ZÁPADOČESKÁ UNIVERZITA V PLZNI

FAKULTA FILOZOFICKÁ

BAKALÁŘSKÁ PRÁCE

Martin Sýkora

Plzeň 2020

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The history of skateboarding and the production of skateboards in connection with the processing of veneer in the USA

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Studijní program Filologie

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Čestné prohlášení

Prohlašuji, že jsem svou bakalářskou práci na téma „*Historie skateboardingu a výroba skateboardů v souvislosti se zpracováním dýhy v USA*” zpracoval samostatně a použil jen uvedených pramenů a literatury.

Plzeň, listopad 2020 ……

Poděkování

Rád bych poděkoval PhDr. Alici Tihelkové, Ph.D. a Mgr. Tomáši Hostýnkovi za odborné vedení mé bakalářské práce, za jejich cenné připomínky a čas, který mi věnovali.

Table of contents

Introduction

My bachelor thesis consists of two main parts – theoretical and practical. In the first one we will be discussing the key topics of this work – the history of skateboarding, the production of skateboards and the processing of veneer. These are the mainstays of the text and all of them are connected with American culture. Skateboarding was invented in the USA and that is why we will study the roots of this life style/extreme sport.

The practical part of this work is going to show and explain the whole process of manufacturing a skateboard deck. All the major steps will be included – screenshots from e-mail communication with the foreign veneer supplier, description of getting other necessary material, the production process itself or the online promotion on social networks.

Most of the countries of the whole world use the metric system (except for the USA, the Republic of the Union of Myanmar and the Republic of Liberia).

„A metric system is a system of measurement that succeeded the decimalised system based on the metre introduced in France in the 1790s."[1] In contrast to other states, the USA uses the **Imperial and US customary measurement systems**, that have been both derived from an English system of measurement.[2] When I started to study woodworking techniques and especially the principles of producing skateboards I had to get familiar with the measurement systems used in the US. That is also the reason why I am going to state different units (inches and feet instead of centimeters and meters) sometimes.

Within this introductory part of my thesis I would like to describe, why I have chosen this unusual topic and what exactly this section will include.

I am a student at the Faculty of Philosophy and Arts, which functions under the auspices of the University of West Bohemia in Pilsen and such topics are not so common for this type of bachelor theses.

During one of the last years of my studies at the Church Grammar School Plzeň I was inspired by a classmate of mine who built his own longboard from a piece of scrap wood. I used to ride a skateboard when I was a young boy and his act gave me the idea of trying the same activity and make better boards than my colleague.

In the course of time I came up with a business plan – producing and selling custom handmade skateboards. The hard work I had to put into my dream to bring it into existence influenced and changed my life in many aspects. I have not only returned to riding a skateboard, which brought me a completely new vision of the city, but also had to spend much money and study a complicated branch of woodworking, too.

After stepping back onto my old skateboard, I suddenly started to see the town differently. I had to pay attention to the surface I was riding on and found out that every sort of

1 *Metric system – Wikipedia.* URL: https://en.wikipedia.org/wiki/Metric_system. [2020-11-04]

2 *Imperial and US customary measurement systems – Wikipedia.* URL: https://en.wikipedia.org/wiki/Imperial_and_US_customary_measurement_systems. [2020-11-04]

interlocking pavers, every concrete or asphalt spot interact in a different way with the wheels and affect the smoothness of the ride. Riders who try this activity begin to see the streets as a big playground and can enjoy the everyday commuting.

I live in a big family house. There has always been a workroom in our cellar and I found the activity of creating things and handwork quite enjoyable since I was born. Because of skateboards I have also improved my woodworking skills. I had to learn many new techniques, adjust my shop, buy machines and build some necessary equipment for the future production. All this business took me two long years and I had to spend a noteworthy amount of money to develop my dream.

The short essay above should serve as an explanatory note or a reason for why I chose this theme. Skateboarding is closely related to English speaking countries, especially to the western part of the USA, where it has also been invented.

Many people are of opinion that skateboarding is just a sport (an extreme one). That is not correct. This explanation is absolutely incomplete. I do partly agree with the definition from the English Wikipedia.

"Skateboarding is an action sport which involves riding and performing tricks using a skateboard, as well as a recreational activity, an art form, an entertainment industry job, and a method of transportation."[3] I would even complement it with the item "lifestyle" but that is just my personal view.

Everybody understands skateboarding a bit differently. I decided to study the technology and I also use my skateboard to ride around the city.

My bachelor thesis will discuss the technological side of skateboarding against the background of its historical development. Boards can be made thanks to the wood industry. Extensive and long-term research had to be made, until the products reached their form and technical parameters which they have nowadays. The original skate decks were made from a plank of solid wood. These were very heavy, inflexible and the shape of the board had no other function than just to give the user the opportunity to ride on it. But this will be the subject of a different chapter focusing on the history of skateboards.

I would like my bachelor thesis to help readers look at this subject differently and I would also be pleased, if my work were to inspire others to find a goal in their lives and to reach it. My goal was to learn how to *"create a skate"*[4] and I succeeded.

3 Skateboarding – Wikipedia. URL: https://en.wikipedia.org/wiki/Skateboarding [2020-05-02]

4 *CreateAskate.org*. URL: http://www.createaskate.org/. [2020-05-02]

1. History

The next chapter is going to give my readers an idea regarding the roots of skateboarding. This is the first part of my work. Every story starts somewhere and at some point. My story has its beginning in the USA in the 1950's.

As stated in one of the last paragraphs of the abstract of this thesis, I will use different measurement units. The material used for the first skateboard/scooter was the well-known two by fours (2" by 4"). The character **"** refers to an inch (= 2.54 cm).

The first mention of skateboards comes from the early 1900's. It was the first time that the world could see something which resembled a combination of a scooter and a skateboard. Those two by fours can be a useful piece of wood for making a floor, table or a doghouse but it is no ideal lumber for a vehicle of this type. It is definitely too narrow for the human feet. Only a foot of a child could fit into such a small space. The wheels were made of steel. It also had handles (an instrument for better control). The invention simply looked as if it were a today's scooter. Today's scooters can be seen with differently long handlebars. Instead of a stick for the handles the creators of the first skateboards used a wooden milk box. Eventually, the crate would disappear and only the bottom plank would persist.

The affinity for wheels has always been remarkable among children. Kids are cheerful and enthusiastic. They want to try and explore new things. Adults usually go for a walk. Children always run. Walking is boring for them. Riding a vehicle is experience that every kid is passionate about. Many US families could not afford to buy a bicycle for their offsprings. Their favorite alternatives were scooters or roller skates.

These toys served as the original parts for the world's first skateboards. These were dismounted and the wheels with the "trucks" were mounted onto those 2" by 4" planks. Riding such thing was called "sidewalk surfing". People knew the vehicles as "sidewalk surfboards". They were created at home (DIY = Do It Yourself[5]). That was in the early 1940's.

As time went by, skateboards became more and more popular. One of the most significant problems was the wheels. The surface on the streets is often rough and it is no pleasant experience to cruise on it with iron wheels. Once they were even the reason that saved skateboarding and returned it onto the scene.

In the late 1950's the first commercially made skateboards appeared on the market. They were slightly technologically improved. Of course, they had to look more professional. The design looked clean. The working principle did not differ much from the "diy" ones.

Now I would like to introduce you to the "Bun Board". These boards were being built by retired Alf Jensen. They were equipped with classic steel wheels and non-steering trucks. Alf sold it through the Guild Drug store at the price of 2,88USD.

As explained by MySkateSpots,com, *"The name "Bun Board" comes from that the decks was trashed hickory boards that a local bakery had used for baking their buns."*[6]Mr. Don Guild wrote a letter explaining the whole story of "Bun Boards". I read it and want to share it in the historical part of my work. Here is the summary of it:

5 *Do it yourself – Wikipedia.* URL: https://en.wikipedia.org/wiki/Do_it_yourself. [2020-11-05]

A retired gentleman Alf Jensen found out that the local bakery (at that time next to the Bank of America on Pier Ave in Hermosa) uses hickory boards for baking their buns. *"The boards became a bit charred after many firings and Alf fished them out of the trash weekly, and gave them a new life."*[7] Alf repaired them and painted them.

He started to visit the Guild Drugstore, where he was offering his product – a very well finished and painted board with a sign "Bun Board" professionally silk screened on the top surface.

During the first few visits to the shop, he had no success. On the third return trip, he left there six of his inventions for free. The owner of the store could pay him after he would sell all of them.

