Russian−Tea−HOWTO

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Russian Tea HOWTO

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Caffeine is essential for keeping the brain active during nightly hacking sessions. There are, however, many ways to satisfy a hacker's need for caffeine. Drinking Canned Capitalism (Coke) contradicts the very principles of the open source movement, for it is a closed source product, manufactured by a huge, evil corporation. This sweet brown fizzy water is unhealthy and does not leave any space for creativity; you just get what you pay for. It is like M$ Windoze. Coffee is somewhat better (much better, in fact), though it can cause irreversible neural damage especially in young hackers still in larval stage (e.g. K−8), if consumed in large quantities. Moreover, it is strongly addictive and does not taste very good for those not yet addicted. A good tea, however, induces catharctic sensations even in those, who drink it for the very first time, warming one's mind, body, and soul. Many cultures have developed excellent ways of producing delicious tea. The English, the Chinese, the Japanese and many more have mastered the art of this divine beverage. In this HOWTO, however, I would like to focus on my native, Russian way of preparing, serving and consuming tea. The issues of scalability (preparing tea for yourself versus the LUG gathering), portability (preparing tea using different utensils), and quality control are also addressed in this HOWTO. Cultural references are given for the curious. Enjoy!

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1. The Basics

2. Choice of ingredients

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1. The Basics

1.1 What is tea

First rule: tea is made of tea. Period. Other hot beverages based on leaves of vegetation different from the Tea Bush (*Thea sinensis*) are not tea. However, hot water and tea leaves do not necessary make good tea. The ways of wasting the precious leaves are amazingly plentiful and widespread. In America, for instance, making bad tea seems to be a matter of patriotism since the infamous incident in Boston.

Second rule: forget those paperbags. They are filled with the dust swept from the floor at tea factories. The bags give the tea an unmistakable flavor of cellulose. In Russia, we call it "the postman's tea", because it comes in envelopes.

Third rule: never cook the tea leaves. The first contact of the tea leaves with water should happen right after the boiling of the latter. Neither before, nor long after. If you cook the tea leaves, you will obtain a liquid almost, but not entirely, unlike tea, fit for leather tanning, rather than drinking.

1.2 What makes it Russian

If you adhere to the above rules, you make tea. Not necessarily good tea, but real tea, nevertheless. These rules are universal, there's nothing Russian so far. What makes all the difference, is the so−called "**zavarka**", the tea concentrate. The Russian process of tea−making is a two stage one; First, you make the zavarka, then water it down with hot, boiled water ("**kipyatok**" in Russian).

At this point, it is worth noting that it's the process sketched in section How to make it that makes the tea Russian. The origin of the tea leaves does not matter, whether they are from Georgia (a member state of the former Soviet Union, located in the Caucasus range on the shore of the Black Sea; home to the largest tea plantations in the Russian Empire and the S. U.) or from Ceylon (Sri Lanka, a former British colony, an island south of India). Nor do the utensils involved in the process of making or consumption. If hot water is poured onto tea bags from a **samovar** the result is still "postman's tea" which has little to do with Mother Russia. In my experience, fake Russian tea parties like this gained some popularity in certain circles. Don't let them fool you. Zavarka is what matters. It's that simple.

1.3 How to make it

Prior to any further action, you should boil a fair amount of water. You will need kipyatok at various stages of the process, and you will inevitably spill some of it during your first attempt. Actually, the more you fear spilling a liquid, the more likely it is that you will, because you are too cautious. Don't hesitate −− be resolute, but pay attention, as hot water is dangerous and carelessness may result in serious injuries.

Boiled water is the only water used in the process of tea making. The Russian language actually makes a clear distinction between "boiled water" and "raw water". The latter is often misinterpreted by non−native speakers as wet water (as opposed to dry water?), which is funny. Although these substances are very similar, they behave very differently under certain circumstances for some mysterious reason. Even a minute quantity of raw water, no matter how hot, can spoil the tea. Therefore, keep the water boiling for a while in order to make sure that it is boiled thoroughly.

The basic steps of zavarka preparation are as follows:

1. Put a certain amount of tea leaves into some pot,
2. Pour kipyatok onto them (approx. one cup for each five teaspoons) in one resolute spurt,
3. Wait until all the leaves sink.

WARNING:

> Never drink the zavarka undiluted. It has a strong narcotic effect, causing intense heartbeat, hallucinations and restlessness. This effect has been widely used by captives in Russian prisons and forced labor camps, since tea has always been included into the rations of the prisoners. The name of tea−based narcotics in the Russian criminal slang is "**chephyr**". If you introduce Russian tea−drinking into some non−Russian company, don't forget to label the zavarka pot! Otherwise, ignorant people might drink its content, and die of a heart attack as a consequence. You, in turn, may face lawsuits or vendetta depending on the culture you live in.

