground clove
- 1 g ground cumin

- 5 g instant coffee granules
- 0.5 g dried oregano (approx ½ tsp)
- 6 g cocoa powder
- 4 g MSG
- 0.5 g cayenne pepper (approx ½ tsp)
- 150 g soy sauce
- 30 g brown sugar
- 20 g tahini

Steps:

1. In a small saute pan, add the onion puree and cook with a small amount of oil over low heat, until golden brown, stirring occasionally to prevent burning, around 20-30 minutes.

2. Remove the onion from the heat.

3. In a separate large saute pan, toast the mulato, ancho, guajillo, and Chinese chilis over medium-high heat until fragrant, pliable, and starting to brown, around 3-5 minutes.

4. Cut the heat, and add the water (or broth if using), cover, and let steep for 10-15 minutes, or until the chilis are soft

and reconstituted. If your pan is hot, you might need to add more water.

5. To the jar of a blender, add the contents from the saucepans in steps 2 and 3 with the remaining ingredients.

6. Blend until the sauce has a uniform consistency. If the sauce is too thick, dilute with water as needed. Store in the fridge for up to 2 weeks.

Add 30g of tare per 350 mL soup, adding an additional 20 mL of soy sauce to the bottom of the bowl.

SHIO TARE

Shio, meaning salt, is a salt-based sauce, which is meant to be more about amplifying the existing flavors of the soup than contributing other flavors. Since the base soup is unseasoned, this tare acts more as a backdrop, adding saltiness and complexity. It often contains a host of dried fish products and blends of different salt. It also, oddly enough, can contain small traces of soy sauce. Again... what are the rules even in ramen?

Shio tare is also the most difficult tare to make, given its ingredients bill. But there are alternatives. Much like the shoyu template, I find a bare-bones idea (shown below) is helpful when thinking about designing your shio tare.

BARE BONES SHIO TARE

THIS IS a template for virtually all tares. It gives you a tare with umami and salt because it uses salt and MSG, and nothing else. On its own it adds minimal complexity, the goal is to highlight the qualities of the soup you've created. But it also establishes a few principles I like to make ramen by, notably that you can use approximately 10% salt in your tare, and 6% glutamic acid including ingredients. All shio tares can be built around these ratios.

Ingredients:

- 500 g water
- 50 g salt
- 33 g msg

Steps:

1. Combine the above ingredients in a saucepan, and heat to dissolve the tare.

2. Cover the saucepan and allow it to cool before storing indefinitely in the fridge.

Add 30 mL of tare per 300 mL soup.

SAKE-BASED SHIO TARE

For some additional complexity, this tare uses kombu for flavor, as well as a few other sources of subtle aromatics. Sake contains trace amounts of glutamate, adding to the umami profile, as well as a variety of other aromatics as a result of the brewing process.

Ingredients:

- 400 g water
- 15 g kombu
- 50 g mirin
- 100 g sake
- 50 g salt
- 10 g msg

Steps:

1. Combine the water, kombu, and mirin in a sealed container.

2. Place in the fridge and rest at least 6 hours or up to 2 days.

3. When ready, heat the contents to 71 °C/160 °F and steep for 10 minutes.

4. Remove the kombu and discard.

5. Add the sake, and bring to a boil, cooking for 10 minutes, or until the smell of alcohol subsides.

6. Add the sugar, salt, and msg, whisking to dissolve.

7. Allow tare to cool before use. Store indefinitely in the fridge.

Add 30 mL of tare per 300 mL soup.

WHITE WINE CHICKEN SHIO

THIS RECIPE IS HEAVILY ADAPTED from a shio recipe I found some time ago in a tare book[31]. It's nice, very sake and wine forward, which you may or may not like. Good for particularly chicken-forward soups, but not bad in a tonkotsu either.

Ingredients:

- 15 g kombu
- 150 g mirin
- 75 g sake
- 75 g dry white wine (such as Pinot Grigio)
- 500 g chicken chintan
- 250 g ground chicken
- 100 g salt
- 10 g msg

Steps:

1. The night before, combine the kombu, mirin, sake, and white wine in a container. Place in the fridge and steep

overnight, or up to 24 hours.

2. When ready to make the tare, place the contents of step 1 in a saucepan and heat to 71° C/160 °F. Hold for 5 minutes.

3. Remove the kombu from the liquid, add in the chicken chintan and the ground chicken. Cook, mixing frequently, at a boil until the chicken is thoroughly cooked, around 5 minutes.

4. Strain the liquid, reserving the cooked ground chicken for another use.

5. Place the strained liquid back into a pot and add the salt and MSG. Cook until dissolved, whisking to incorporate, around 2-3 minutes.

6. Allow to cool, and store in the fridge for up to 6 months.

Add 30 mL of tare per 350 mL soup.

SOY/SHIO BLEND TARE

As mentioned earlier, some shio tare recipes contain soy sauce. There's no way I could leave you hanging, so this is one of them. It's effectively a blend of many tares listed above, making it a great all-purpose tare for creamy soups and light soups alike.

Ingredients:

- 7 g kombu
- 75 g mirin
- 50 g sake
- 25 g white wine
- 75 g white soy sauce
- 25 g usukuchi soy sauce
- 10 g salt
- 5 g MSG (optional)
- 25 g niboshi
- Sesame oil for toasting
- 150 g water
- 10 g katsuobushi

Steps:

1. Soak the kombu in the mirin, sake, and white wine, for at least 6 hours and up to 24, in the fridge.

2. When ready to make, add the kombu and steeping liquid to a saucepot. Cook on medium heat until the cooking liquid registers at 160 F degrees. Hold here for 5 minutes.

3. Remove the kombu, boil slightly to remove some residual alcohol, around 5 minutes.

4. Add the soy sauces and salts. Reserve this liquid on the side.

5. In the now-empty pot, add the niboshi and sesame oil to a pot. Cook until fragrant on medium-high heat, around 40 seconds.

6. Add the water, bring to 82 °C/180 °F.

7. Add the katsuobushi and steep for 10 minutes.

8. Strain this liquid, adding it to the one in step 4.

9. Combine the two strained liquids.

10. Store in the fridge until ready to use. Keeps for around 6 months.

Add 30 mL of tare per 300 mL soup.

MISO TARE

Miso is the newest tare style. Miso is a common ingredient in Japan made from mashed legumes and grains (typically soybeans), plus koji, a fungus with enzymes that convert protein and starches in legumes into complex flavor compounds. Technically, miso can use any sort of protein-rich source (my friend Rich made miso once with ricotta cheese!). The use of miso in ramen originates from Sapporo in Hokkaido, the northernmost island of Japan, and was invented in the mid-1950s, in a small shop named Aji no Sanpei, whose chef fed hungry workers by adding noodles to a pork miso soup. Or so the lore goes.

It is my favorite style of ramen, and the tare I have spent the most time on. In many ways, the following recipe is my most important one.

RAMEN_LORD'S MISO TARE

AFTER MORE THAN 8 years of tweaking and experimenting with miso tare, here's my take. It's very miso forward. If you don't like your miso so forward in the flavor of the final dish, you can cook the tare in a saucepan or wok for 5-10 minutes over medium heat. Doing so releases volatile compounds in the miso (of which there are many[32]).

Ingredients:

- 140 g raw onion pureed in a food processor, or grated finely (around one half of an onion)
- 7 g garlic, grated (around 2 cloves)
- 6 g ginger, grated (around a 1-inch piece)
- 300 g white miso (I use Yamabuki Shinshu)
- 180 g tezukuri or mugi miso (I use Yamabuki Tezukuri)
- 80 g hatcho style miso
- 20 g mirin
- 30 g soy sauce
- 5 g sesame oil
- 14 g tahini or nerigoma

- 1 g black pepper (or around 20 grinds from a pepper mill)
- 2 g tobanjan (or Chinese doubanjiang)
- pinch of white pepper
- pinch of togarashi or cayenne

Steps:

1. Take 70 g of the raw onion puree, and add to a small pan.

2. Cook over low heat, stirring frequently, until golden brown, around 20-30 minutes.

3. Remove from heat, place the cooked onion in a mixing bowl.

4. When the onion has cooled, add all remaining other ingredients. Use a whisk to combine.

5. Place in the fridge in a covered container and allow the tare to mature for at least 24 hours to better develop the flavor and remove some of the harshnesses from the raw vegetables. The tare will keep for up to 12 months.

Add 70 g of tare per 350 mL soup.

KARA MISO (SPICY MISO)

THIS RECIPE IS a variant of the standard miso approach but uses additional ingredients to highlight the actual pepper flavor, rather than merely adding spice.