Bun Boards became a hit and Alf Jensen could not manage to fulfill the orders.

For the old man, it was too much pressure and after 3 months he sold his business to a friend form North Redondo.

In 1959, the California company called Roller Derby began to sell the first mass-produced skateboard on the US marketplace. Basically, it was the same as the previous "Bun Board". It had iron wheels, no griptape, no concave and no kicktail. The trucks did not steer either.

The reason why I am mentioning the Roller Derby here is the revolution. This is the point when the expression "skateboard" was founded. Until 1959 these vehicles had only been known as "sidewalk surfboards".

The birth of skateboarding

"Skateboarding, as we know it, was probably born sometime in the late 1940s, or early 1950s, when surfers in California wanted something to do when the waves were flat."[8]This is what the whole planet thinks. Michael Brooke – the author of The Concrete Wave: The History of Skateboarding says "...because I remember skateboarding on Oahu, Hawaii, the day President Kennedy was killed…"[9]. At the moment, Michael was attaching roller skate wheels to a plank, when suddenly he heard this news on the radio.

With this I would like to share with you that nobody knows who made the first board ever. Probably several people came up with the same idea and executed it circa at the same time.

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6 *The Bun Board skateboard - First commercial skateboard – MySkateSpots.com.* URL: https://myskatespots.com/event/the-bun-board-skateboard-first-commercial-skateboard/. [2020-11-05]

7 *The Hermosa Bun Board Story.* URL: http://fishingnetwork.net/forum4/showthread.php?61809-The-Hermosa-Bun-Board-Story. [2020-11-05]

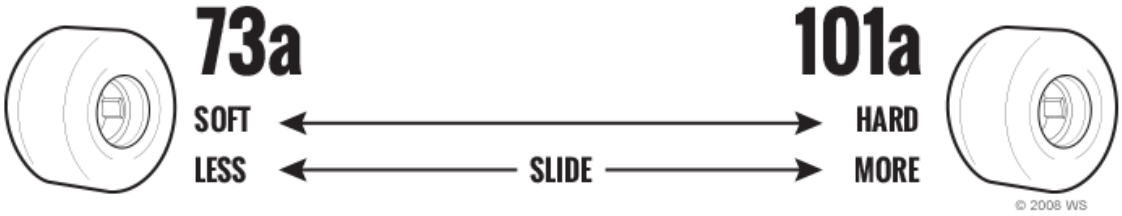
8 *When was the skateboard invented?* | *Alexa Answers.* URL: https://alexaanswers.amazon.com/question/3ksTE0EoGlRL1ukLthQz9b. [2021-01-19]

9 Brooke, M., 2005. The Concrete Wave. Toronto: Warwick Publ.

Dangerous wheels?

Now we have all those boards, but what to do with them? One of the factors which influence the style of riding was the terrain in the area. The smoother the surface, the more enjoyable the ride.

I used to work in a skateshop and this was exactly what we as sellers advised our customers to be mindful of. The rougher the asphalt/concrete, the bigger and softer wheels you need. The skateboarding industry uses a special appliance. *"The Shore **durometer** is a device for measuring the hardness of a material, typically of polymers, elastomers, and rubbers."*[10]Skateboard companies use this instrument for determining the hardness of the skateboard wheels. The wheels get a number. Its position can be seen on the durometer scale.



11

Smaller and harder wheels are mostly used for technical street skating. Manufacturers of longboards and cruisers usually use bigger and softer wheels. When you skate mainly in skateparks, you need wheels that slide (for performing specific tricks). Longboarders and other people, who want to enjoy just the ride, look for "grippier" wheels that stick more on the surface.

The old skateboards were equipped with steel wheels. That meant these were very slippery. Injuries because of this were common. The ride was also noisy and not smooth at all.

"We took an old metal roller skate and strapped it to a short piece of 2x4, hopped on top and took off. It was wobblier than hell, moved way too fast, and vibrated on the asphalt enough to jar every bone in your body and loosen every tooth."[12]

10 *Shore durometer – Wikipedia.* URL: https://en.wikipedia.org/wiki/Shore_durometer. [2020-11-06]

11 *Skateboard Wheels Buying Guide - Warehouse Skateboards.* URL: https://www.warehouseskateboards.com/help/Skateboard-Wheels-Buying-Guide. [2020-11-06]

12 Brooke, M., 2005. The Concrete Wave. Toronto: Warwick Publ.

Let the fun begin

The world's first skateboard riders used to challenge themselves in riding down hills (on both feet, one foot, in a handstand…). They always came with crazy and often considerably dangerous ideas.

Bob Schmidt from Orlando, Florida has much experience in this matter.

The most enjoyable and challenging activity was riding the so-called downhills. Nowadays skaters organize competitions in riding down a hill. Today riders use longboards. Those are longer and wider versions of a typical street skateboard or a cruiser board. Modern vehicles have PU wheels and perfect trucks. The ancestors had very small boards with no griptape and slippery iron wheels. Broken extremities and grazes were not unique at all.

A suitable example of riding the boards could be the SkaterDater movie[13]. It shows the viewer certain attempts to perform the first tricks (riding up a curb, hippie jump).

Of course it has a story, too. A group of boys meets to have some fun outside and to "shred" the streets. The main character comes into collision with a girl on a bike and a classic Hollywood plot continues. They like each other. After the event, he realizes it would be nice to have a soul mate. He finds out, he does not want to stay in the crew and starts to go out with her.

Many adults throughout the USA says: "Stop skateboarding! Get a job!" This short movie is a wonderful example of how a skater leaves the pose of being a skater and begins his way to a more adult life.

2. Three waves of skateboarding

The history of skateboarding is divided into 3 main eras – the 1st, the 2nd and the 3rd wave.

In this part I would like to summarize all the three waves mentioning the most significant events and inventions.

3. The first wave

It began in 1959 and ended in 1965. With the beginning of the 1960's, skateboarding was becoming more and more popular. Richard Lawrence Stevenson comes to the scene. This was his real name but everybody called him Larry.

Once he graduated from high school, he joined the U. S. Navy and served as a fighter mechanic in the Korean War for two years.

Then he went on to Santa Monica College in California and became a swimmer. After a short swimming career he became a lifeguard on the Santa Monica Beach. This is the most important point. While watching such people, especially surfers, he found out, they enjoy surfing and skateboarding as well.[14]During the 1960's he was publishing the Surf

13 *(64) Skater Dater (1965) Full 17:38 Version. - YouTube.* URL: https://www.youtube.com/watch?v=lRIt3aDX7-k&t=161s&ab_channel=sharpclay. [2020-11-09]

14 *Larry Stevenson – Wikipedia.* URL: https://en.wikipedia.org/wiki/Larry_Stevenson. [2020-11-10]

Guide and the Poweredge magazines. He also established a skateboard company Makaha, designed the first very professional skateboards and set up a team to promote his products. In 1963 he held a skateboard competition. He was a holder of the patent for the kicktail and double tail. These expressions can be described as the bent front (nose) and the back (tail) parts of a skateboard deck.[15]

16

In the picture above, there can be seen a typical double tail deck. To put it more simply, both its ends are bent (pressed into a bent shape).

17

This a classic so-called cruiser board. The deck is singlekicktail (only one end is significantly bent).

15 *About Us – Makaha.* URL: https://www.makahaskateboards.com/pages/about-us. [2020-11-10]

16 *Sovrn Romeo Skate Deska - Desky Skateboardy | SkatePro.* URL: https://www.skatepro.cz/209-37153.htm. [2020-11-14]

The difference lies in the usage of the complete board. Skateboards are mainly used for performing tricks – ollie, kickflip, frontside pop-shuvit, heelflip, etc. These are the tricks which can be performed with popping the tail. There are also tricks you can do using the nose (**nose** ollie = **n**ollie, **nollie** kickflip, nose manual and other). I am going to explain this terminology and these problems in upcoming chapters.

Cruiser board is created for cruising – "*to move or proceed speedily, smoothly, or effortlessly*"[18]. According to my opinion, this is the exact definition of a cruiser – big and soft wheels that roll smoothly, a pliable and flexible singlekicktail deck, not ideal for tricks. Tricks can be performed on it, but with little comfort. The board is not suitable for such an activity.

In the 60's more and more skateboard manufacturers appeared on the market. Teams of skateboarders were established and their cross-country trips elevated skateboarding to unbelievable heights of popularity. Companies such as Makaha and Hobie had their own teams. There was the Palisades[19] Skateboard Team, too.