Now, you are ready to make your first cup of Russian tea. Pour some zavarka into a teacup and dilute it with kipyatok. The ratio is approximately 10:1, though it may change as your deadlines approach. Actually, the strength of the tea depends both on this ratio and the strength of the zavarka. Given the brand, the strength can be inferred from the color.

The color of the tea should be similar to that of a chestnut. If your glass, cup, or mug has vertical walls (constant horizontal cross−section, that is), you can control the color very easily. Observe that the color of the tea does not change if you look from above, assuming the water is completely transparent (the proof of this statement is left as an exercise to the reader). Therefore, all you have to do is pour zavarka until it reaches the desired color, and water it down thereafter. Cups with increasing horizontal cross−sections do not offer such an easy method, you will either have to solve an integral equation or make an educated guess.

Lastly, I would like to draw your attention to a very important detail. Many of the steps in the Russian method of tea preparation are time consuming and might appear superfluous at first glance. Good tea, however, takes patience and commitment; all shortcuts degrade the final product. Don't hurry, take your time. As the wise Russian proverb goes: "If you rush, you just make people laugh."

2. Choice of ingredients

2.1 The water

Water matters big time. As unbelievable as it may sound, the quality of the water and the way we treat it determine the quality of the product to an equal, if not greater, extent than the tea leaves. The best tea can be spoiled by poor quality water, while careful treatment and the right choice of water along with the right technology can work wonders even with the cheapest tea.

First, I would like to repeat: all the water involved should be thoroughly boiled and hot. Never ever use raw water that hasn't been boiled, no matter how hot it is. Boiled water that has somewhat cooled down is equally unacceptable for most purposes, though at the final stage (watering down the zavarka) it is less harmful than raw water.

The source of the water also deserves some attention. Most of the time, hackers are compelled to use the water from the hot water faucet. As tempting as it may be, using this water is disadvantageous. Hot water spends more time in pipes, and being more active in chemical reactions, carries more pollution than cold water. Therefore, you'd better stick to the cold water. Furthermore, after opening the faucet, let the water flow until it reaches its final cool temperature before collecting it for tea. Residual water usually tastes worse than fresh water.

Although natural sources, such as springs, unpolluted lakes, fresh snow in the countryside, and so on are great in general, some comments are to be made. High concentration of calcium or potassium ions harms the boiling equipment and somewhat degrades the taste of the tea. Therefore, if possible, avoid artesian water in areas where the soil is rich in limestone. The softer the water is, the better tea it makes.

Interestingly enough, the actual *taste* of the cold water does not matter as much as one would expect. This does not mean of course, that you can use water with some repulsive odor or taste, but if some water appears to be extremely delicious, don't rush to make tea out of it; you're better off drinking it raw.

2.2 The leaves

Of course, there are good tea brands and poor ones, but again, the right technology and careful treatment work wonders. Although in other fields of life the package might be less important than the internals, with tea it is almost exactly the opposite. Since the flavor of the tea is due to volatiles, the package should be firmly sealed and airtight. Personally, I prefer cube−shaped metallic boxen with round hatches, which one can open using the handle of a teaspoon as a lever. They can be reused to hold tea from cheaper packages, like plastic or impregnated paper bags, which cannot be properly resealed.

If you take a look at the unit prices of tea, you may notice that the distribution is essentially bimodal. There is a clear distinction between cheap and expensive tea. Expensive, selected tea usually has a strong aroma, characteristic to the particular brand, which you may or may not like. Generic cheap tea, in contrast, is usually acceptable to everyone. However, mixing expensive and inexpensive tea is not only acceptable, but strongly recommended and encouraged. Moreover, you can mix different tea and amaze your guests with the unique flavor invented by yourself. Since the Russian technology of tea preparation preserves the aroma very well, it is usually recommended to dissolve expensive, flavored tea in some good, generic tea (that is, to mix the leaves *before* making zavarka).

There are, however, poor quality leaves, which are best avoided. Firstly, tea in less airtight packaging that hasn't been sold for a long time loses its aroma. If you buy tea in paperbags or cardboard boxes, pay attention to the date of production. Even if you choose to buy it, pour it immediately into some airtight, resealable package (e.g. a metallic box). The second important factor is the granularity. Finely grained, dust−like tea is a by−product of tea production. Selling it as tea is a consequence of the typical capitalist rush for efficiency that sacrifices quality on the altar of productivity. Don't buy dust swept off the floor. The other extreme is the rough tea possibly containing parts of the tea plant other than the leaves. This is due to the careless treatment characteristic of planned economies. Underpaid slaves or irresponsible workers who get paid no matter how badly they work are prone to such crimes.

Anyhow, I challenge you to experiment with various tea brands; mix them at will. Share your experience with others. And don't hesitate to ask your host what leaves s/he uses if you happen to be offered some tea you like. In my experience, even a hint of selected, flavored tea can ameliorate generic inexpensive tea to an amazing degree. Remember: you can't spoil tea with tea.