Ingredients:

- 1 red bell pepper, deseeded
- 2 habanero chilies, deseeded
- 140 g onion, pureed in a food processor
- 7 g garlic, grated/minced
- 6 g ginger, grated/minced
- 300 g white miso
- 180 g Tezukuri or mugi miso
- 80 g red miso
- 10 g mirin
- 30 g soy sauce
- 5 g sesame oil
- 14 g tahini
- 8 g Tobanjan
- 60 g Gochujang
- 0.5 g smoked paprika (approx ½ tsp)

- 1 tbsp togarashi (this is for flavor, we're also adding spice to the bottom of the bowl)

Steps:

1. Blend the red bell pepper, deseeded habaneros in a food processor until fully pureed and liquidy.

2. Combine with half of the large onion pulp (about ¼ of an onion).

3. Add this liquidy paste to a small saucepan or skillet, and cook over medium heat, until the majority of the water has evaporated and begins to caramelize, around 10-15 minutes.

4. Add the contents from step 2 to a bowl. Combine with the remaining ingredients. Whisk fully to incorporate. Reserve indefinitely in the fridge.

Add 70 g of tare per 350 mL soup.

OTHER TARES

Some tares don't quite fall into the above categories, due to their ingredient composition. These alternatives are listed below.

TANTANMEN TARE

TANTANMEN, derived from dan dan noodles from China, is a sesame and spice based dish. This method is extremely simple, but feel free to incorporate other common ingredients, such as Sichuan pickles. Ironically, this tare rarely contains large quantities of umami-building ingredients, but it's still delicious.

Ingredients (for one bowl):

- 35 g soy sauce
- 3 g rice wine vinegar
- 25 g ground sesame (either tahini or nerigoma)

Steps:

1. Combine the above ingredients, whisking until fully incorporated, at the bottom of a serving bowl. You can, alternatively, up the amount by scaling the amounts as needed.

TOPPINGS

Toppings, like with many other components of ramen, depend on the goal of the dish. Toppings can enhance the existing flavors in the dish or contrast with them. They can provide textural contrast or can easily blend into the soup, providing additional flavor notes. We can imagine that topics have a ton of versatility if they can fit so many different characteristics. And because they can be so diverse, there's plenty of room for innovation and experimentation. In this chapter, we'll cover a handful of common toppings used in ramen, as well as ingredients and steps to make them.

But, still, there is SO much variation in toppings. You can go an infinite number of directions based on your taste. Much like with everything else in ramen, there's a lot of room to explore, get creative, and make the bowl yours. So this chapter will focus on some staples, mainly the proteins, or technique-specific toppings that aren’t obvious to the home cook.

STEEPED EGG (AJITAMA/AJIDAMA/TSUKETAMAGO/AJITAMAGO/HANJUKUTAMAGO ETC.)

Steeped eggs are probably the most loved part of ramen in the US. Often more than the noodles and soup, Americans love a soft-cooked egg with just a bit of seasoning, the yolk, gooey and liquid, spilling into the broth, with a firm, fully cooked white. Stuff of legends.

There are generally two approaches to soft boiled eggs, but they begin with the same starting point: an egg with fully cooked whites, and typically liquid but creamy yolks (though some shops also create fully cooked eggs).

The history of eggs as a ramen topping is sort of bizarre; legend has it that they were originally a snack food given out at shops before the dish itself. Someone must have figured out that one could combine the two instead of separating them because the pairing works really well. Different shops name them different things based on preparation and customs, but for the sake of simplicity we'll just call them "Eggs".

There's a way to predict just how quickly the egg will season, but the math behind it is rigorous. Even Scott was scratching his head for a little bit (and still is). Luckily, the final formula is pretty simple. The length of the diffusion layer for a three-dimensional object is described by:

$$L^2 = 6Dt$$

Here, L is the depth of the diffusion layer, D is the diffusion coefficient (in m^2/s), and t is the time (in seconds). In this case, D is a material property of the egg, the solution, and the temperature, which is best determined by experiment. The important takeaway is that time is related to the square of the seasoning distance into the egg. This means that a full cure will take a longer time than we might intuitively think. If it takes 1 hour for the brine to penetrate the egg white 1 mm, it will take 4 hours to penetrate 2 mm, and 9 hours to penetrate just 3 mm. This means that it can be pretty difficult to overseason the egg unless your brine is particularly salty, and that brining is often an exercise in waiting for more than careful timing.

Now, where do we start? First, you gotta make some soft-boiled eggs. Here’s my go-to technique.

Ingredients:

- High-quality chicken eggs (large is good)
- Water
- Ice

Steps:

1. Bring a large pot of water to a full boil.

2. In a large bowl or container, fill with ice and cold water to make an ice bath. Reserve.

3. Remove eggs from the refrigerator. Optionally, using a thumbtack or the heel of a knife, poke a small hole or divot in the bottom of the wider side of the egg.

1. This step has the benefit of allowing the albumen to expand in the shell, preventing cracking, and helps with the overall shape of the egg. It’s optional, but if you’re having trouble with eggs cracking, or having eggs that are hard to peel, this step can help. Sort of a shop secret.

4. Working in batches of 4-6 eggs at a time, to avoid the water temperature dropping too quickly. lower your eggs into the boiling water.

5. Boil the eggs, stirring occasionally during the first minute or so of cooking, for 6-7 minutes, depending on how firm you'd like the yolk. I like 7, the yolk gets juuuust a tad cooked, and slightly custardy. Others like a completely liquid yolk, which is around 6 minutes to 6 minutes 30 seconds.

6. After the time is up, quickly remove the eggs from the water and place them in the ice bath from step 2, hold for 15 minutes, or until thoroughly chilled.

1. This process, called shocking, prevents additional carry-over cooking (the exterior of the egg is much hotter than the interior), making sure the white is fully cooked without allowing the yolk to cook more than necessary.

7. Peel, then proceed with the steeping method below.

Once you have your soft boiled eggs, there are a few approaches to finalizing them.

STEEPING METHOD ZERO: DO NOTHING, EAT THE EGGS AS PREPARED NOW

OKAY, I lied, not all methods will involve steeping. Soft boiled eggs are delicious in their own right, and it's not unheard of for shops to include just a plain ol' unsteeped egg. You can slice them in half and float them on the soup, exposing their gloriously liquid yolk to all, or keep them whole, and let them bob on the surface ready to be broken into with chopsticks, the yolk gushing out to the delight of the consumer as the egg white is broken. Either/or works.

Naturally, these eggs aren't seasoned. If you want to add to the flavor profile, the next options will accomplish that. In keeping with common approaches in egg seasoning, both steeping methods involve a brine, but the difference between each method depends on the proportions of seasoning used and timing.

STEEPING METHOD ONE: QUICK AND EASY BRINE

THIS IS the generally accepted approach for eggs in most Japanese kitchens. It's simple and doesn't require a lot of precision. Just be sure to pull the eggs out after 4-6 hours to avoid over-saturating them in the brine.

Ingredients:

- One part soy sauce
- One part mirin
- One part water

So for 300 mL of brine, use 100 mL of each ingredient. How much brine you want to make is totally up to you.

Steps:

1. Place peeled eggs in an airtight container, like a hard plastic container or a sealable bag.

2. Pour above ingredients into the container to cover (you may not need to use all the brine, reduce the amount as necessary)

3. Soak, jostling contents every hour or so, for 4-6 hours.

4. Remove from brine, reserve in the fridge until needed.

You can tell based on the detail here that I like, but don't love, this method. So what do I prefer?

STEEPING METHOD 2: EQUILIBRIUM BRINE

Equilibrium brining is a technique commonly used to flavor proteins like chicken or pork[33]. However, few cooks, if anyone, have used this method for eggs, and the technique's results are very effective.

The technique treats the brine as the general flavor and salinity you want your brined item to be, not more or less. Like the previous method, diffusion is still involved, and eventually everything would reach equilibrium, where no more seasoning is diffusing into the egg. However, the salt content is very high in that method's brine, and that salt would not only overseason the egg at equilibrium but would destroy the proteins in the process, creating something far from delicious.

By contrast, this equilibrium method takes the guesswork out of knowing when to pull the eggs and creates a consistent edge to edge seasoned egg with no grainy yolks. And that's reflected in the final egg's appearance and taste.

In this method, the egg white is uniformly seasoned throughout, and the yolk is lightly cured, firming into a clear and fully seasoned gel.

While this technique might seem more technical, it's still simple. You just need a scale and patience. Based on my experimentation, these eggs will be perfect anywhere from 1 to 4 days after being placed in the brine with no loss in quality. The only real downside is that you have to wait around 1-4 days before they'll be ready. Which... y'know... some of us don't like to wait, I get it. Physics doesn't make exceptions for any of us, unfortunately. Still, I think patience is a virtue, and these are delicious and easy.

Ingredients:

- Water (varies)
- Soy sauce (varies)
- Mirin (varies)

Steps:

1. In the container you will also soak the eggs in, weigh your peeled eggs. Add water to cover completely, and record the total weight of the eggs and water.