In 1963[20] the clay wheels were invented and the old and obsolete two-by-fours were replaced with wider decks shaped like surfboards. Those vehicles started to look like today's cruiser- or longboards. Clay wheels were made of composite plastic. They had better grip and were not so slippery. Thanks to this invention, skaters could attempt the same stunts that were possible on surfboards (kickturns, handstands, dancing, nose wheelie, frogstand, hippie jump…).[21] Many boards had been sold since the beginning of the 1960's. Skateboarding, though, suddenly went extinct in 1965. There were 2 main reasons why it all (almost) ended. Skateboarding was experiencing a major boom/expansion of popularity. Everybody was manufacturing the same skateboards. No big innovation could be seen regarding the products. Some manufacturers had ideas on how to produce better wheels, but the basic made from clay were the cheapest option. Everyone used them.

The second reason was safety. Riders got usually hurt, injured. Cities started to ban skateboarding in many areas. In other words "Skateboarding got exhausted."

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17 *Mindless Stained Daily II Cruiser - Green I RMD BIKE shop - BMX, MTB Street, Stunt Scooters, parts.* URL: https://www.rmdbike.com/en_GB/p/Mindless-Stained-Daily-II-Cruiser-Green/2027. [2020-11-14]

18 *Cruise | Definition of Cruise by Merriam-Webster.* URL: https://www.merriam-webster.com/dictionary/cruise. [2020-11-14]

19 *Skateboarding's First Wave - A Palisades Story.* URL: http://www.timkellerphotography.com/timkellerarts/SkateboardingHistory.html. [2020-11-15]

20 *The Evolution Of Skateboard Wheels - Skateboarding Magazine.* URL: https://skateboardingmagazine.com/the-evolution-of-skateboard-wheels/. [2020-11-14]

21 *HOME | skateboarding.* URL: https://www.skateboardingsfirstwave.com/. [2020-11-15]

Makaha and the fall of skateboarding

Until 1965, Makaha was celebrating as immeasurable success. Their orders grew over 10 000 boards per day. They also sold $4 000 000 worth of skateboards.

After the fall, the Makaha lost a significant amount of money because of canceled orders.

In the late 1960's Richard Lawrence Stevenson invented the above-described kicktail. In 1969 he achieved the goal of patenting his idea. At first it was not accepted by the public. Thanks to advertisement on the radio it got its first fans.

It is the same with all new inventions. When others see the success of a product, they start to replicate it. When this happened to Larry, he thought, it would not be any problem. After all he had his thing patented.

Stevenson took a legal action against them. Unfortunately the court decided not to acknowledge his product as more than just an "obvious invention"[22] and after the three-year legal battle Larry gave up.

The (Quarterly) Skateboarder

The Quaterly Skateboarder = the SkateBoarder was a skateboarding magazine the launch of which took place in 1964 in Dana Point, California, US.[23] Surfer Publications planned to publish only four issues. That was the reason for choosing the attribute "quarterly". They really made only 4 seasons. In 1965 the authors decided to rename their magazine and to publish bimonthly.[24] Unfortunately as stated above, the first era stopped in the same year.

The founder John Severson expressed his opinion in his first editorial:

"Today's skateboarders are founders in this sport — they're pioneers — they are first. There is no history in skateboarding — it's being made now — by you. The sport is being molded and we believe that doing the right thing now will lead to a bright future for the sport. Already there are storm clouds on the horizon with opponents of the sport talking about ban and restriction. Skateboarding is not a sport of speed; it's a sport of skill. It's not a sport of destruction — of others or yourself. It's a sport of control. It's up to you to see that skateboarding does not become a sport of rebels and radicals. It's a sport for young sportsmen. We look forward to a great future in skateboarding and we ask you. the pioneers, to make it great."[25]

22 Brooke, M., 2005. The Concrete Wave. Toronto: Warwick Publ.

23 *Skateboarder (magazine) – Wikipedia.* URL: https://en.wikipedia.org/wiki/Skateboarder_(magazine) [2020-11-21]

24 *Ibid.*

25 John Severson. "Editorial – SIDEWALK SURFING?." *The Quarterly Skateboarder,* VOL. 1 NO. 1 WINTER 1964, 50.

The first skateshop ever

On the 6th of October 1962 Bill Richards and his sons – Mark and Kurt opened the very first skateboard shop – Val Surf in the history in North Hollywood, California. They were confident that skateboarding was something extraordinary, something more than just a toy for children.

They persuaded The Chicago Roller Skate Company to make a deal and to sell them just the trucks (iron component for mounting wheels).

High school students who used to work for Val Surf were producing the wooden decks and mounting trucks to them. In the early operation mode, they were selling only a small amount of complete boards.

To increase the retailing, they also offered to send their products by mail. It did not take a long time and Val Surf became successful.

Val Surf was experiencing its golden times when Hobart "Hobie" Alter joined their business. Originally, he focused mainly on surfboards. Hobie made the first experiments in his garage. As time went by, Alter found ways of how to produce the surfboards effectively and simply.

He also enjoyed skateboarding and in 1964 joined Bill Richards and his sons in their business. Together they came up with a collection of popular skateboards.

Vita-Pakt Juice Company

The uninitiated readers can put a question to themselves: "What does juice have in common with skateboards?" The following paragraphs will explain it.

At the same time the owner of Vita-Pakt, Baron Hilton, and Ed Morgan conceived of a similar idea. Morgan was not the only person from California who enjoyed watching skateboarders on their vehicles. While doing so, he thought, Vita-Pakt could expand to another profitable business. He introduced the idea to the management. They saw some potential and agreed.

In 1964 a contract between Hobie Alter and Vita-Pakt was established and boards started to be produced.

The next step Hobie had to take forward was making up a team which would travel and promote the brand with its products. Hobie assembled it from the top riders. Some of them were overtaken from the Makaha skateboard team. One of the biggest trips is even recorded and documented in the movie The Endless Summer (1966).

A wasted chance

In 1965 the company called American Latex approached Hobie Alter with their novelty. The president of American Latex had a son who used to surf and skate. He cast a set of **P**oly**U**rethane wheels. He brought them to Hobie. Alter mounted them on a board and gave it to one his team riders. It was described as a completely new and awesome experience.

Hobart Alter wanted the management of Vita-Pakt to equip their boards with the PU wheels. The response was to be expected. The addition of the wheels would increase the price of the complete skateboard in a significant way. The executive did not allow Hobart to take this action and the whole project ended as soon as it began.

Archery hand in hand with skateboarding

Larry Gordon, a student of chemistry, worked with Floyd Smith for Gordon Plastics. Their dream was to produce surfboards. The desire was so intense that they left the company and moved into a garage. 1962 Larry even left school to be able to work on surfboards full time. The Gordon & Smith co. was established.

One year before the failure of skateboarding Larry came up with an idea. He combined the so-called Bo-Tuff – a fiber reinforced laminate for the facing and backing for bows[26] with maple wood core to make the first laminated skateboard on the market.

The board was called Fibreflex. It provided the rider a very responsive and smooth ride. Decks made with Bo-Tuff were extremely flexible. They were built mainly for slalom riding. It is not possible to perform street skating tricks on them.

A collector of old skateboards donated one of his Fibreflexes to members of the Braille Skateboarding[27] team to test it in modern conditions.

The G&S Fibreflex bankrupted in 1965 and took skateboarding with it. It was revived in the 70's and other models were coming into existence (a freestyle one with a rocker, Bowlrider, etc.).

Since 1979 Gordon & Smith have produced mostly plywood boards (Dennis Martinez "Flying Ace", Doug Saladino "Pine Design").

28

26 *Gordon Plastics.* URL: http://www.vintagearchery.org/gordon-plastics.html. [2020-11-25]

27 *SKATING A 1970s FIBERFLEX SLALOM SKATEBOARD | YOU MAKE IT WE SKATE IT EP 75.* URL: https://www.youtube.com/watch?v=TwyUVLlqqxA. [2020-11-25]

4. The second wave

It sometimes happens that something new comes into existence and the idea is innovative and interesting in such a way it becomes immensely popular. A wise English saying goes as follows: “easy come, easy go” and fits the first era environment (fast expansion, fast collapse). Once the early era started, it also ended soon.

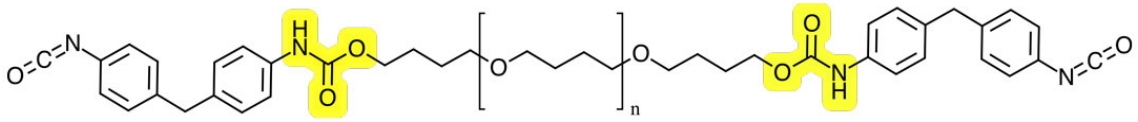
One of the saviors of skateboarding was also Richard Lawrence Stevenson in 1973. Makaha was with its new team from 1969 the leader of the new age of skateboarding.