2.3 Additions

Tea is a full−featured beverage on its own right. Some claim that any addition will only make it worse by suppressing its genuine taste. Despite such opinions, many drink tea with different additions making it sweeter, sourer or inebriative. I would like to give a brief overview, so that you can decide what to do.

Sweeteners

Sweetening of the tea is very popular. It has to be noted, though, that this practice is unhealthy for your teeth. After hacking all night long sipping on your sweet tea, wash your teeth thoroughly before going into bed.

Sugar:

Sugar is the cheapest and the most widespread way to make your tea sugared. Sugared tea usually contributes to clear thinking more than the unsugared kind. But of course, if you prefer to fuel your braincells without disturbing the original flavor of the tea, you can eat jelly or candies instead of adding sugar to the tea. More than three teaspoons of sugar can ruin the beverage: it becomes a syrup. Exercise self−control.

Glucose:

A less trivial way to sugar your tea. Essentially the same as sugar, except that it tastes better and feeds braincells more efficiently than ordinary sugar. The true hacker's choice. Especially recommended before exams or approaching deadlines.

Honey:

Very healthy and very Russian. Caught the flu? No problem. Three spoons of honey and a resolute spurt of vodka into your tea, and off to bed you go. Of course, you do not need to be sick to drink tea with honey.

Fruit jam:

Some Russians prefer to put fruit jam into the tea. Others eat it separately. Changes the taste of the tea dramatically, though not necessarily in an unpleasing fashion.

Saccharine and other artificial sweeteners:

The taste of sugar, without the benefits and disadvantages thereof. Unless you have diabetes but cannot drink unsweetened tea, there is no point in contaminating your tea with such chemicals. Real hackers prefer the real thing to substitutes.

Alcohol

Alcoholic influence degrades the quality of your code. Therefore, you should abstain from alcohol while hacking. And while driving. If, however, you are celebrating a finished project or a successful exam or whatever, a touch of alcohol can't hurt.

Tea with alcohol loosens inhibitions and relaxes the muscles of the mouth. Thus, it is very helpful for learning foreign languages. Learn Russian! It's a fun language, not to mention the abundance of dirt−cheap scientific and technical literature available in it, both on− and off−line.

In this section we will take a look at the ways of cheering up your tea.

Vodka:

Since the outstanding Russian chemist, Dmitrij Ivanovich Mendeleyev (same guy who devised the periodic table of elements) invented and standardized the technology of 40% vol/vol vodka production, you have Absolut control over the alcohol content of your tea. If the ratio of vodka does not exceed one third, we speak of tea with vodka. If it is between one and two thirds, we speak of a sailor's tea. Beyond that, it is contaminated (or pure) vodka. But come on, hackers claim to be intellectuals, right? You will need your braincells in the future.

Rum:

This is the Caribbean variant of vodka, distilled from sugar cane. Its special flavor fits very well to that of the tea. Make a stand against imperialism, support the Isle of Freedom! Did you know that the Castro regime runs its website on a Linux box and funds the local LUG? ;−)

Liquor:

Very ladylike.

Other stuff

Lemon:

Some like it, some do not. Find out for yourself which category you belong to. Note, that even a drop of lemon juice makes the color of the tea substantially lighter. This is because tea has properties similar to litmus: in an acidic environment it lightens, while in an alkalic environment it darkens. Hence, you can find out if you have rinsed the detergent off the cup insufficiently even before letting the soapy tea into your mouth (FYI: detergents are bases). Some claim that tea with lemon is healthy, because of its high C vitamin content. Bu^H^HNonsense. Molecules of ascorbic acid disintegrate at a temperature much lower than that of the tea. Whether or not to put lemon in your tea, should depend solely on your taste.

Baking soda:

This is a dirty trick, used primarily by state−operated, cheap catering enterprises in Russia. As you can infer from the description of the lemon, the alkalic nature of baking soda makes the tea substantially darker, even if added in very small quantities. Makes almost no difference in taste, but the tea will look much stronger than it is in reality. No self−respecting tea−drinker would cheat his/her guests (or oneself) by darkening the tea by any means other than more zavarka. This paragraph is intended to give you a clue in case the tea you have been offered looked great but tasted like hot rainwater.

Milk:

Adding milk to the tea is actually an English custom. Nevertheless, it's fine as long as you don't mind sweating like a pony. Smokers tend to like it for its detoxicating effect; tea with milk cancels the weariness caused by tobacco.

Cream:

Similar to milk, only less common. And less cost−effective.

WARNING:

Lemon and milk/cream conflict. They are incompatible.

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3. Utensils and their usage

3.1 The zavarka pot

Zavarka is usually prepared in a teapot ("**chainik**" in Russian) made of some sort of ceramic or glass. In either case, the inside has to be hot at the moment you put the leaves therein. Usually, this is achieved by steaming (on the inside), but rinsing with hot water does the job equally well. Russians disagree as to whether the pot should be wet or dry. The followers of the latter opinion wipe it dry with a cloth or a napkin after steaming. In my experience, it makes no difference. Hence, I stick to the minimum−effort approach and leave it wet.