1. For instance, if I have 3 cooked and peeled eggs that weigh 150 grams, and I cover them completely with 350 grams of water, I'd have 500 grams total.

2. Add in 10% of this weight in soy sauce, and 8% in mirin.

1. If in the example above, since your eggs and water weighs 500 grams, you'd add in 50 grams of soy sauce, and 40 grams of mirin.

3. Soak in the fridge for at least 24 hours, and reserve in the brine until needed. Anywhere from 1-3 days, these will be excellent. If left in the brine for longer, the egg begins to degrade in quality over time. I've found that anything longer than 5 days and the egg's exterior will feel soft and somewhat crumbly.

CHASHU

Alongside eggs, chashu is perhaps the other most common topping for ramen. Chashu is almost always a slow-cooked, decadently tender slice of pork, usually from either the belly or the shoulder, but it can also be from the loin for leaner variants. There are several approaches to making chashu:

1. Several shops cook the pork in broth and boil it until tender, usually 2-3 hours. Then they reserve it in a sauce (or tare) of some kind.

2. Some shops perform a braise, tossing the pork into a tare directly and boiling until cooked. Then this tare gets used for other dishes.

3. Some shops just straight-up roast their pork, for that excellent caramelized flavor.

4. More sophisticated shops often use sous vide, or temperature-controlled water baths, for optimal precision.

All of these techniques have their pros and cons:

Technique	Pros	Cons
Cook in Soup	• Requires very little setup; No additional pots needed • Adds flavor to soup	• Can't add salt before cooking • Typically the most boring-flavor wise • Prone to overcooking
Braise in Tare	• Flavorful • Relatively easy • Familiar technique to most home cooks	• Some monitoring required
Dry Roasting	• Flavorful • Familiar to most cooks	• Messy • Unable to add certain flavors • Prone to overcooking
Sous Vide	• Most control • Most consistent product • Great color • Best flavor	• Most time consuming • Equipment can be expensive

How you finish the chashu is also a common point of contention. Searing, reheating, throwing the slices into the soup cold, you can do whatever you like with whatever combination you desire. It'll probably be delicious no matter how you finish preparing the meat, but I recommend making sure the pieces you use are similar in size. That’ll make the presentation and cooking much more consistent.

COOK IN SOUP

TAKE YOUR BELLY OR SHOULDER, and toss it into your simmering/boiling broth. Tie it, keep it loose, whatever you like, just put it in your broth when it begins to bubble, and after you've skimmed any scum.

Then, cook in the broth until tender, anywhere from 2-3 hours. Remove the pork when you feel it is sufficiently cooked (for a melty piece of meat, I prefer around 203F, though anything above 190 F will be very tender), and place in the Easy Meat Shoyu Tare, and allow to soak in the fridge for 2-4 hours. This seasons the pork, your tare, AND adds porky goodness to your soup. It's not complex, but some styles, like Jiro ramen, hinge on this approach.

STANDARD BRAISE

THIS IS OFTEN how I make chashu. The pork is really tender, to the point that it actually becomes difficult to pick up with chopsticks, so if you're into that extremely luscious texture, this method is for you. You can mix things up by adding green onion, ginger, garlic, or other aromatics to your braising liquid, but I've always kept it simple.

Ingredients:

• Pork belly or shoulder (weight is not important here)

• Salt to taste

• Pepper to taste

• 125 mL (½ cup) mirin

• 125 mL (½ cup) soy sauce

• 250 mL (approx. 1 cup) water

• 12.5 g (approx. 1 tbsp) brown sugar

• 60 mL (approx. ¼ cup) sake

• Three garlic cloves, smashed

Steps:

1. Preheat your oven to 110 °C/225 °F.

2. Heat a large, oven-safe vessel that you can sear in over medium heat. Cast iron or an enameled dutch oven works great here, but any oven-safe pot or pan will work

3. Season the exterior of the pork with salt and pepper on all sides.

4. Place the pork in the heated pan and sear on all sides until golden brown, around 4-5 minutes per side.

5. Some fat will render as the pork cooks. With a paper towel, sop up residual fat.

6. Meanwhile, in a small bowl, combine mirin, soy sauce, water, and brown sugar. Stir to dissolve the brown sugar. Then add the garlic. At this stage, you could also add other aromatics like ginger, or green onion.

7. Deglaze the pan with the sake, then add in the ingredients from step 6.

8. Bring the liquid to a boil, then cover the vessel.

9. Place the vessel into the oven, and braise, occasionally turning the pork every hour or so, until the pork is quite tender, and the internal temperature reaches around 93 °C/200 °F.

10. Remove, allow to cool, then place in the fridge with the cooking liquid, and chill to allow for easy slicing.

DRY ROASTING

In some shops, the pork is hung in a small chimney like charcoal or gas grills until it is cooked. Despite the name “chashu” roughly referring to Chinese roast pork, the actual act of dry roasting chashu is relatively rare. But it can be delicious.

In dry roasting, some precaution needs to be taken into account to avoid over-cooking the meat. Unlike in a water-based cooking method, where the temperature never gets above boiling, dry roasting can quickly get portions of the meat past the temperature where connective tissue breaks down before the collagen has time to turn into gelatin, resulting in dry, chalky meat, that is essentially ruined.

To compensate, chashu needs to be roasted at a lower temperature for a very long time, upwards of 5-6 hours. Meat cooked this way is never tender the way a braised piece of meat is, but it has deep, intense, caramelized notes on the exterior of the meat.

The method is effectively the same for pork belly or shoulder. Use whichever cut you prefer.

Ingredients:

- Pork belly
- Seasoning (typically, salt, and pepper, followed by a glaze of some kind, typically soy sauce-based)

Steps:

1. Preheat the oven to 150 °C/300 °F

2. On a baking sheet with a wire rack set in it, add the pork belly and season generously.

3. Roast until the interior of the meat reaches 91 °C/195 °F, anywhere from 5-10 hours depending on the size of the roast.

4. Remove the pork, increase the heat of the oven to 230 °C/450 °F

5. When the oven has come to the higher temperature, coat the pork in the glaze, and roast for 5-10 minutes or until caramelized and seared to your liking.

Sous vide is an incredible tool for chashu. It allows you to produce meat that is both exceptionally tender, well structured, and gorgeously pink, while still being fully cooked and safe to eat. This is the ultimate way to make chashu, and most high-end shops are pivoting to this approach (and should be if they aren't already!).

It also allows you to store the pork in the bag well in advance before use. Simply remove the bag from the water bath, chill the bag in an ice bath, and then reserve in the fridge. This pork should keep well for several weeks, provided you keep it in the vacuum-sealed bag, as the pork itself will be pasteurized and won't be exposed to oxygen.

The cooking liquid is practically identical to what was used in the braising recipe.

Ingredients:

- Pork belly (weight is not important here)
- 125 mL (approx. 0.5 cup) mirin
- 125 mL (approx. 0.5 cup) soy sauce
- 250 mL (approx.1 cup) water
- 12.5 g (1 tbsp) brown sugar
- 60 mL (approx. 0.25 cup) sake
- Ice water for shocking

Steps:

1. Preheat a water bath to 79 °C/175 °F using a sous vide water circulator.

2. Sear the pork belly on all sides on high heat in a pan until golden brown, then place in a sturdy bag (ideally one used for a vacuum sealer).

3. Deglaze the pan with the remaining ingredients, then reserve this liquid and allow it to cool.

4. When the liquid has cooled, add it to the bag with the pork.

5. Seal the bag, removing as much air as possible.

6. Cook the pork belly sous vide for 7-12 hours.

7. Remove the meat from the bath, and add to the ice water to chill quickly. Reserve in the fridge until needed, then slice as desired.

Now, there are many temperatures and times you could select based on preference. I like chashu to be pretty melty, but still with some structure so that it doesn't fall apart in the chopsticks, so I sous vide at a relatively high temperature. Others may prefer a more steak-like, or firm chashu. Lower temperatures (say, 68 °C/155 °F) for a longer period (24-36 hours) will give a more steaky texture if that's what you're looking for.

In the past 10 years, chashu has evolved to be more than simply cooked pork shoulder.

Techniques like sous vide have rapidly improved the capacity to cook and eat pork products in unique and often otherwise impossible ways. Chefs in Japan have used the technique of sous vide to cook pieces of pork until they are just barely cooked, around 57 °C/135 °F or so, then chilling thoroughly before slicing. Hence the name "rare" chashu. It's legit rare pork, taking on the color of something like rare roast beef.