In the 1960’s this activity/sport/life style appeared with its first boom. Very few technological creations were noticeable.

The 70’s brought a technological revolution of sorts. A new style of pool riding has been developed, urethane wheels have been invented. Riders began to test vertical ramps. The SkateBoarder magazine comes to scene. In the late 1970’s Alan Gelfand invented the trick Ollie.

The technological breakthrough was the most important factor. The “previous” skateboarding did not offer any new possibilities and what was even worse was that skateboarding was not allowed in the cities.

The year of 1970 had a key function. 1970 was the time the “second” PU wheels experienced their official launch. Somebody calls them polyurethane, someone uses the expression urethane. What is the difference? There is none.



“Polyurethane is a polymer. A polymer consists of repeating units that are chemically linked in a particular pattern. Some of the repeating units are urethane groups. The term polyurethane simply means that it contains multiple urethane groups.”[29] In the following pictures, the visual differences between clay and urethane wheels are visible.

28 *My LBS sold me an unused, unsold 1970s vintage FibreFlex for the €20 I had in my hand. eBay tells me this is a collectible dreamboard. I feel bad. : longboarding.* URL: https://www.reddit.com/r/longboarding/comments/6zlrsa/my_lbs_sold_me_an_unused_unsold_1970s_vintage/. [2020-11-25]

29 *Urethane vs. Polyurethane | Gallagher Corporation.* URL: https://gallaghercorp.com/urethane-vs-polyurethane/. [2020-11-25]

30

31

The major difference was in material. Clay wheels were made of composite plastic.

The inventor of the polyurethane wheels was called Frank Nashworthy. He began the development in 1970 and the first commercial model – Cadillac Wheels was ready in 1973.

A board cannot roll without proper chassis. In skate terminology it is being called “trucks”.

32

30 *60’S VINTAGE STYLE Makaha Old School Clay Skateboard Wheels Loose Ball Bearings - $34.95 | PicClick.* URL: https://picclick.com/60%E2%80%99s-Vintage-Style-Makaha-Old-School-Clay-Skateboard-264008641165.html. [2020-11-25]

31 *Skateboard BONES Wheels V1 – Queens ♡.* URL: https://www.queens.cz/wear/71431/139/bones-wheels-v1/. [2020-11-25]

32 *Independent Trucks: Stage 11 Polished Standard Independent Skateboard Trucks.* URL: https://www.nhsfunfactory.com/stage-11-polished-standard-independent-skateboard-trucks-4980742. [2020-11-25]

But what are these?

"Skateboard trucks are the metal T-shaped pieces that mount onto the underside of the skateboard and keep your skateboard wheels and bearings securely attached to the deck."[33] Companies such as Independent, Tracker or Bennett were founded. They began to produce their parts only as skateboard parts. The era of reused roller skate accessories ended.

1976 was the year the precision-bearing was created. That can be described as a small part integrated in the wheel. Through the middle of the bearing goes the axle of the truck. This whole setup is equipped with two washers and mounted to the trucks with a nut.

33 *Skateboard Trucks Buying Guide - Warehouse Skateboards.* URL: https://www.warehouseskateboards.com/help/Skateboard-Trucks-Buying-Guide. [2020-11-25]

The Ollie, another huge step forward

Alan Gelfand, the author of this trick, was able to do no-handed aerials in pools. He did so with gentle raising of the nose while trying to keep the skateboard with the feet.[34] In 1977 in the concrete skatepark – Skateboard USA, Craig Snyder (a skater and a photographer) took a picture of Gelfand performing his maneuver.

The first version of the trick was an accidental aerial lipslide. It was called the Ollie Pop. The most important factor for the development of the Ollie no-handed jump were the over-vertical sections in the Skateboard USA skatepark.

At the end of the year 1977 Stacy Peralta met Alan Gelfand in Solid Surf Skate Park in Fort Lauderdale, where he showed him his invention. The complete trick – the Ollie Air was born in 1978. Today it is simply known as the ollie.[35][36][37]

34 *Ollie (skateboarding) – Wikipedia.* URL: https://en.wikipedia.org/wiki/Ollie_(skateboarding)#Origin_of_the_technique. [2020-11-30]

35 *Alan Gelfand – Wikipedia.* URL: https://en.wikipedia.org/wiki/Alan_Gelfand. [2020-11-30]

36 *Ollie: the trick that revolutionized skateboarding.* URL: https://www.surfertoday.com/skateboarding/ollie-the-trick-that-revolutionized-skateboarding. [2020-11-30]

37 *Ibid.*

Road Rider – a hard competitor to Cadillac

Only a year after the development of the Cadillac wheels, Anthony Roderick offered the company Santa Cruz Skateboards his product – polyurethane wheels equipped with precision bearings.[38] Generally said steel and clay wheels together with those made by Cadillac disappeared. Many customers left them for Road Rider because of the smoothness and comfort which was provided by the new wheels with precision bearings.

Wee Willi Winkel and Canadian maple

Willi Winkel (his real name) started skateboarding in the 60's. He was not enjoying it much until the urethane wheels appeared. Winkel bought a pair of trucks and the wheels. Because of the lack of money, he did not buy a complete board. That was why he decided to make a deck himself. Willi's "*father owned and operated a door manufacturing company and had necessary equipment and supplies to create a deck."*[39] The first attempt yielded a solid piece of wood. Willi wished for something more special and so he began gluing layers of wood to create a so called "wedge tail". The process was unfortunately very time-consuming and not so effective. His father advised him to laminate (gluing and pressing thin layers of wood together) the skateboards.

The wood Winkel used was the Canadian maple. In the mid 70's no manufacturer produced skateboards from maple. That was the reason why Willi Winkel was celebrating such success with his products.

The "Independent" story

There are many features that play a role in choosing the right trucks. According to my opinion, the most important factors are the profile, size and brand.

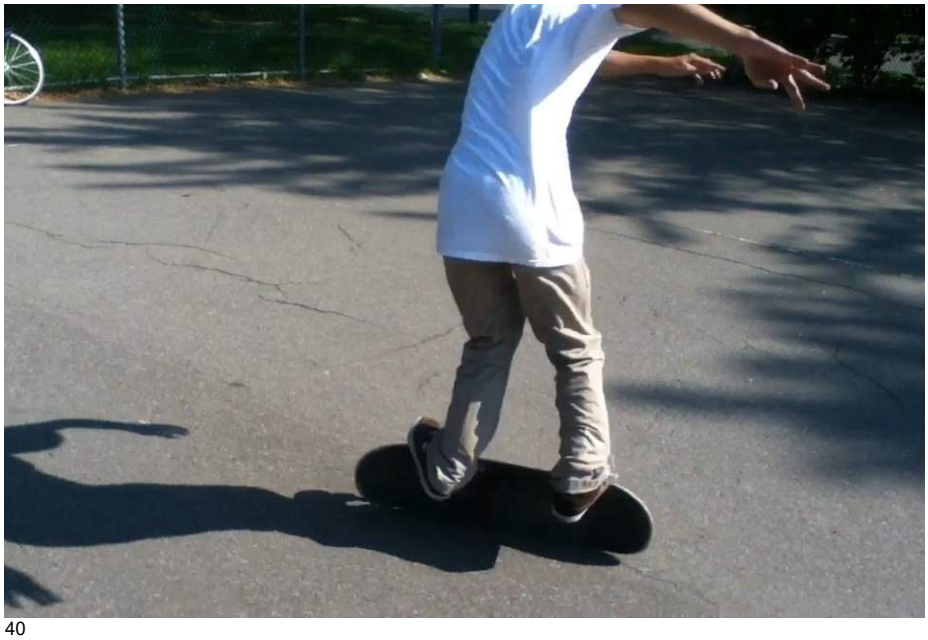
Profile: Three major types

- **low** – most stable, ideal for small-diameter wheels (50-53 mm)
- **mid** – the golden mean, good for street skating, bigger wheels can be mounted on them (53-56 mm)
- **high** – for cruisers and longboards, good for carving and cruising (56 + mm)

Size: Depends on the width of the deck. In skateshops it is usually recommended that one has the end of the axle in the same line with the edge of the deck above. When a skater falls down on the side of the board, having the same size of trucks and deck can prevent many injuries. This kind of falling is called "primo landing".