Once you put the leaves into the pot, close it, and let them warm up and release some of the volatiles. It is essential that you keep the pot closed at this time; otherwise, you risk losing aroma. After 5 to 10 seconds, you should pour hot, boiled water onto the leaves, and close the pot again. When all the leaves sink, the zavarka is ready.

It is strongly recommended that you keep the chainik warm by covering it with a cloth, a knitted cap, or the skirt of a special doll ("**baba**"), which is the traditional Russian way. Warming the chainik with steam is allowed, but never boil the zavarka inside. Warming after it has cooled down is meaningless. Either keep it warm, or let it cool down. Once it has cooled, you best leave it that way.

The canonical chainik has a circular bottom and a circular top hatch. Moreover, these two circles are of identical diameter (8 centimeters), so that they fit into the crown of a standard (`GOST 7400−75`) samovar. Cheap chainiks are available in the Chinese markets.

If you have to make tea for a crowd −− say, at a LUG meeting −− regular chainiks can prove to be too small. In this case, bigger teapots of glass or metal can be utilized.

In any case, you might want to filter out the tea leaves, since they are claimed to cause cancer (like everything else in this world) if swallowed directly. Russians use a special hemispheric metallic net for this purpose ("**sitechko**"), which is hung from the spout of the pot.

In case of emergency −− say, if your chainik has broken into a thousand pieces −− zavarka can be brewed in an ordinary mug. This procedure, however, requires skill and care. First off, you'd have to find some way to cover the mug in order to preserve the aroma. Secondly, pouring the right amount of zavarka out of an ordinary mug without a spout is a task very far from trivial. You have been warned.

3.2 The Samovar

What a Samovar is, and what it is not

Let us begin with the etymology and the morphology of the word. The Russian prefix "samo−" is somewhat similar to Latin "auto−" and English "self−". The second part of words beginning with the "samo−" prefix usually derives from a verb. Thus, "samolet" (literally: flies by itself) means *aircraft*, "samokat" (literally: rolls by itself) means *roller*, and "samogon" (literally: self−distilled) means *illegal whiskey*. The "−var" part derives from a verb meaning both *brewing* and *cooking*. Therefore, the proper literal translation of "samovar" would be "autobrewer" −− a device that brews tea automagically.

However, samovars are not fool−proof, self−reliant devices; they require care and attention, which they pay off with years and decades (if not centuries) of reliable and faithful service. Furthermore, we never brew anything *inside* the samovar, although it is true that the samovar might serve as the only source of energy in the entire process of tea−making. All steps of Russian tea−making with a samovar involve some operation with this truly wonderful machine. Therefore, its central role is unquestionable.

In short, samovars are fit for the following tasks:

1. water boiling
2. steaming
3. boiled water portioning

In a broad sense, all utensils capable of the above operations could be samovars, though in general, we call so only those consisting of a brass boiler with a faucet near its bottom, steam−holes and a teapot socket at its top, and some heating device inside.

At this point, I would like to emphasize that the samovar is not just an ordinary item in the household, but also a hallmark of the Russian way of life and hospitality.

Brief history of the Samovar

When Americans were busy dumping tea into the dark waters of Boston harbor (late eighteenth century), a Russian gunsmith, Fedor Lisitsin, set up a small workshop south of Moscow, in the city of Tula, the heart of the Russian defense industry. Lisitsin and his two sons were laboring in their time free from making arms and ammunition for Mother Russia on a rather unusual device, which had been hitherto handcrafted by individual craftsmen in the Ural region solely for personal use: the **charcoal−burning samovar**.

Lisitsin's workshop was the first to produce samovars industrially and had tremendous success. Due to the blessed lack of IP law enforcement in Russia, which endures to our days, competing samovar−factories sprang up in Tula like mushrooms after the rain. By the thirties of the nineteenth century, Tula established itself as the capital of Samovar−making.

During the nineteenth century, samovars gained increasing popularity in major cities, such as St. Petersburg and Moscow, and became inseparably bound to the Russian way of life. Classics of Russian literature, like Pushkin, Gogol and Chekhov, regularly mention samovars in their works. Anton Pavlovich Chekhov has even coined an idiom, which stands for an utterly wasteful effort: *to take one's own samovar to Tula*. This phrase is still understood and occasionally used by most Russians (even on Linux−related mailing lists). You know, it's like writing a new C compiler for your project, instead of using GCC.

In the second half of the nineteenth century, samovar manufacturing took root in Moscow, St. Petersburg and some industrialized parts of Siberia and the Ural region. However, Tula retained its leading and standard−setting role in this trade. By that time, four shapes of samovars became traditional: **cylindric**, **egg−like**, **spherical** and the most beautiful of them all, those resembling the ancient Greek vase called **crater**.