I've found, admittedly, that this concept is pretty hard for most Americans to get behind, especially with American pork. The texture is somewhere between steak-like and ham, and the color is very pink, which some Americans would say is undercooked. That doesn't mean it's unsafe though. The odds of getting trichinosis, the main pathogen in undercooked pork, is very low. The CDC reports less than 20 cases yearly, in large part due to extensive safety precautions taken by meat manufacturers, effectively eliminating it as a safety measure. The USDA as a result has lowered the required temperature of pork products to 63 °C/145 °F. But as, realistically you can probably go lower, and to get rare chashu, a lower temperature is required.

Texture-wise, it's a completely different product than the well-done pork I described earlier. It needs to be thinly sliced to account for the lack of collagen breakdown. And it can quickly go from pink to grey if it sits in the hot soup for too long, as the pork effectively cooks further in the heat. Rare chashu also often uses different cuts of pork than more traditional chashu. Unlike well-done chashu, which uses belly or a standard shoulder roast, rare chashu most often uses a specific cut of the shoulder typically called the "coppa." In the world of BBQ, this cut is called "the tubes." Other names include the CT Butt, the top of the shoulder, or even the so-called "pork neck" muscle. No matter the name, this is a section of the shoulder that runs the furthest from the large bone you typically find in a pork shoulder and is heavily marbled with fat in between circular, tube-shaped muscle groups.

That's not to suggest that rare chashu must use the coppa. Practically, rare chashu can be made from any cut of nicely marbled shoulder, but traditionally the tubes are used to get the quintessential round look seen in shops.

Ingredients:

- Pork coppa or pork shoulder
- 125 mL (approx. 0.5 cup) mirin
- 125 mL (approx. 0.5 cup) soy sauce
- 250 mL (approx. 1 cup) water
- 13 g (1 tbsp) brown sugar
- 60 mL (approx. 0.25 cup) sake
- Ice water for shocking

Steps:

1. (optional) Using butcher's twine, tie the pork into a round shape.

2. Preheat a water bath to 57 °C/135 °F using a sous vide water circulator.

3. Sear the pork belly on all sides on high heat in a pan until golden brown, then place in a sturdy bag (ideally one used for a vacuum sealer).

4. Deglaze the pan with the remaining ingredients, then reserve this liquid and allow it to cool.

5. When the liquid has cooled, add it to the bag with the pork.

6. Remove as much of the air from the bag as possible. Use either a vacuum sealer or the water in the immersion circulator to push out the air before sealing the bag.

7. Cook the pork belly for 2-3 hours.

8. Remove the meat from the bath, and shock in ice water to chill quickly. Reserve in the fridge until needed, then slice as desired.

COMBINATION METHOD: BRAISE THEN ROAST

As I was writing this book, I wondered, why not combine some of the approaches to get the ideal results for each? I love the deeply caramelized exterior of roasted pork but hate how much you have to babysit it. And I love the melty quality of a braised piece of meat but hated how it lacked true roasted flavor. The term "chashu" is derived from Cantonese style BBQ pork after all. This method, therefore, combines both approaches, to get succulent meat, and a delicious, charred exterior.

Since the pork sits out of the braising liquid while the oven preheats, the surface is dry and slightly tacky from the sugar, so it caramelizes very quickly. A quick blast in the oven is all it takes.

Ingredients:

- Pork belly (I find this method is less successful with shoulder)
- 125 mL (approx. 0.5 cup) mirin

- 125 mL (approx. 0.5 cup) soy sauce
- 250 mL (approx. 1 cup) water
- 25 g (approx. 2 tbsp) brown sugar
- 60 mL (approx. 0.25 cup) sake
- Three garlic cloves, smashed

Steps:

1. Add all ingredients to a saucepan large enough to hold the pork, but small enough to allow for the pork to be submerged.

2. Bring the liquid to a boil, then cover the vessel.

3. Continue to cook the pork at a simmer until tender, or the internal temperature registers above 90 °C/190 °F, around 90 minutes (though the thickness of your pork belly will increase this cooking time)

4. Remove the pork and place it on a wire rack set in a baking sheet. Reserve the liquid in a container of your choice that will be big enough to hold the pork as well.

5. Preheat your oven to 230 °C/450 °F.

6. When the oven is heated, Place the pork in the oven and roast for 5-10 minutes, or until the exterior of the pork is dark, rusted, and bubbling.

7. Place the hot pork back into the braising liquid in the container. Allow to cool the room temperature, then let chill overnight in the fridge before slicing.

Unlike my opinions on sous vide pork, which often teeters back and forth preference and dislike, sous vide is my preferred method when including chicken breast.

For one, chicken breast is probably the most misunderstood and disrespected meat of all time. Widely available in supermarkets, most chicken breast is either too dry or underseasoned. Many home cooks have avoided this cut entirely for fattier dark meat pieces like thigh or drumsticks, and for good reason. They're usually far easier to cook and often result in far more palatable dishes.

Sous vide takes all of the needed measurement and process control away and fixes the temperature, which is controlled by a computer. You can't overcook something if you know exactly what temperature it's going to be. And sous vide hinges on equilibrium cooking, that is, the heat of the surrounding water is equal to the temperature you want the final product to be. So this is my preferred method for chicken breasts. It is extremely versatile, feel free to add herbs, other spices, or seasonings like soy sauce or mirin, to the bag.

Ingredients:

- Chicken breast
- Salt to taste
- Ice water for shocking
- Pepper (optional)
- Other seasonings (optional)

Steps:

1. Preheat a water bath to 63 °C/145 °F using a sous vide water circulator (or whichever temperature you prefer, to me 63 °C/145 °F is extremely supple, juicy, and tender).

2. Season the chicken breasts with salt and pepper, making sure to cover the breasts evenly.

3. Place the chicken breasts in a sturdy bag ideally one used for a vacuum sealer or a sealable bag.

4. Remove as much of the air from the bag as possible. Use either a vacuum sealer or the water in the immersion circulator to push out the air before sealing the bag.

5. Cook for 2 hours (or up to 4) to ensure pasteurization.

6. Remove from the water bath, slice as desired. If not using immediately, chill the breasts quickly via an ice bath, and store in the fridge until needed.

I THINK green onions are the most important topping in ramen. Scallions add sharpness, vegetal complexity, texture, and color contrast. In Japan, a similar allium known as "Tokyo negi" is often swapped in, but the flavor and preparation are similar enough that most home cooks can get away with using scallions.

You have a few options with how you prepare your green onions, most of which is personal preference:

1. ringlets: slice the scallion into small rings, typically as thin as you can get them. The goal of this cut is to have the green onions be so thin that they give almost no texture to the bowl. You can use the green or the white or both for this application.

2. oblong diamonds: a more western technique, slicing the green onions at a 45-degree angle gives the resulting shape

a diamond-like appearance.

3. threads: you can also slice the green onion lengthwise. Cut the green onion into 3-inch pieces, rotate, and slide into threads. The layers of the green onion will help you achieve this, and it’s easier with the white part of the green onion.

4. fine dice: After creating threads along the length of the onion, you can slice the green onion further into small dice. This looks nice when added with the tare, giving the surface of the soup a speckled appearance.

Since the onions are served raw, there’s no recipe for their preparation, only that you cut them how you’d like to eat them. It is of my humble opinion, however, that scallions should be included on virtually every bowl. A bowl of ramen without scallions feels incomplete, even with chashu, eggs, menma, or anything else.

The reality is that menma in the US is hard to make. Menma requires a specific type of bamboo that has been dried and lacto-fermented. These are effectively unavailable to home cooks (though some restaurant distributors do sell them in bulk).

If you can get your hands on these, the process is also somewhat annoying, but doable. Otherwise, some asian supermarkets sell prepared menma.

Ingredients:

- 500 g lacto fermented bamboo shoots

- 100 g mirin

• 15 g sugar

• 20 g soy sauce

• Sesame oil, as needed

Steps:

1. The night before, submerge the bamboo to a bowl of cold water and allow them to soak in the fridge for 12-24 hours.

2. Drain the bamboo thoroughly, set aside.

3. In a saute pan, add your bamboo, mirin, sugar, and soy sauce.

4. Cook, stirring occasionally, until the liquid is slightly absorbed, 10-15 minutes.

5. Add the sesame oil to coat.

6. Transfer the menma to a container and allow them to soak for 24 hours. The menma will keep over time.

Note: you may find some additional “quick” methods for making menma with canned bamboo. At this time, I don't have a recipe I think is a sufficient substitute for the real stuff.

ROASTED TOMATO

THIS METHOD IS BLATANTLY STOLEN from the legendary Ivan Orkin[24], who used this topping to great effect in his shio ramen in Japan. It's delicious, and a great alternative for an umami-laden ingredient.

Ingredients:

- Tomatoes (I like Roma tomatoes, but any tomato you like will work)
- Salt
- Pepper
- Olive Oil

Steps:

1. Preheat your oven to 121 °C/ 225 °F.

2. Slice the tops and bottoms off of the tomato, then slice the tomato in half lengthwise (so that you have two round, fat disks of tomato).