38 *Road Rider Wheels-Road Rider Wheels.* URL: http://www.xgames.com/xgames/gallery/9793447/image/2/road-rider-wheels. [2020-11-30]

39 Brooke, M., 2005. The Concrete Wave. Toronto: Warwick Publ.



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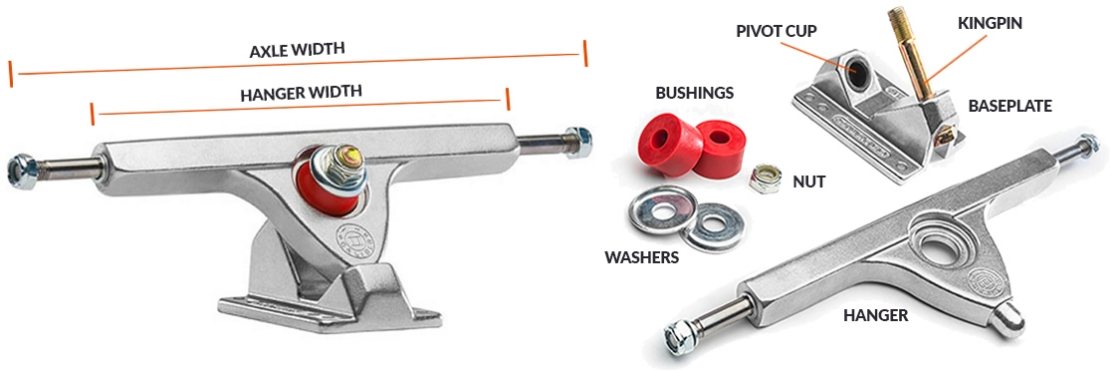
Trucks consist of seven parts (hanger with the axle, kingpin, bushings, baseplate, pivot cup, washers and nuts).



41 Brand: I personally did not try many different brands of skate trucks but the Independents were (and still are) the best performing trucks I have ever tried. I used to ride Darkstars but they were positioned too low. When I wanted to learn how to grind, it was always the long kingpin that overhung the hanger and the top part did not allow me to do the trick. After these broke I bought a pair of Independents which were higher and I was having no problems. I found out, the higher the truck, the more is the kingpin hidden. That is just my personal discovery. It largely depends on personal preferences. A technical introductory part was necessary for a full understanding of the history of the Independent truck co. The truck companies that were founded in the 70's (Bennett, Tracker, Gullwing)

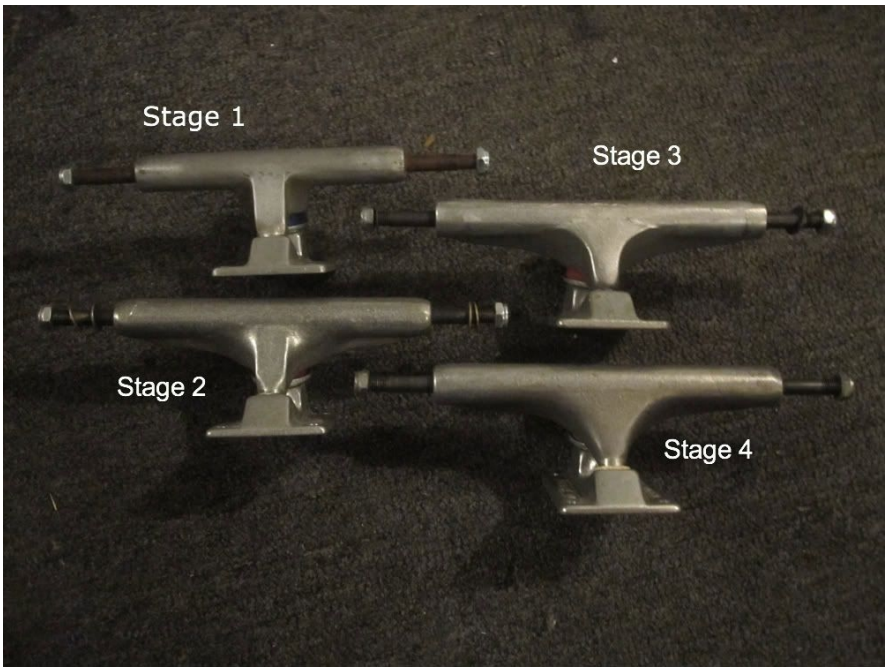
40 *Landing Primo | SKATEBOARD Amino.* URL: https://aminoapps.com/c/skateboard/page/blog/landing-primo/mWsk_ue08llGBgojZgkWKMZmanDvkx. [2020-12-04]

41 *Choosing the right skateboard trucks for your deck.* URL: https://www.zenedasports.com/choosing-the-right-skateboard-trucks-for-your-deck. [2020-12-04]

would not produce bad skateboard parts. Their products merely had limitations of the turning capabilities. Two guys Fausto Vitello and Eric Swenson created the first truck and they called it The Stroker. It was considerably expensive for that time, but the steering mechanism worked very well. According to one of the founders, The Stroker worked too well. Even in low speed, the rider was experiencing a so-called wobble. Wobbling is a strange, unpleasant movement that occurs when the rider loosens the nut on the kingpin too much. It could be described as a significant vibration which is usually difficult to handle for the riding person.

Another type of trucks had to be designed – the double-kingpinned Rebound truck. It already resembled today's trucks, but the system was still not perfect.

An additional attempt had to be made in order to create a unique steering principle. Four or five prototypes were made, until the ideal product was refined into the brilliant form. In 1978 "The Independent" (Stage I) truck hit the market – a revolutionary skateboard truck with features of modern alternatives.



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In the 70's vert and pool skating was developed. It happened thanks to the invention of polyurethane wheels which were not slippery anymore, so that skaters could ride on vertical sides of the empty pools.

Freestyle almost disappeared and the process of its transformation into flatground riding began.

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42 *Independent Trucks corner - Bulldog Skates Message Board.* URL: http://bulldogskates.websitetoolbox.com/post/Independent-Trucks-corner-1791387?trail=195. [2020-12-08]

The vert style could be marked as a synonym to new and more dangerous tricks and more injuries that caused the increase of insurance costs for the owners of skateparks. Some of them closed and that led to the decline of skateboarding in the USA again.[43] A brief summary of the major characteristics of the 70's follows:

- 1976 – first modern outdoor skatepark (Florida),
- different styles of riding come to scene – vertical instead of slaloms and freestyle,
- popularization of graphic designs on the bottom side of decks,
- pool skating,
- 1978 – Alan Gelfand originated the Ollie.

5. The third wave

As usual, even in the 80's skateboarding needed something that would highlight the positives and show people it is an entertaining leisure activity and a convenient means of transport.

This time, it was no new device, no invention, no special ability or trick. It was a movie. A Movie with a capital "M". *Back to the Future* from 1985 became one of the rescuers of skateboarding.

"Girl: What's that thing he's on?

Boy: A board with wheels."[44]

The main character is a young man – Marty McFly. He uses his board for commuting. In the first movie he visits the town in the 50's, where he has to "borrow" a boy's milk crate skateboard to escape.

The decade of the 1980s is also important because of the establishing of one of the most famous skateboard magazine in the whole world, *the Trasher*. Actually, it was not only Trasher. The Transworld Skateboarding magazine entered the skate scene, too.

There was no skateboarding-only magazine in the early 1980's. The *SkateBoarder* was transformed into *Action Now*. The editing caught criticism for such an act.

Fausto Vittello, manufacturer and designer of Independent trucks, decided to make his own magazine. Trasher appeared in the newsstands in January 1981 a soon became one of the key characteristic typical for the skate culture.

To fully explain the third wave, it is essential to mention the upcoming facts listed below.

- vert skating – 1984,
- first signs of streetstyle,
- Powell Peralta – Bones Brigade,

43 *Skateboarding – Wikipedia.* URL: https://en.wikipedia.org/wiki/Skateboarding#cite_note-Architecture-1. [2020-12-08]

44 Back to the Future [movie]. Directed by Robert Zemeckis. USA, 1985

- stars – Tony Hawk, Rodney Mullen, Ray “Bones” Rodriguez,
- Rodney Mullen – keeps freestyle healthy, tricks as “Impossible” or “kickflip”,
- streetskating = problems with property owners, government or police.

For the purpose of completion, it is essential to clarify some of the terms. Vert skating is quite understandable. The expression “vert” is an abbreviation for “vertical”. When somebody practises this type of riding, his body can get into a parallel position with the ground (pool or vertical ramps riding). That was the activity which was not feasible without PU wheels.