The beginning of the twentieth century has been marked with various attempts at innovation. The traditional heating method has been challenged by gasoline, petroleum, kerosene, gas, and other means of heating at that time. However, these models proved unpopular, due to the repugnant odor of the fuels and the dangers of inflammation and explosion.

Railroad companies in Russia recognized the practicality and popularity of samovars and fitted long−distance sleeping cars with them. Luxurious cars of the Trans−Siberian railroad were first to adopt this custom. Today, all sleeping cars from second class up are equipped with a samovar at the end of the hallway, next to the conductor's closet. Just in case you need some hot water during your journey...

During World War I and the subsequent turmoil of revolutions and civil war, the design and the production technology of samovars were largely simplified and made fit for the military. It was during that time that huge samovars holding dozens of liters of water became common. Roughly welded cylindric samovars devoid of decoration are characteristic of the period.

The late twenties and early thirties saw Stalinist collectivization and industrialization. Small samovar−making workshops were integrated into vast factories or disbanded. Quantity took priority over quality. However, it was during this period that the largest samovar−manufacturer of the Soviet Union, the "Shtamp" company, was founded. In Tula, of course.

During World War II, factories of the defense industry −− and samovars have always been byproducts of military production −− were moved from the European part of the Soviet Union to behind the Ural mountain range, out of the reach of fascist intruders. Thus, skillful samovar−manufacturers and essential equipment were saved, despite the Nazi occupation of Tula.

The fifties and sixties brought significant changes. Ground−breaking technologies provided mankind with wondrous inventions: space travel, nuclear powerplants, supersonic jets, and the nickel−plated electric samovar.

The hitherto undisputed reign of the charcoal−burning samovar came to an end. The gentle flavor of smoke proved to be insufficient in the face of such benefits as the ease of use and convenience, reduced tea−brewing time and the ease of cleaning, let alone the longevity provided by the nickel−plating that protects brass from corrosion. Catering facilities and households embraced the new technology swiftly; Only the railroads remained faithful to the smoky, charcoal−fueled, traditional samovar.

The period of Brezhnevian stagnation did not leave any marks on the samovar. In fact, only the Olympic games of 1980, during which an incredible amount of samovars were sold to visitors from abroad affected the samovar: it gained international recognition and became a symbol of Russia.

While the samovars on the railroads resisted electrification, the other prerequisite of communism postulated by V. I. Lenin, ceased to exist in the nineties: the soviet power. The second dawn of capitalism in Russia brought the samovar industry back to its original shape. Recent spin−offs of the Shtamp corporation are competing for their share of the samovar−market with newly founded businesses.

A Tula company, no matter whether it produces radars, guns, refrigerators or armored vehicles, must have a samovar workshop. Thus, if you're seeking venture capital to start an ISP or a software development company in Tula, don't forget to mention samovar manufacturing in your business plan.

What does the future of samovars look like? Will the twenty−first century bring internet−enabled computer−controlled samovars that guide us through the tea−brewing process in the language of our choice? Certainly not. Two engineering principles, often overlooked by western engineers, became second nature to their Russian colleagues due to the stormy history of Russia and the constant need for working, mission−critical technology in extreme or downright hostile environments. First, we keep things as simple as possible: "the more complicated, the sooner dead" as the proverb goes. Second, one must not fix what works. During the above outlined process of evolution, the samovar achieved technical perfection: nothing to add, nothing to take away. Like a good UNIX utility, it serves one purpose, and serves it well.

Samovar Anatomy I. −− The charcoal−burning samovar

The parts of the samovar beginning from the bottom up are as follows:

1. Nearly all samovars have a four−legged square−shaped foundation. This keeps the samovar from damaging the furniture with its heat.
2. Above that, we find the "neck" of the samovar, or **"sheika"**in Russian. The neck thickens towards its top, where the ventilation chamber (the windbox) resides. This chamber has small intakes (holes) along its perimeter in order to supply the combustion process with oxygen from the atmosphere. The foundation with the neck together are referred to as "**poddon**".
3. At this point the actual boiler begins. Inside, we find a thick tube (in Russian: "**truba**") which constitutes the combustion chamber. The bottom of this tube is separated from the ventilation chamber with bars to prevent the fuel from falling therein. This separation we call "**kolosiak**" in Russian.
4. Near the bottom of the boiler, a small faucet ("**kran**") protrudes from the tank. It consists of three parts: a small decoration at its stem (the "**repe'ek**"), that contributes to the rigidity of the mounting, the pipe itself, and an extremely simple valve with a handle ("**vetka**"). The valve is essentially a funnel with a hole. In the two extreme positions of the handle the valve is closed, while in central position the water can pour through the hole. It is the weight of the valve and the handle that keeps the whole thing in place; you can simply pull it out upwards. No O−rings, no gaskets, no bearings, no screws −− nothing to go wrong.
5. The hatch of the boiler has two small handles protecting your hands from the heat. These two handles are denoted by the same word that means pine−cones: "**shishki**". There are also small steaming holes ("**dushinki**") on the hatch. Their purpose is to prevent the samovar from explosion and to steam the teapot at the same time.
6. The whole construction is topped off by a crown−like teapot socket, often decorated with some

ornament. This part of the samovar is called "**kamforka**".
7. Finally, charcoal−burning samovars come with two accessories: a cap and a chimney extension for the tube. Both need to be placed onto the open end of the heating tube, though not at the same time.