3. Place the tomato on a baking sheet, season with salt, pepper, and drizzle with olive oil.

4. Roast the tomatoes until they are plush, withered, and have shrunk in size, around 2-3 hours.

THIS IS a common topping in southern-style paitan soups, particularly tonkotsu. It is bafflingly easy to make. They're primarily for texture contrast, as they have little to no flavor.

Ingredients:

- Dried wood ear mushrooms
- Water

Steps:

1. Cover the dried wood ear mushrooms with boiling water.

2. Allow to steep for 15 minutes, or until rehydrated.

3. Strain and reserve as needed. You can optionally cut into thin strips if desired.

BOILED SPINACH

Boiling spinach is not hard, and it’s also a common topping, particularly in shoyu. Since the soup is often amply seasoned, I find the water used for cooking here does not need salt. Feel free to add it if you so choose.

Ingredients:

- Spinach (ideally with root attached)
- Water for boiling
- Ice water for shocking

Steps:

1. Bring the water to a boil in a large pot/.

2. Add the spinach, starting from the root end. Cook for 20-30 seconds.

3. Strain spinach and transfer to ice water to stop cooking.

4. Wring out the spinach of its residual water, shaping it into a firm log.

5. Cut the log into 2-inch pieces, then reserve as needed.

Soboro is a common ramen topping in tantanmen, but it's also great over rice, stuffed into lettuce wraps, or on its own with a spoon, if you're feeling extra gluttonous.

Ingredients:

- 15 mL (approx 1 tbsp) vegetable oil
- Half of one white onion, diced finely
- 0.5 kg ground pork (or around 1 lb)
- 2 cloves garlic, minced
- 2 0.5-cm/0.25-in coins of ginger, minced
- 30 mL (approx. 2 tbsp) soy sauce
- 45 mL (approx. 3 tbsp) sweet bean paste
- 15 mL (approx. 1 tbsp) mirin
- 15 mL (approx. 1 tbsp) sake
- salt to taste

Steps:

1. In a large saute pan, sweat the onion over medium heat in the oil until translucent, 3-5 minutes.

2. Increase the heat to high, and add in the pork. Cook, stirring and breaking up clumps, until starting to brown.

3. Add in the garlic and ginger, cook until fragrant, around 1 minute.

4. Add in remaining ingredients. Cook until the pork is glossy, fully cooked, and flavorful. Adjust seasonings as necessary.

I don't know whether this counts as a "topping" or not. I like to add it both to the bottom of the bowl and also on top of the soup after the noodles have been added. Will the ramen gods forsake me for mischaracterizing a spice blend? Eh, maybe I'm overthinking it.

In any case, heat comes in several forms in ramen. You can add chili oil, togarashi powder (ground Japanese chilis), or fermented pastes like Gochujang and Tobanjan. I like to make a blend of spices for spicier variants of ramen. Below is a standard spice blend I use:

Ingredients

- 8 dried Chinese chilies, whole
- 30 g togarashi (approx 2 tbsp)
- 30 g whole Sichuan peppercorns (approx. 1 tbsp)
- Optional: 10 g white peppercorns (approx. 2 tsp)

Steps:

1. In a spice mill, blend the above ingredients one by one. Combine in a small bowl. Reserve until needed.

There are countless other toppings, these are just a handful of the most common ones. Toppings give chefs an incredible amount of creativity, and you can really go nuts.

AROMA OIL

Aroma oil, the unsung hero of ramen.

Have you ever noticed the glimmering surface of a bowl of shoyu ramen? How it almost looks crystalline, glistening with little beads of fat? Those fat blobs are an intentional component of the dish, one that you should be eager to add to your final bowl.

In modern ramen making, the fat content is seen as integral for a host of reasons:

1. **Aroma**. Fat often dissolves compounds not otherwise dispersed in the soup. These compounds are often volatile and release when heated within an oily solution. The oil's design here is to provide an additional level of aromatic quality, hence the name.

2. Insulation. Fat acts as an insulator, creating a barrier between the water in the soup and the air. This prevents heat in the soup from escaping as vapor. Some styles of ramen, like Sapporo Miso, actually hinge on this mechanism to retain the dish's heat.

3. Viscosity: Fat has a specific texture on the palate that plays well with the texture of the soup itself.

4. Complexity: Including an aroma oil in the bowl allows the cook to layer flavors throughout the bowl. Since these compounds would otherwise be absent without an aroma oil to dissolve them, the complexity of the final dish can be improved.

5. Visual appeal: Uh… fat just looks awesome. It refracts light well and makes the surface of the ramen more complex. You eat with your eyes, it's not silly!

It's worth noting that, contrary to the lore of many chefs, fat **does not help soup stick to noodles**. As mentioned in the soup section of this book, fat is hydrophobic as a non-polar liquid. Water is a polar solvent, and as such only dissolves compounds that have, well, polarity. Table salt comes to mind, the chloride is significantly electronegative, while the sodium ion is electropositive. Fats, by contrast, are nonpolar.

The distribution of the charge is pretty neutral across the length of the fat molecule. This is especially true for long fatty acids most commonly found in fats used in food. The attraction between water and fat is therefore repulsive. To minimize free energy, fats prefer to attract one another instead of other water molecules. The fat and the water, therefore, separate, and poorly interact with one another. This can only be overcome by emulsion, which requires additional compounds that interact with the fat and water and allows the fat droplets to suspend in the water indefinitely, but an emulsion does not mean the fat is attracted to water, only that its suspension is more stable.

If we believe the science, there's no scientific explanation that justifies the kitchen lore on soup-sticking-fat. Fat isn't dragging more soup onto the noodle, out of anything it's displacing soup as it coats noodles. But aroma oil is still valuable for the flavor, mouthfeel, and visual appeal it provides.

Aroma oil is sort of a new addition in several respects. Normally, aromatic oil was derived from the soup making process. Vegetables floating on the surface of the bubbling broth infused the rendered fat from chicken or pork bones used to make the base soup. With the modernization of the technique, cooks now infuse the fat more carefully or add additional fat on top of the fat that is rendered during the soup making process.

This can be a tough pill to swallow for home cooks, but it's important. For ramen broths, you should expect to include fat in the dish. Ramen isn't really ramen without some form of fat. This ain't health food y'all. So this chapter will introduce several styles of fat that you can include. Typically, aroma oil is added with the tare, in a liquid (read: warm if an animal/saturated fat) state.

Most aroma oils take the same standard approach. Take fat and aromatics and bring them to the point that the aromatics sizzle. You can push this more and allow them to brown, or not, your choice, but then remove from the heat and allow the aromatics to steep in the fat until cool. Then strain and reserve as needed.

Of all the components in ramen, aroma oil is probably the most versatile for home cooks; you can use it for all sorts of other dishes beyond ramen. This chapter includes the standard aroma oils I use, but the possibilities are limitless.

CHICKEN FAT

Many of the recipes here will call for some sort of animal fat as the aroma oil. Chicken fat, sometimes called, "schmaltz" is made from the skin most frequently. It's surprisingly easy to make, and the resultant cooked chicken skins are a tasty snack.

Ingredients:

- Chicken skin
- 15-30 g water

Steps:

1. Add the skin and the water to a pan and heat, over medium heat. The water reduces the temperature of the cooking, which will render fat but prohibit browning, resulting in a cleaner tasting fat. You can omit it if you'd like the additional flavor browning provides.

2. Continue to cook until the skins have taken on a golden brown color and have rendered out their fat, approximately 45 minutes.

3. Strain and reserve the crispy skins as desired. If not using the oil immediately, keep in the fridge for up to 6 months.

You can also use the fat that renders out of any chicken skin used while making soup. This comes with the additional benefit of the skin contributing some of its connective tissue (and therefore collagen) to the soup, enriching it with gelatin. The negative of this approach is that the soup’s oil soluble aromatics will flavor this final fat, which you may or may not want.

LARD IS available at most grocery stores. However, should you desire, you can also render pork fat to make lard at home. I find that purchasing even poor quality lard is sufficient for most purposes since we sort of want that piggy-flavor in most applications. But you do you.

Ingredients:

- 2 lb backfat (or other fat-laden pork parts)
- 15-30 g water

Steps:

1. Preheat an oven to 121 °C/250 °F.

2. Add fatback and water to an oven-safe pan.

3. Cook in the oven for 2-3 hours, or until the fatback has turned golden brown and rendered fully.

4. Strain and reserve the fat as needed. If not using immediately, keep in the fridge for up to 6 months.

ALL-PURPOSE NEGI (SCALLION) OIL

If this is your first exposure to aroma oil, this is an easy way to see how the process works, and it's versatile for several ramen styles without requiring any complex ingredients. It works on lighter bowls and more rich ones. As a bonus, you can use this stuff in all sorts of dishes. Fried rice, sear chicken in it, toss it with a salad. All tasty.