45

Street is a style of skateboarding that involves the use of urban obstacles (stairs, handrails, benches and other furniture that can be found on the street).[46] A typical feature of this style is that the tricks are more “technical”. The rider does not only fly out in the air from a radius/bowl/vert ramp, etc. He “flicks” with his feet to “flip” the board/jump (ollie up something), the performer can also jump onto a handrail and “slide” down. Another typical street trick is the “grind” (a jump onto a curb/ledge/rail/almost anything and slide on it with the trucks).

The introduction to the Powell Peralta company

This firm which had a significant impact on the world of skateboarding was founded in 1978 by George Powell and Stacy Peralta. Powell was an engineer from the Stanford University. His first deck was built in 1957, but he soon left interest in it and came back in the mid 70’s when his son wanted George to make him a board. The interest returned even in an improved version. He started to experiment with different materials (aluminium, urethane or fiberglass). After combining these materials a composition was created – a super flexible deck. One of the testers was Stacy Peralta.

45 *Braille Skateboarding | Why is Vert Skating Not In the Olympics? All Products.* URL: https://brailleskateboarding.com/why-is-vert-skating-not-in-the-olympics/. [2020-12-08]

46 *Skateboarding styles – Wikipedia.* URL: https://en.wikipedia.org/wiki/Skateboarding_styles. [2020-12-08]

Powell worked for aerospace industry. He got laid off from his job in 1976 and moved from Los Angeles to Santa Barbara. There he started the skateboard manufacturing business (1977) – Powell Corporation. Decks were being made of maple and aluminum. The designing of Bones Wheels was also in progress. In 1978 Stacy Peralta and George Powell got together to form a brand. Peralta had incredible abilities for marketing and Powell was a great product designer. After Peralta retired from pro skateboarding in 1979, he decided to focus mainly on the business and to build up a skate team – The Bones Brigade. Original setup consisted of **Alan Gelfand, Steve Caballero, Mike McGill, and Ray "Bones" Rodriguez**. As the time went by number of the Brigade members was growing. The company always released a pro deck for each rider. Soon, Powell Peralta experienced steady growth.

1980's meant huge success for the firm. Tony Hawk, Rodney Mullen, the king of flatground, freestyle tricks, and others joined the Brigade. The Bones brigade was winning basically every skate competition. 1985 was a very important year for Powell Peralta. The selling was increased thanks to their second skate video "Future Primitive" and the movie Back to the Future.

Powell Peralta movies from the 1980's always start with an introductory sketch. They usually have a story. On the other hand, modern skate videos mostly showcase the talents of skaters only.

At the turn of the 80's and 90's members of skate teams owned by the 3 biggest companies (Powell Peralta, Vision and Santa Cruz) began to leave and to establish their own businesses.

1991 Stacy Peralta decided to stop working for the firm. George and Stacy reunite back again after more than 10 years.

This company has never given up and still produces handmade skateboards in Santa Barbara, USA.[47][48]

6. The last wave (1990's - ?)[49]

Street skating dominates the scene. In 1989, first double tails appeared and the trend of making symmetrical shapes remained until now. As I already said, the street style is very technical and that is why there is no space for 10-inch wide decks with only the tail. For example, it is insanely difficult to flip a heavy, wide board. Skater-readers of my work will understand and agree. Widths generally have about 8 inches.

The wheels became smaller and much harder (reaching 99A hardness). State-of-the-art wheels are even harder, but for that time, it was a substantial change.

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47 *Skateboarding – Wikipedia.* URL: https://en.wikipedia.org/wiki/Skateboarding#cite_note-Architecture-1. [2020-12-08]

48 *Everything You Need To Know About Powell Peralta - Shredz Shop.* URL: https://shop.shredzshop.com/blogs/blog/history-of-powell-peralta/. [2020-12-08]

49 *Skateboarding – Wikipedia.* URL: https://en.wikipedia.org/wiki/Skateboarding#cite_note-Architecture-1. [2020-12-08]

7. Conclusion

This major chapter of my bachelor thesis is dedicated to the history of skateboarding in the USA. For the first time it was planned to make this part significantly longer but a rough writing calculation hinted that the work would have more than 120 pages. I had to make a final decision – write about the most important events and inventions.

The following chapter is going to discuss the processing of veneer and the production of skateboards in the USA. When I was scheduling a "writing plan" I got an idea of documenting the whole process of creating a 100% wooden deck. The boards from my shop have never been made of Canadian maple. For this special event – writing a bachelor thesis – I decided to order some and use it for the production. But before we explore making decks, we have to understand the input material – the wooden veneer.

8. The production of veneer in the USA

The historical part already describes the basic principles and materials used for producing skateboards quite well. It is already known that the best performing and most affordable material is wood veneer.

What is "veneer"? Usually it is defined as a thin (mostly under 3 mm) sheet of wood that is typically used for laminating or gluing onto core panels.[50] It is divided on the basis of ways of **cutting:**

- rotary cutting
- slicing
- sawing

However, the veneer itself is not sufficient. It must be laminated in a mold using glue. This complex process will be explored in greater detail in the next and also final chapter.

The first essential step which precedes the main processing is of course harvesting. *"An adequate supply of suitable logs"*[51] is the most important factor. According to the Roarockit website there are 3 main species of wood[52] that are commonly used for skateboard production nowadays. The list includes items such as **Canadian Maple** (also known as hard maple, sugar maple, rock maple or *Acer saccharum*[53]), **Bamboo** and **Baltic or Russian Birch**. After months of searching I found a lumber firm JAF Holz, that has one of its branches in a near town – Rokycany. I would buy **ash** (Fraxinus excelsior) veneer from them and use it as my processing material.

50 *Wood veneer – Wikipedia.* URL: https://en.wikipedia.org/wiki/Wood_veneer. [2020-12-14]

51 1977. Woodveneer : logselection, cutting, and drying. U.S. Dep. Agric, Tech. Bull. No.1577, p. 137

52 *Understand the Materials — Roarockit.* URL: http://www.thinairpress.com/skateboard-building/2015/3/14/understand-the-materials. [2020-12-14]

53 *Acer saccharum – Wikipedia.* URL: https://en.wikipedia.org/wiki/Acer_saccharum#Timber. [2020-12-14]

In the following paragraphs I would like to focus primarily on the veneer production processes that are common in connection with the skateboarding industry. There are many facts concerning working with veneer but it would take much time and my thesis would be filled with issues which would not even relate to the main topic.

The 1st step – harvesting

Based on my research and experience, harvesting is the easier part in preparing a veneer log. A much more complex and more difficult process is the planting of the trees itself. There are several factors that influence the biological action. There is absolutely no doubt, it is not necessary to mention that correct growing conditions have a tremendous impact on the final quality of wood. The most important features of a forest are:

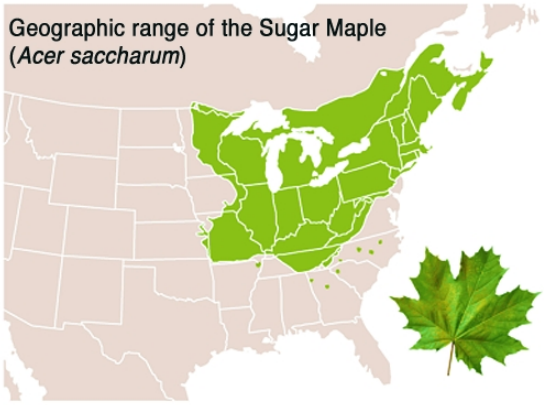
- canopy
- weed-free ground
- the more unfavorable climate, the denser the wood
- the attacks of insects and animals

Trees which can be marked as veneer wood are ordinarily high and straight. That is because of the canopy of the forest (fully-canopied woods are ideal). A tree needs sunlight and lack of it could negatively affect the growing process. A tree growing in a dark, fully-canopied forest have the tendency to make a long, straight (no crooks, bends or bows) trunk without limbs and knots. The trunk must be solid and blemish and rot free. Veneer logs must also maintain a minimum number of growth rings per inch.[54] To summarize it, an ideal veneer log should be straight, round, with centered pith, minimum/no defects, without mineral deposits, worm tracks, gum deposits or bird pecks.[55]It is also better to have weed-free ground in the surrounding (and under) of the trees. Small plants decrease the amount of nutrients and water that can reach the root system of the tree.

When talking about planting sugar maples for the production of skateboards, the best wood can be found in the big lake region (Michigan, Superior...) of northeast America.