Samovar Anatomy II. −− The electric samovar

Rather than enumerating all the parts of the electric samovar, we just highlight the differences from its smoke−puffing predecessor.

The first −− and most important −− difference is the look and the purpose of the thicker part of the neck: instead of ventholes, you'd find one big electric socket on its perimeter; In the place of the empty ventilation chamber of the charcoal−burner, the electric samovar has a packed electric compartment.

The most apparent difference, however, is arguably the lack of the characteristic tube. A huge spiral of an electric immersion heater is what occupies the tube's place.

Inside the ventilation chamber, which you can access by unscrewing the nut at the bottom of the samovar, you will find the connections of the heating coil. The coil itself is insulated from the spiral's body (and thus the samovar itself) by a set of ceramic rings. The coil with the white insulator rings resembles the backbone of some fish, if you pull it out of the heater.

In order to unscrew the nut (with a metric M6 thread, in most cases) at the bottom, you will need a metric wrench (usually a 10mm one). The one used for your bike or your car would do. Do not apply your swiss army knife, though. The refined Swiss tool is just not appropriate for the rugged Russian machinery.

The last important distinguishing feature of the electric samovar is the position of the steaming holes; The lack of the tube allows for a more convenient place right at the center of the kamforka.

Some samovars have a special floating device near the heater, which turns the latter off, if the water in the tank does not engulf the spiral entirely. This design, however, did not prove very popular, since it has an additional moving part, which, in turn, constitutes yet another point of failure. Thus, it caused more problems than it solved, so Russians chose to look after the simpler samovars. Generally, Russian technology assumes dumb machines and smart humans, not the other way around.

Don't complain about the missing switch −− just pull the plug, if you want to turn the heating off; the only moving part in a samovar should be the valve of the faucet.

How to Use the Samovar

Charcoal−burning samovars are strictly outdoor equipment. Even today you can encounter them at rural garden−parties in remote, cozy **dacha**s, where laptop computers run on batteries and the only access to the Internet is a satellite link.

The first thing to do with a samovar is to clean it thoroughly and fill it up with water through its open hatch. A samovar shining bright in the sunlight is a sign of hospitality and good manners of the party's host.

Now, it is time to load the device with fuel. Instead of charcoal, Russians often use dry pine−cones. Cones add a hint of resin's flavor to the tea, which is especially precious to hardware hackers, the Knights of the Soldering Iron.

No matter whether you use charcoal or pine−cones, you've got to ignite the fuel somehow. The traditional way is to use pieces of bark from a birch−tree. In the soviet era, we used Pravda, the newspaper of the Communist Party. Proprietary software licenses work just as well.

As soon as the igniting substance and smaller pieces of the fuel catch fire, you need to pump on the upper end of the tube, in order to help the fire burn. The canonical pumping device is a Russian infantry boot. Finally, attach the chimney extension and wait until the water boils.

Controlling the oxidation process is somewhat simpler than controlling a nuclear reactor, though the principles are similar. In order to abate the fire, put the cap on the tube instead of the chimney. If, however, you want to stimulate the heater, apply the pump.

When the water boils, cover the tube with the cap, and steam the chainik with the steam coming from dushinki. Then prepare zavarka as described in sections How to make it and The zavarka pot .

Put the zavarka pot where it belongs: onto the top of the kamforka. It will keep it warm.

You shall dilute the zavarka with kipyatok poured from the samovar.

Electric samovars can operate indoors. Their operation is much simpler, since the only thing you need to do to start one heating is to plug it into the AC outlet. To stop it, you, respectively, pull the plug out. Always make sure that the heater is fully immersed in water, when turned on.

Samovars in North America

In North America, charcoal−burning samovars can be used exactly the same way we use them in Russia, except, perhaps, that you should warn each participant of the garden−party, preferably in written form, about the dangers of scalding themselves. Otherwise, some ignorant bastard might sue your pants off, should s/he touch the samovar in the wrong place.

The operation of Russian electric samovars is somewhat more involved, given the differences in the AC grid. First off, the frequency differs: as opposed to the Russian 50 Hz, North America operates at 60 CPS (unit conversion: 1 Hertz = 1 Cycle Per Second). This difference does not affect the samovars in any way.

The difference in voltage is more salient. Recall Ohm's Law: $R=U/I$ and the definition of electric power: $P=UI$.

>From these two equations it is apparent that the heating power of the same resistance at half the voltage is one fourth of the original value. Assuming the samovar's heating coil linear and the losses negligible, it would take four times as long to boil the water in the same samovar in America than it took in Russia. Fortunately enough, non−linearities work to your advantage.