Ingredients:

- 125 mL (approx. 0.5 cup) neutral oil, like vegetable oil
- One bunch of scallion whites, trimmed of their ends.

Steps:

1. In a small saucepan, add the oil and scallions.

2. Cook over medium heat, stirring occasionally until the scallions take on a light golden hue and smell fragrant

around 10-15 minutes.

3. Remove from the heat, reserve in the pot and allow it to cool.

4. Strain and transfer oil to a melt-resistant container. If not used immediately, store in the fridge for up to 6 months.

CHICKEN AND SCALLION OIL

THIS AROMA OIL is really nice for ramen bowls that are light in their richness.

Ingredients:

- 125 mL (approx. 0.5 cup) rendered chicken fat
- One bunch of scallion whites, trimmed of their ends and cut into 2-inch pieces
- 4 garlic cloves

Steps:

1. In a small saucepan, add the oil, scallions, and garlic cloves.

2. Heat over medium to medium-low heat, stirring occasionally, until the scallions take on a light golden hue and smell fragrant, around 15 minutes.

3. Remove from the heat, reserve in the pot, and allow it to cool.

4. Strain and transfer to a container. If not used immediately, store in the fridge.

NEGI NIBOSHI OIL

THIS IS awesome on bowls with shoyu tares, or soups with fish-forward characteristics like the "Cement" ramen soup.

Ingredients:

- 125 mL (approx. 0.5 cup) rendered chicken fat
- 5 whole scallions, trimmed of ends and cut into 2-inch pieces
- 10 medium-sized niboshi.

Steps:

1. In a small saucepan, add the oil, scallions, and niboshi.

2. Heat over medium to medium low heat, stirring occasionally, until the scallions and niboshi take on a light golden hue, and smell fragrant, around 15 minutes.

3. Remove from the heat, reserve in the pot and allow to cool.

4. Strain and transfer to a container. If not using immediately, keep in the fridge for up to 6 months.

GINGER AND ONION PORK LARD

I PARTICULARLY LIKE this one for miso variants, though it's good on shoyu too.

Ingredients:

- 125 mL (approx. 0.5 cup) rendered pork lard
- One half white onion, cut into large pieces
- 4 garlic cloves
- One one-inch piece of ginger, peeled, sliced into 0.5 cm/0.25 in coins.

Steps:

1. In a small saucepan, add the oil, onion, garlic, and ginger.

2. Heat over medium to medium-low heat, stirring occasionally, until the ingredients take on a light golden hue, and smell fragrant, around 15 minutes.

3. Remove from the heat, reserve in the pot, and allow it to cool.

4. Strain and transfer to a container. If not using immediately, keep in the fridge for up to 6 months.

CHILI OIL

Chili oil is a relative newcomer to the ramen world, usually used in Chinese-flavor inspired ramen dishes like tantanmen, but it's definitely in line with what I'd consider an aroma oil. I like to use animal fats in mine and combine them with some aromatics, but you can use any variants you like. This is classically used in tantanmen, but is also good for adding some nice chili flavor and heat to other kinds of ramen.

Ingredients:

- 250 mL (approx. 1 cup) fat of choice (I typically use pork lard, though vegetable oil also works here)
- 8 cloves garlic
- 1 5-cm/2-in piece of ginger, sliced into 0.5 cm/0.25 in coins
- Half of a small onion
- 3 tbsp coarsely ground togarashi
- 4 dried Chinese chilis
- 1-2 tsp Sichuan peppercorns

Steps:

1. In a small saucepan, add the fat, garlic, ginger, and onion.

2. Heat over medium to medium-low heat, stirring occasionally, until the ingredients take on a light golden hue, and smell fragrant, around 15 minutes.

3. Add in your togarashi, Chinese chilis, and Sichuan peppercorns.

4. Remove the saucepan from the heat, and let the ingredients steep in this oil for 30 minutes.

5. Strain and transfer to a container. If not using immediately, keep in the fridge for up to 6 months.

Mayu is a very dark, almost black, aroma oil commonly used in southern-style tonkotsu based ramen, particularly from the Kumamoto region. It achieves this look from finely ground cooked vegetables that are used, not from the oil necessarily. It has a bitter, slightly acrid taste, and should be used sparingly for visual contrast and aromatic complexity. Many approaches exist, but I use a very simple one with just garlic and fat. Adding scallion or regular onion is not a bad idea, however.

While it might appear like it at first glance, none of the vegetables used in mayu dissolve in this process; they still contain a lot of insoluble solids. Like the emulsion found in a paitan, mayu is also a colloid, which is the technical term for a mixture where one material is uniformly dispersed in another, but doesn't dissolve in the suspending material. The difference between mayu and an emulsion is what is being dispersed. In an emulsion, a liquid is dispersed in a liquid. In mayu, a solid is dispersed in a liquid. Otherwise, several of the same concepts I mentioned earlier apply here.

Much like emulsions, to make a stable mayu, you need to make the dispersed particles (in this case the cooked solids) very small so that they become indefinitely suspended in the oil. Making sure your ingredients are dry helps with this. Moisture both prolongs the frying process and results in soggier fried vegetables that are more difficult to grind. This recipe accounts for this with a two-staged approach.

Some recipes online suggest using a food processor or blender, but I’ve found this ends up making a paste that splits over time rather than a uniform oil that’s black throughout. Combining the ingredients with a mortar and pestle has worked the best for me. If you have a suribachi (a Japanese mortar and pestle) that’s even better; the ridges are really effective at breaking down the vegetables into a fine paste. But any bowl and mashing tool (like a muddler even) will work well.

Ingredients:

- 15 cloves of garlic

- 60 mL oil (approx. 0.25 cup). I used equal parts sesame, vegetable oil, and lard. 100% lard is nice, but it'll firm up at room temperature.

Steps:

1. Take the garlic cloves and throw them into a food processor. Process until finely minced (around 1/8th inch pieces). You can also mince finely by hand, though avoid turning the garlic into a paste.

2. Spread the mince on a paper towel and squeeze as much moisture out as possible. Replace paper towels until little to no moisture escapes. This is going to help you dry your mince out when you cook it, and that's important for suspending the particulate in the oil at the end.

3. Heat your oil on the stove, and when warm, add your aromatics. You can test this by throwing a small amount of your garlic into the oil and seeing if it sizzles.

4. Cook, on medium to medium-high heat, stirring constantly, until the garlic takes on a dark brown, almost black color, and the oil begins to smoke, around 15-20 minutes.

5. Strain the solids, reserving the oil, and then lay the solids on more paper towels to remove excess oil. This is once again to keep things as dry and brittle as possible. You

should be left with garlic pieces that you can crumble into dust between your fingers.

6. Add your solids only to a mortar and pestle, and mash until the oil within them begins to escape and the contents turn into a uniform paste. This takes around 5 minutes.

7. Once the paste is smooth, with no visible grit, add the reserved oil from step 6 to thin the mayu to your liking and mix fully.

8. Store in an airtight container until ready to use. If not using immediately, keep in the fridge for up to 6 months.

PUTTING IT ALL TOGETHER

The assembly of ramen is easy but requires some planning, as there are many components. Below is a framework for planning, and eventually assembling, a single bowl of ramen. You’ll notice that the components are not made on the same day. I find that spreading out the work prevents this process from being too overwhelming. Ramen is designed to be prepared in advance anyway, with most of the components improving as they mature over time in the fridge.

RAMEN IS all about mise en place, the French phrase that means "everything in its place". In ramen, this means everything is ready to be put into the bowl. In most ramen shops, all components are fully prepped/cooked in advance, so a ramen cook can assemble the dish quickly. Usually, assembly only requires heating some soup and cooking some noodles.

But you should know, as a broad method, it's best to break up the process over time. Thinking slightly like a chef helps when making ramen to prevent it from being overwhelming. This means breaking down the prep into manageable pieces and storing them in your fridge gradually. No ramen chef makes every component all at once.

THIS PROCESS WILL BREAK down a hypothetical scenario for a shoyu ramen to be served on a Sunday. Given the cooking time for some of the components, the weekend/days off are good times, much like a household prepares a stew on Sunday. But this general approach will work for any bowl of ramen you wind up making.

Sunday, one week out (around 1-2 hours of work)

• Cook the tare. Usually, this involves soaking some items in soy or water, then heating them. Assembly is minimal; store in the fridge after cooking. Tare, broadly, can be kept in the fridge for very long periods due to its high salt content.

• Cook the aroma oil if possible, store in the fridge until ready to use. If the fat comes from the soup, you'll need to wait, but this is helpful, as it's one less component you'll need to prepare.