54 *What Makes A Tree Veneer Quality - Timber Works.* URL: https://ohiotimberworks.com/blog/2013/10/determining-veneer-quality-trees/. [2020-12-21]

55 *Growing Value in Your Woods | Articles | Features.* URL: https://northernwoodlands.org/articles/article/growing_value_in_your_woods. [2020-12-21]



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The Great Lakes are located in a cold area. Generally speaking, the nature flourishes when the ambient temperature is warm. Fortunately (for skateboarders) the local climate becomes cold in winter. The freezing inhibits the growing process. The slower the growing, the harder the wood. When the water freezes in the material during winter, it is also a factor that makes it denser.[57] *Accer sacharum* is not only used for producing veneer. Maple syrup is made out of these trees, too.

Animals and microorganisms are also capable of harming the trees. A typical example would be a bird pecking at the bark. It creates a "wound" which is later attacked by microorganisms such as bacteria. They feed on the fresh sap and it turns the harmed area into a dark color.[58]

The 2nd step – log storage

After a tree has been marked as a veneer grade log, it must be been cut down. This means the first few steps are completed and now the harder part of the production comes onto the scene. It is highly recommended to process the wood as soon as possible after the harvesting. When there is no way the manufacturer can begin with the veneer making, the trunks/logs/stem (*"the main stem of a tree apart from limbs and roots"*[59]) must be stored. There are many ways of how to do so. The most common are:

- storing not too much material,
- the logs that have been cut down first should also be manufactured as the first,
- coating the ends of the trunks,

56 *BIL 330 - Lecture 13.* URL: http://www.bio.miami.edu/dana/330/330F19_13a.html. [2020-12-21]

57 *(253) PROFESSOR PAUL SCHMITT - A SKATEBOARD HAS NEVER BROKEN LIKE THIS – YouTube.* URL: https://www.youtube.com/watch?v=tBF-CtkG6N4&ab_channel=BrailleSkateboarding. [2020-12-21]

58 *Ask a Forester: What makes a log a veneer grade log?.* URL: https://www.kretzlumber.com/articles/item/429-ask-a-forester-what-makes-a-log-a-veneer-grade-log. [2020-12-21]

59 *Trunk | Definition of Trunk by Merriam-Webster.* URL: https://www.merriam-webster.com/dictionary/trunk. [2020-12-22]

- letting the bark on the surface of the trees,
- keeping at high humidity and temperature just above freezing or completely sunken under cold water.

“Coating the ends of the trunks”, “end coating” or “sealing up” mean the same thing. It is a technique ideal for preventing cracking of the ends of the logs. Common latex paint, tar or Anchorseal are being used. When the ends of the wood are not sealed up, they tend to crack. What happens is that the wood fibers are “*longitudinal arranged*”[60] within the stem. The root system of the tree absorbs the water from the ground and after cutting it down, it is still wet and fresh. The problem is that after cutting, the water evaporates. The log is still covered with the bark and because of the above mentioned arrangement of the fibers, the moisture cannot circumvent on the longitudinal surface. The only place for the vaporization are the freshly cut ends. They often dry out much quicker than the middle part of the tree. It causes shriveling up of the end edge. The end of a log cannot be of a smaller diameter than the middle. It has stay the same even after shrinking and that is the moment the material cracks.[61]This defect spreads along the log and can depreciate it for veneer making.

Letting the bark on is useful in fighting against bacteria and other microorganisms. It can be compared to the human skin. It is a safety layer of the inner parts.

The next suitable system would be keeping the trees under a roof with a constant spraying them with water or chemical sealer.

62

63

60 *Wood grain – Wikipedia.* URL: https://en.wikipedia.org/wiki/Wood_grain. [2020-12-22]

61 *(253) Sealing the Ends of Logs and Lumber - Ask Matt 20 – YouTube.* URL: https://www.youtube.com/watch?v=WWztws5mltQ&ab_channel=MatthewCremona. [2020-12-22]

62 LEFT: *ANCHORSEAL - #1 Wax End Sealer Prevents End Checks - U-C Coatings.* URL: https://uccoatings.com/products/anchorseal/. [2020-12-22]

The 3rd step – preparation of the veneer log

A good preparation is an essential step of every successful project. This is valid even for the veneer production. The whole process includes three major tasks:

- debarking
- cutting to length
- cooking/steaming

The point n. 1 is clear. Bark is a waste material and it must be removed before the peeling/ rotary cutting process. Usually trees are being debarked already before heating. The bark is good heat insulation and it takes less time to boil the “cleaned” stems. Debarking machines are used for it. Five types of these mechanical appliances can be found.

- ring debarker
- chain flail debarker
- drum debarker
- roller debarker
- rosserhead debarker

Some of them are more suitable, some not. I studied the working principles of each machine and watched videos. From my point of view, the best solution is the rosserhead debarker. It has a milling arm which goes from one side of the log to the other and peels the trunk. I would say it is the most efficient one. It creates a smooth surface of the stem, which, after that, is ready for scanning and rotary-cutting.

64

63 RIGHT: *Anchorseal Green Wood Sealer, Application up to -12 °C, 5 l | Waxes | Dictum.* URL: https://www.dictum.com/en/waxes-dbg/anchorseal-green-wood-sealer-application-up-to-12-0c-5-l-810136. [2020-12-22]

In my view, the most inefficient systems are the drum debarkers. Sometimes this method tends to destroy/crack wooden logs. It resembles a giant washing machine full of trees that tumble against one another.

65

Cutting to length is important as well. The lathes are not so big to be able to deal with such long pieces of wood. The technical possibilities and dimensions of the final product are the factors which must be taken into consideration.

It is quite uneasy to find a tree with a completely even stem. When they are cut into the ideal length, it is more manageable to process them. For this operation, circular or chain saws are normally used. Within the preparation, the logs must also be checked if there are no pressed in stones, sand, soil or hammered in nails. Objects of high hardness would represent a possible danger for the cutting knife.

Cooking/heating/boiling/steaming has effects of two kinds. Thanks to that, wood *"acquires the necessary pliability, in order to ensure a smooth cut."*[66] The second interesting fact is that cooking time affects the color of the veneer. The optimal heating level is reached differently with different species of wood.[67]

64 *Types of Log Debarkes: Guide to Advantages and Disadvantages - Veneer Services.* URL: https://www.veneerservices.com/types-of-log-debarkes-guide-to-advantages-and-disadvantages/. [2020-12-23]

65 *Drum Debarker - Timber Automation - Woodyard Equipment Manufacturer.* URL: https://timberna.com/equipment/logpro-drum-debarker/. [2020-12-23]

66 *This is how veneer is made.* URL: https://www.furnier.de/en/wood-veneer/production.html. [2020-12-23]

67 URL: https://slideplayer.cz/slide/15170449/. [2020-12-23]

Temperatures:

- hard deciduous trees – 90°C
- coniferous trees – 70°C
- soft deciduous trees – 45°C

This step is executed through softening in water, cooking/boiling in water, steaming or softening with electricity.

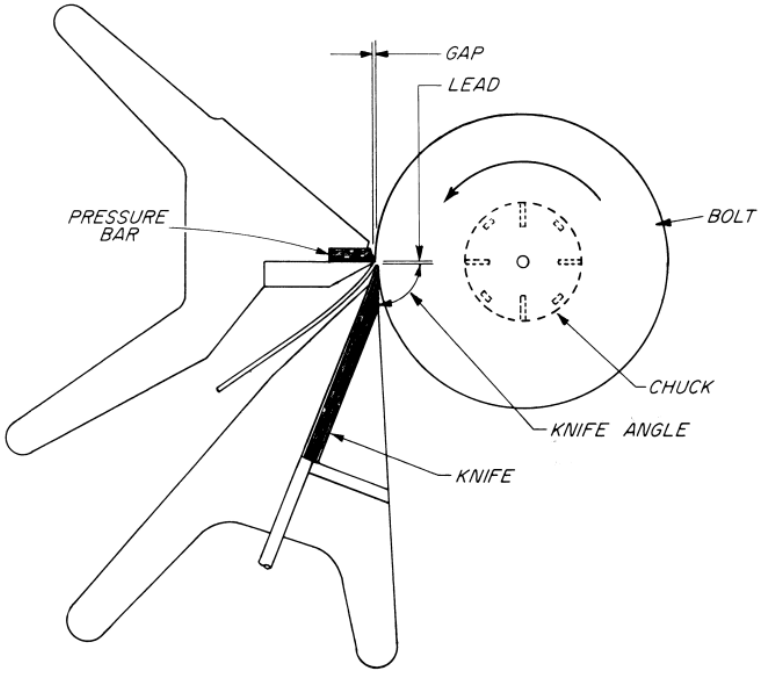
The 4th step – rotary-cutting itself[68]

In this chapter I am going to discuss the processing of veneer for the production of skateboards. There are more ways to make these thin layers of wood but I am going to concentrate only on the most used in this industry – rotary-cutting. The veneer is of high quality and r-c. is also the cheapest way of creating it.