The last obstacle is the difference in connectors. You can overcome it either by replacing the plug with an American one, or by utilizing a so called "outlet adapter" (Radio Shack part `#273−1406D`). Don't forget the grounding!

The brave and impatient can hack up the samovar to operate just as fast as it does in Russia. In order to achieve the same power at half the voltage, you'll need one fourth of the resistance. Now, recall the definition of resistance in terms of dimensions: $R=rl/A$, whereby l denotes the length of the resistor, A its cross−section and r is a constant that depends on the properties of the material. The volume of this resistor would be $V=lA$.

In order not to affect the longevity of the spiral, you'd better preserve the volume of the heating element, while decreasing its resistance. If you take a look at the two above formulae, you'd notice that halving the length and doubling the cross−section would achieve exactly the desired effect. So, pull the spiral out, remove the insulation, fold it in two, and stretch it to the desired length before putting the insulation back. If you cannot stretch the spiral without risking its integrity, you can prolong it with a thick copper−wire.

3.3 Other waterboiling devices

In this section we will review some gadgets that come handy when you need boiled water "out there". That is, usually far from your home, on the move, etc. It does not cover the entire range of waterboiling devices available in the stores, since their usage is straightforward and well documented in the accompanying user's guide. Rather, I will focus on simple, practical devices popular among hackers and ordinary Russians (and ordinary Russian hackers) that can help one out under most unusual circumstances.

The Whistling Tin Pot

One of the most cost−effective ways of obtaining boiled water is to place a metallic boiling pot with a whistle onto the stove. It whistles when the water is boiling inside *and* if the hatch is closed. So, don't forget to close it.

Always direct the spout toward the wall, in order to avoid injuries caused by the hot steam. Moreover, it is much more convenient that way. Some models are prone to shoot the whistle off after a few seconds of whistling. Be extremely cautious with those.

The Primus

This is a propane−buthan canister integrated with a stove. For outdoor use only. Great in winter; makes kipyatok out of thawed snow. Handle with care.

The Immersion Heater

The immersion heater (Russian term: "**kipyatil'nik**") is one of the most frequent reasons for expelling hackers (esp. Russians, since many of them are notorious tea addicts) from dormitories for fire safety violations, second, perhaps, only to the soldering iron.

It is an extremely simple device that boils water when plugged into the AC outlet. You can make kipyatok practically in any fire−proof cavity (no plastic or impregnated paper cups!) that can sustain boiling water. Make sure that the immersion heater is totally immersed in the water when you turn it on, when you turn it off, and all the time in between.

WARNING:

> Never leave an immersion heater unattended. As soon as the water boils, pull the plug. Even the unplugged heater is very hot for a relatively long period of time. Excercise caution when dealing with such a beast! And do not forget to hide it well in the meantime...

3.4 The Saucer

In a well−kept household, there's always a saucer ("**blyudce**" or "**blyudechko**" is the Russian expression) beneath the cup or the mug, whenever we pour anything thereinto. It is a wise custom, for it saves you from many inconveniences resulting from spilled zavarka or kipyatok.

If you have enough of them, it would be a manifestation of your good manners to serve tea with a saucer under each cup, so that your guests can put their wet teaspoons there.

Furthermore, it makes a lot of sense to keep an additional saucer under the samovar's spout in order to save the table from dipping hot water.

Finally, as seen in many Russian paintings, kids often drink tea directly from a saucer. The reason is the following:

The pace of cooling is roughly proportional to the surface of the liquid over its volume. Therefore, tea cools much faster if served in a saucer rather than in a cup. Now, Russians prefer to drink their tea *hot*, while children can easily scald their lips or tongues with such a hot liquid. However, tea drinking is a community rite, so it would be inappropriate to let the juniors wait until their tea cools down while the elders drink. Hence the saucer.

3.5 The Podstakannik

The **podstakannik** is basically a −− usually metallic −− holder with a handle for handleless glasses. It is much easier to wash a plain glass than a mug. Thus, such a device is just the right choice for a practical hacker. Many think, that it is the traditional Russian way to serve the tea, but in fact it is neither traditional nor Russian; First podstakanniks showed up on German railroads, exactly for their above mentioned practical value. However, as it often happens with customs adopted from former adversaries (see also the Japanese **Matryoshka** doll), it gained extreme popularity throughout Russia and gradually became characteristic of Russia. Someday, even "**beysbollka**" might become a traditional Russian headgear. Who knows?

If you decide to purchase a podstakannik, pay attention to the material: although the most expensive and decorated ones are made of silver, I would not recommend them (except for showing off your wealth and ignorance); the heat conductivity of silver (approx. 420J/mKs) is too high, thus the handle becomes unbearably hot in a very short time. The best choice is stainless steel (50J/mKs) or brass (90J/mKs). Plastic? Please...