• Make or purchase the noodles. For first-timers, I recommend buying the noodles over making them. But ramen noodles get better as they age in the fridge, and can stay in the fridge for up to two weeks while still being safe to eat.

Saturday, the day before (around 6-10 hours of work, mostly idle waiting for things to cook)

• Prep the soup. If you have one, use a pressure cooker to save time.

• Cook chashu. Since chashu needs to usually be cold to be sliced, you can make it in advance. Feel free to freeze leftovers for later use.

• Cook and steep eggs: eggs need around a day or so to steep (especially with a diluted brine of 100 mL water, 20 mL soy sauce, and 10 mL mirin or so, where eggs can sit for days at a time without over-curing). You can cook these while the chashu and soup go.

Sunday, the day of (only 30 minutes or so required)

• Prep your toppings: slice the scallions, cut nori, etc.

• Assemble your bowl

With this approach, basically all of the work is done before the actual serving day. Most of the days only have an hour or so of actual intense cooking. Even though some of the processes may take a long time, they are not laborious the entire way. Soups may take hours, but there’s a lot of downtime between simmering and straining. Otherwise, this plan makes the labor involved far more digestible.

STANDARD BOWL ASSEMBLY

Once you have all of your components, it's time to assemble the bowl of ramen.

STEP 0: IDENTIFY YOUR SERVING BOWL

Before you get to the actual ramen feasting, you will want to consider the vessel you'll be serving the ramen in. Ramen is typically served in what is called a donburi-style bowl. If this kind of bowl isn't available, something like a large cereal bowl is probably okay. If you're trying to up your ramen presentation, consider the following characteristics when picking a bowl for the specific kind of ramen you decide on making:

• **shape:** Most ramen bowls are cupped at the bottom, and have a slightly flared lip at the top. But some are v-shaped, or almost inverted, with a small base that flares outward into a wider lip. Different shapes make the final dish look different; a narrower base hides the noodles, while a wider bowl shape shows them off.

• **height:** Some bowls are deep and tall, while others are shallow and wide. Shallower bowls mean the noodles will sit on the bottom of the bowl, which makes them look more bountiful, but makes the dish look less soupy.

• **material:** Ramen bowls are usually made of ceramic, but some bowls can be made of metal or even plastic. Ceramic is easy to clean, heat resistant, and affordable, but can chip or break.

• **color:** A darker bowl is going to hide the nuances of a clearer broth; instead of seeing how gorgeous that yellow chicken broth is, it just looks black. And a lightly colored bowl may detract from the color of an opaque broth, the lack of contrast making the visual confusing. Generally, white is the easiest to work with since it neither adds nor detracts from the contents of the bowl. Is it obvious I like white serving ware? Yes. Cool.

• **thickness:** A bowl made of thicker material is going to hold heat for longer and be less prone to chipping. But it may look less elegant and chunky.

My ideal bowl is a classic shape: Round, with a slightly flared lip, which can be used to carry the bowl without burning yourself as the bowl heats up. It's made of ceramic, is white, and is moderately thick. It should not be extravagant looking but should be wide enough that you can add toppings without totally hiding the soup and noodles below. Currently, I am loving the bowls by Koyo[34]. Their medium 52-oz bowl is essentially perfect, though I've also used their straight-sided V bowls, which are also great. Another good place to buy ramen bowls is Korin[35].

STEP 0.5: GET YOUR MISE EN PLACE READY

RAMEN DOES NOT WORK without a well set up station where the components are prepped, chefs call this mise en place; it's how a shop can get a bowl done in five minutes. So get yourself ready.

- Have your soup and noodle-cooking water already warm or boiling.

- Have all ingredients like chashu and scallions sliced and ready to be plated. If you're topping your bowl with torched chashu, now is a good time to do it. I try to have no more than five toppings. Less is more here!

- Have your containers of tare and aroma oil out, with appropriate utensils to scoop into your serving bowl.

• Tempter cold items, like eggs or noodles, by bringing them out of the fridge when you start to heat your water for cooking.

• Get a timer ready.

STEP 1: PREHEAT YOUR BOWL

YES, you should do this. This is the first thing almost all great ramen shops do that improves the final dish. Short of using a double-walled metal bowl or something hyper-insulated, if you add hot soup to a lukewarm or room-temperature bowl, the bowl's material is going to absorb a lot of that liquid's heat as the two reach equilibrium, easily 20-30 °C/40-50 °F sapped immediately from your soup. And lukewarm ramen isn't great. Preheating the bowls completely prevents this issue. In ramen shops, they'll often take some of the boiling water from the noodle cooker and pour it into the bowl temporarily to heat things, but at home, I just set my oven to the lowest setting it has, in this case, 77 °C/170 °F, and preheat my serving bowls in there. By the time the oven reaches temperature, the bowls are hot (almost too hot), and I turn off the oven.

STEP 2: COOK YOUR NOODLES

ONCE YOUR MISE en place is ready, it's time to start cooking. I like to start with the noodles, as they can take the longest in the assembly. With the water boiling rapidly, add your noodles, then set your timer and let them cook, keeping the water boiling as much as possible to promote even cooking. Give them a quick stir to make sure they won't stick together as soon as the timer is going. It's worth noting that noodles can vary in terms of the time required to finish them. Look for manufacturer recommendations on timing, or taste occasionally for doneness.

It's critical, by the way, that you don't cook your noodles in the soup itself. These aren't instant noodles; fresh ramen noodles release salt, alkaline salts, starch, and even sometimes food dye as they cook. This stuff doesn't taste all that great, and it will severely mess up the pristine soup you've worked so hard on. For control's sake, cook the noodles in separate water.

STEP 3: PREPARE THE BOWL FOR NOODLES

WHILE THE NOODLES COOK, add tare, aroma oil, and soup, ideally in that order, to your serving bowl. If you're doing something funky, such as adding spices, pepper, or fish powder, add them with the tare.

Tare amounts vary by recipe, look at suggestions below for specific examples.

Adding the soup last ensures the tare is evenly dispersed and the final soup is evenly seasoned. If you're using a thicker tare, like miso, you'll want to whisk things in the serving bowl.

STEP 4: STRAIN THE NOODLES

When the noodles are done, it's imperative to move quickly, as these are fresh noodles, and 5-10 seconds is all it takes for these noodles to go from chewy and pliant to soft and limp from overcooking. Remove the noodles from the cooking water immediately, and strain the noodles as thoroughly as you can. The goal is to remove as much excess water as you can in 5-10 seconds. This water will dilute your soup and potentially give it a strange flavor, so thorough straining is important.

Many chefs in Japan have developed stylistic straining methods to do this effectively. They'll use noodle baskets, flailing them around and spraying water everywhere. Or throw their arms to the side and crash the noodles against the confines of the noodle basket. Chef Jack Nakamura, a legendary ramen chef in Japan, is particularly known for his noodle straining technique, which has been dubbed the "Heaven's Drop" technique[36].

I don't think this showmanship is necessary, even if it looks cool. I just gather the noodles into a fine mesh strainer, or noodle basket, and shake over the pot quickly to make sure there's very little water[37].

You also want to move quickly because ramen noodles tend to get sticky when exposed to air after cooking. The residual gelatinized starch quickly links up as the surface dries, promoted by the alkaline environment, and your noodles will go from separate and slippery to clumped and caked. If this does happen, just dunk the noodles back into hot water for 5-10 seconds to dissolve some of that starch and separate them again. They won't be as perfectly cooked, but they won't be clumped and impossible to eat. And move quickly next time!

STEP 5: SEPARATE AND LINE UP THE NOODLES: NOODLE FOLD

Once the noodles are added to the bowl, they'll probably be bunched up into a ball. Some shops leave the noodles as is, others use a pair of chopsticks to shake the noodles briefly in the soup to distribute them evenly and prevent them from sticking.

This is also where you can perform the so-called, "noodle fold." Noodle folding is a common plating technique to take the noodles and essentially fold them into a bundle. Doing this effectively separates each strand so they're easier to pick out of the bowl while eating, and provides a platform for toppings later on. It also looks cool. I use a pair of super-long kitchen tweezers to do this, lifting the noodles and folding them over themselves. But chopsticks or tongs can be used to create the fold.

The fold is not easy, making it takes practice. And some noodles, such as thin, low hydration ones, fold better than others, like curly, short noodles. Ultimately, it is a mostly aesthetic choice with some arguable functional benefits. If you're dead set on noodle folds, consider the following qualities of the noodle as part of the design of the bowl:

• **hydration**: Noodles with more water are more prone to curling. Noodles at 36% hydration or lower create better folds than those above.

• **kansui composition**: Potassium carbonate creates rigidity in the noodle, preventing curling. An increase in the potassium carbonate amount can help create more aesthetically pleasing folds.

• **length**: Longer noodles are easier to fold, as they give you more runway to pull from the soup and drape into the aforementioned noodle fold shape.