Note:

> The metric unit for heat conductivity is the **Joule/(meter*Kelvin*second)**, the imperial unit would, therefore, be something like **calories/(foot*Fahrenheit*hour)** or **horsepower/(inch*Fahrenheit)**; the conversion is left as an exercise to the reader.

Most Russian−made podstakanniks are decorated with some theme. A hacker's choice could be the one commemorating the greatest hack ever: the 1957 launch of *Sputnik−1*, the first artificial satellite of our planet.

Aside from protecting your hands from the heat and alleviating the burden of dish−washing, podstakanniks contribute a great deal of stability to the glass. Therefore, Russian railroads serve the tea in glasses with podstakanniks, and so do the operators of ferries and luxurious liners. And so does our Navy, of course.

You can sample the best railroad tea in Russia on the **Krasnaya Strela** (*Red Arrow*) train that connects St. Petersburg, the capital of Russian hackerdom with Moscow, the city of Tetris (and the capital of the Russian Federation, by coincidence). This is a nightly train with very comfortable sleeping cars, where you can fix those last two bugs in your project, while sipping on delicious tea.

Finally, it is worth noting that aside from samovars, some beautiful podstakanniks are also manufactured in Tula. Check, for example, those from TCW (Tula Cartridge Works, http://tcwammo.tula.ru). If you need a few dozen extra slugs for your AK−47M, they can probably help you as well.

4. Troubleshooting

In this chapter, we will review the most common problems that emerge in the process of tea−making and the solutions thereof. Those having obvious solutions, such as changing the spiral if the samovar doesn't heat the water are omitted. Rather, we will focus on issues that are not as trivial and require some knowledge beyond common sense.

Problem	Cause	Solution
The tea is foamy, especially after adding sugar	Some unboiled water has slipped in during the process of teamaking	Dump the tea, boil the water thoroughly and try again.
There's an oily film on the surface of the zavarka, the tea has an unpleasant, sour taste	Tannin has been cooked out of the tea leaves.	Make new zavarka in a well steamed, hot pot. Do not heat it after it has cooled down.
An oily film has formed on the top of the diluted tea	Tannin has formed in the cup because it has been standing too long	Make a new cup of tea. Drink it soon after making.
Water drips from the faucet of the samovar even when it is closed	The valve is not water−proof anymore	First, try to use the other 'closed' position. If it doesn't fix the problem, clean the valve from the residual calx.
The zavarka pot as well as the tea have a rather repulsive odor	The wet tea leaves molded inside the teapot	Dump the zavarka, and sterilize the pot. A UV lamp such as the one used for erasing EPROMs comes in handy

5. Glossary

of Russian terms and expressions related to the tea

beysbollka:

Baseball cap in Russian.

blyudce:

Saucer.

chai:

Tea.

chainaya lozhka:

Teaspoon.

chainik:

A teapot with a spout for making **zavarka**. Means also "incapable dummy" in Russian slang.

chephyr:

Tea−based narcotics, used chiefly in prisons and forced labor camps.

dushinki:

The holes at the top of the samovar that let the steam out.

kamforka:

The crown−like topping of the samovar. Its purpose is to support the **chainik**.

kipyatok:

Boiled, hot water. No other kind of water is suitable for tea−making.

kipyatil'nik:

Immersion heater.

kolosiak:

Bars that separate the ventilation chamber from the combustion chamber in the charcoal−burning samovar.

kran:

Faucet. As of a samovar, in this paper.

poddon:

The foundation of the samovar.

podstakannik:

A metallic glassholder with a handle for handleless glasses.

repe'ek:

The reinforcement of the faucet at its stem. Usually depicts a flower or a figurehead.

sahar:

Sugar.

samovar:

Water−boiling, steaming and portioning device described in detail in section samovar}{}.

sheika:

The "neck" of the samovar that supports the boiler tank.

shishki:

The handles of the samovar's hatch. Literally "*pine cones*".

sitechko:

Hemispheric metallic net for filtering out tea leaves from the zavarka.

truba:

Tube. In this context, it means the combustion chamber of the charcoal−burning samovar.

vetka:

The handle of a samovar's faucet. Literally "*branch*" (as of a tree).

zavarka:

Tea concentrate. This is the most characteristic attribute of Russian tea−making.

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6. References

1. Comprehensive information on Tula Samovars < http://www.samovar.holm.ru > (English/Russian)
2. **Samovar FAQ** <http://www.therussianshop.com/russhop/samovar/FAQ.htm> (English)
    - a nice picture at the same site: < http://www.therussianshop.com/russhop/samovar/spsam.jpg>
3. "**Tula Samovars**" by A. Tikhonova, MIR 1988 (English/Russian)

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7. Legal stuff

7.1 Copyleft

7.2 Disclaimer

UNDER NO CIRCUMSTANCES shall the author be held responsible for any loss or injury, direct or indirect, resulting from reading, and/or following the procedures described in this document. Some of them are admittedly dangerous; follow them at ***YOUR OWN RISK***. You have been warned.

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