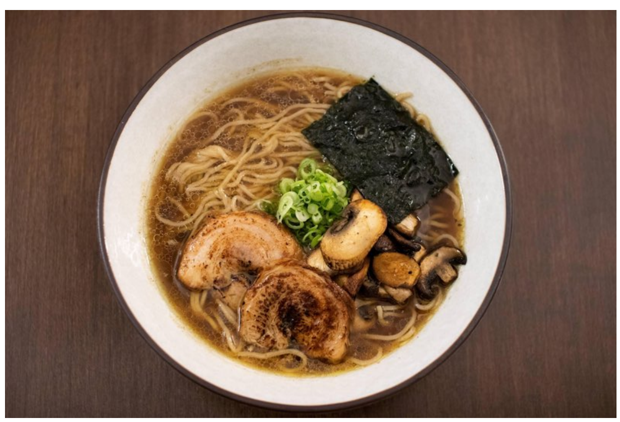
• **thickness**: Thicker noodles are harder to fold, as they're more prone to slipping out of the grip of the tool you use to lift them due to their increased weight per noodle.

cut: An oblong cut (meaning where the noodles are slightly wider than they are thick) can help with creating presentable noodles, as the noodles more easily align on the tool you use to lift them.

STEP 6: PLATING

ADD TOPPINGS. The plating is entirely up to you, but I have a few recommendations. If you're using nori, add it last, as it quickly gets soggy. I add the meat first, so it can maintain warmth. I'm also pretty particular with the position of the toppings. Using a clock as an analogy, I like placing the green onion in the middle, chashu/meat at 6 o'clock, nori at 1 or 2 o'clock, egg at 11 or 12 o'clock, and other toppings at 3 or 9 o'clock.

Plating examples are below. Notice that in virtually all examples, the bowl has the protein at the 6 o'clock position, with toppings aligned mostly towards the center of the bowl.



Even the eating of ramen is highly disputed. I’ve heard chefs say that noodles degrade in quality after 8 minutes (of course, different noodles will behave differently in soup, as we have discussed). But it’s true that ramen, being the scalding hot dish it is, is best eaten quickly, to avoid the noodles sogging out in the hot broth. Some adjuncts in the noodle will help maintain the structure to an extent, but after a while, all noodles become soggy.

Most ramen nerds agree that noodles should be slurped when eating, this is mostly a function of cooling the noodle while eating it, but slurping also brings in air, helping with retro-nasal olfaction, and allowing you to taste the soup and noodles more fully. I wouldn’t say it’s required, I’m hardly dogmatic, but I’d say it tastes a lot better when you slurp.

ASSEMBLY ALTERNATIVES

The basic approach to assembly applies to most bowls of ramen bowls. But it’s not the only method, as chefs inherently deviate to develop their approaches and techniques when putting their stamp on the dish. Below are some methods that have evolved over the last 100 years of the dish.

In the north of Japan, in Hokkaido, an emergence of wok cooking via Chinese restaurants resulted in several ramen styles that incorporate woks as part of the assembly of the ramen. This is particularly true for miso ramen, whose origins specifically include the wok as part of the assembly, but even shoyu ramen in the north can include wok cooking to some capacity. It's important to understand the difference in assembly.

Unlike in the standard ramen approach, the wok method follows the following flow:

1. Bowl is heated

2. Noodles are cooked

3. Aromatics are sauteed in fat in a wok (can be aroma oil or pure fat)

4. Soup and tare are added to the wok. If the tare is added first, it can be charred, or cooked briefly, on the wok surface. If the soup is added first, the tare is added after and whisked in.

5. The soup and tare mixture is then poured into the bowl. In some instances, the noodles have finished cooking and go into the bowl, first, in other instances, the noodles are added after the soup.

6. The aromatics are piled over the noodles, and final garnishes are applied

Most miso ramen in Hokkaido is created this way. But the treatment of the tare itself varies from shop to shop. Some commit to charring the tare, others keep it mostly raw up until the very end. But the wok flavor is an integral component of a true to style bowl of Sapporo ramen.

69'N'ROLL ONE AND MULTIPLE-TARE APPROACH

As part of the new wave of ramen in Tokyo, which focused on refining the ingredient bill to only use top tier ingredients and to strip away excess, the shop 69'N'Roll One is credited with a technique where a small dropper of extremely potent, expensive soy sauce is added in addition to the tare to the bottom of the bowl.

This creates a new style of ramen where the tare is broken into components, rather than being one cohesive sauce. Some newer shops now experiment with multiple tares, arguing that different ingredients extract better in different applications. As I’ve mentioned before, I disagree with this concept, as there’s very little evidence to suggest that extraction is impacted by these mediums, but it’s worth noting that the style does exist.

TSUKEMEN IS distinct in that the soup and noodles are served separately, where the customer is expected to dip the noodles into the soup before slurping them up. Often the noodles are served cold, and the soup hot, providing temperature contrast. The cold noodles, due to their preparation, also have an intensely dense starch gel, providing substantial chew and gloss that is often unachievable in standard ramen applications.

Assembly is very similar to the standard approach, except that the noodles are plated on the side. They may be shocked in cold water to stop the cooking or served hot.

There are a host of different names for these approaches, but they all share the same general framework in that they are essentially soup free. They share some resemblance to pasta, with a dressing or sauce coating the noodle.

Most of these styles work on a basic framework where:

1. The sauce is placed in the bottom of the bowl

2. Cooked noodles are added on top

3. Garnishes are applied

4. The customer is asked to mix the ingredients.

Virtually any ramen method can be turned into abura soba simply by excluding the soup and adding the aroma oil and tare to the bottom of the bowl.

COMPONENT COMBINATION SUGGESTIONS

As is the case with most ramen making, you'll need to combine tare, oils, soup, and noodles to make a cohesive bowl. Below are suggestions based on the way these recipes were designed, but they are by no means required combinations. See what works for you, and adjust as necessary.

You may notice that the liquids in many of these methods are in volume, rather than in mass measurements. This is primarily because volumetric measurement here is often very fast (1 tbsp is 15 mL, 300 mL is 10 oz, etc.), and asking a recipient to try and weigh out tare per bowl is an arduous affair in my opinion. Volume, therefore, does make this easier. But of course, these are just suggestions, your mileage may vary.

In an ideal setting, getting specific ladles for these quantities will help considerably. But a set of measuring spoons and cups will work fine.

- 300 mL Tokyo Style Chintan
  - 30 mL Standard Shoyu Tare
  - 20 mL Negi Niboshi Oil
  - 135 g Tokyo Style Noodle

- 350 mL "Doubutsu Kei" Style Chintan
  - 80 g Ramen_Lord's Miso Tare
  - 30 mL Ginger and Onion Pork Lard
  - 140 g Sapporo Style Noodle

Use the Standard Bowl Assembly approach or the Sapporo Miso Wok Method.

SHIO RAMEN

- 350 mL All-Purpose Chintan
    - 30 mL White Wine Chicken Shio Tare
    - 15 mL All-Purpose Scallion Oil
    - 135 g Tokyo Style Noodle

TONKOTSU

- 300 mL Tonkotsu Soup
- 30 mL Bare Bones Shio Tare or Light Shoyu Tare (to preserve color, you can also use any shoyu tare if a darker color is preferred)
- 15 mL All-Purpose Negi (Scallion) Oil

130 g Makeshift-Hakata Style Noodle

- 350 mL All-Purpose Chintan
- One serving of Tantenmen Tare
- 15 mL Chili Oil
- 130 g Makeshift-Hakata Style Noodle or 140 g Tokyo Style Noodle
- Spice Blend, as desired for heat (start with 1 tsp, increase as desired)

Since the tare in this is thick, it's sometimes helpful to whisk in the bowl to incorporate fully.

CHICKEN PAITAN

- 300 mL Chicken Paitan Soup
  - 30 mL Light Shoyu Tare or Soy/Shio Blend Tare
  - 15 mL Chicken and Scallion Oil, or Chicken Fat (you can also use both)
  - 130 g Makeshift-Hakata Style Noodle

Please note the slightly lower volume of soup and the slightly higher relative salinity, both of which are required for tsukemen to work

- 250 mL Tsukemen “Thick” Soup
- 30 mL Toasted Shoyu Tare
- 10 mL (approx. 2 tsp) gyofun
- A few grinds of black pepper
- 200 g (or more) Thick Tsukemen Noodle

Follow the tsukemen approach, ensuring the noodles are shocked thoroughly before assembling the soup.

APPENDIX: INGREDIENT DISCUSSION (IN PROGRESS)

There are a host of different ingredients used in ramen that may be unfamiliar to cooks outside of Japan. This section will be used to explain the nuances of some of the common ones.

Soy Sauce:

Mirin:

Kombu

Bushi Products

Niboshi

Miso

Sake

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