The principle of this peeling system is very simple and easy to understand. The process could be compared to unrolling a carpet or sharpening a pencil. The machine which is used for this purpose is called a lathe.

After steaming the logs (bolts) are clamped into the lathe. Trunks that are being rotary-cut are called **bolts**. One side is fastened with the chuck. The other holds there thanks to the tailstock quill. The motor drives the chuck and the bolt and as the peeling mechanism (the pressure bar with the knife) gets closer and closer, it starts to sever the thin layer of wood from the bolt.

68 *zpracovaný v rámci projektu - ppt stáhnout.* URL: https://slideplayer.cz/slide/15264615/. [2020-12-21]



69

A long sheet of veneer is made which is usually cut into desired dimensions. This is rotary-cutting (centric). The chuck is in the axis of the bolt and it spins symmetrically. There are more ways (eccentric peeling, stay-log, rift and from the heart peeling) but the basic (centric) way is the most common in the skateboarding industry. The next and also the last procedure will appear in the next chapter.

The 5th step – drying

Veneer has to be dried in specialized dryers. Again, different wood species must be dried differently. When the layers are too wet, they can start to go moldy. Too dry sheets tend to become crumbly. These defects mean, the veneer cannot be used anymore.

After that sheets are bundled and sent to further processing.[70]

9. The production of skateboards

When exploring the production of veneer in connection with skateboards I have many questions that have not been answered yet. A skate deck can be made basically from any type of veneer but the most used one is the so called rotary cut veneer.

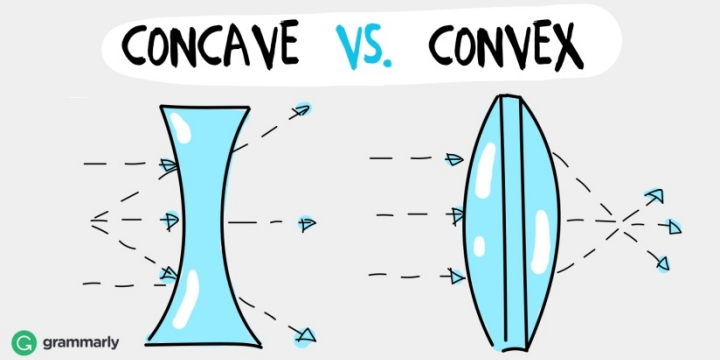
First manufacturers used to produce skateboards from solid wooden planks. Raw wood itself is not an ideal material for this purpose. It has no flex, it is rather stiff. Such a board would also be super heavy, thick and narrow. When compared to skateboards nowadays, these would be completely unrideable.

69 1977. Woodveneer : logselection, cutting, and drying. U.S. Dep. Agrie, Tech. Bull. No.1577, p. 137

70 *This is how veneer is made.* URL: https://www.furnier.de/en/wood-veneer/production.html. [2020-12-23]

As stated above, it was Willi Winkel (his father), who got the extraordinary idea to laminate a board. A typical skatedeck which can be seen in modern skateshops are shaped in a special way. It has not only a tail and a nose. The longest middle part of the board is bent to form a concave. It is essential to understand these two opposite meanings – concave & convex.

The simple difference is evident from the following picture. The example shows a curve of a lens, but the principle is same. Both terms describe a shape of a thing (each one is different). Concave means the shape is curved inwards. The curve of the convex shape is bent outwards.



71

What I would like to say with this is that state-of-the-art skateboards are curved in many ways which would be hardly possible with solid wood. There are ways that allow woodworkers and carpenters to bend wood using heat and steam but this method is time consuming and difficult.

Laminating wood is simpler and faster. The best way is to create a mould (wood, concrete, metal, other species of material…) and to press the wood veneer inside.

The whole procedure of manufacturing skateboards consists of 7 simple steps. This part will be written using mostly my personal experience I gained after 3 years of experimenting and amateur development. The production process stated in this chapter is going to be based on an attempt I decided to try within the bachelor thesis. I am always going to insert a picture from my work shop, describe it and compare it to very professional conditions which can be commonly seen in factories of big Skateboard brands (Santa Cruz, Enjoi, Darkstar, Revive…).

The subject of my production is going to be a typical **double-kicktail street skating** deck. I will not focus on any specialties like cruiser-, long- or pennyboards.

71 *Concave vs. Convex | Grammarly.* URL: https://www.grammarly.com/blog/concave-vs-convex/. [2020-12-04]

1) the veneer structure, number of layers, thickness, grain direction (+ why?)

The selection of veneer in my shop does not differ in any way from the factory process. A classic board is laminated with 7 sheets of Canadian hard rock maple (acer saccharum). 5 of them have longitudinal arrangement of the fibers, 2 are so called cross bands.

Layers also differ in thickness. Here are the common measurements:

- face – 1.5 mm (sanded)
- core – 1.5 mm (usually unsanded)
- cross band – 1.3 mm (unsanded)
- core – 1.5 mm (usually unsanded)
- cross band – 1.3 mm (unsanded)
- core – 1.5 mm (usually unsanded)
- face – 1.5 mm (sanded)

I do not sand the sheets. I do not own the specialized machine for that – the drum sander. That is the factory way of doing it.

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Now, you are maybe wondering why it is necessary to make the plywood with cross band layers. If the grain were only longitudinally arranged, the complete deck would tend to break in the longitudinal direction as well. If there was too many cross band veneers, the skateboard would be very flexible, bendy and limp in length. It would not have any pop (the essential stiffness/energy that allows the rider to perform tricks).

72 *(260) Skateboard - How its made – YouTube.* URL: https://www.youtube.com/watch?v=PMNKsa7reyI&ab_channel=rvd4always. [2020-12-24]

The 7-ply structure has been achieved by experimenting of many previous generations of skateboard developers.

2) applying glue, types, my shop vs factory, safety

The world of woodworking offers a whole lot of types of glue for carpenters. When looking for the right one for skateboard manufacturing, price (mainly for business purposes), amount, type of glue, water resistance, the open drying time and the general drying time must be considered.

According to my measurements, for the production of one deck 0.5 l glue is needed. Different manufacturers use different types of glue. Somebody prefers PVAC. Someone favors polyurethane adhesives. Epoxy resin glues play a role, too. Those are three mainly used types of glues. Vohlej vrut skateboards are laminated with PVAC glue. I use Titebond III D4 – a water-based, super water resistant, polyvinyl acetate, dispersion adhesive for wood. Polyurethane glue becomes foam when drying. It can be useful when trying to fill a gap in loose joints for example. Gaps must be avoided in skateboarding industry. I tried both of these but ended up using the PVAC one after hearing about possible health issues caused by PU adhesives. PVAC is harmless to health, easy to use and very strong. The only disadvantage – it does not fill gaps. It does not foam.

How to apply glue?

In factories, glue spreaders are used. It is a big machine with two large rolling cylinders which are dipped in a tank with PVAC glue. The veneer sheet is inserted in between these cylinders and gets an even coat.

I do it manually using a foam paint roller. It is recommended to spread the glue as evenly as possible. Either a very precise mold or an even coat of adhesive is necessary. When there is a “thick” spill of the sticky liquid on the veneer, the wood tends to swell up and create an air bubble in the plywood. That can cause the overall decrease of strength of the complete plywood.

When talking about epoxy resin, I do not have enough experience to be able to mention professional data here. I used it for laminating carbon fibre skateboards because carbon or fibreglass cloths cannot be glued up with PVAC or PU adhesives.

Safety?

For working with PVAC I never used any kind of safety aids. For laminating with polyurethane I would recommend wearing gloves and a respirator FFP3.

3) pressing, types of molds (concave + materials), the principles of building molds, basic press construction, the pressure, pressing time

Pressing is a complex chapter with many information that can be mentioned. The first point I would like to explain are **molds**. A mold is *"a hollow container with a particular shape into which soft or liquid substances are poured, so that when the substance becomes hard it takes the shape of the container."*[73]

The definition fits rather a baking mold or a roasting pan. In the world of skateboarding, molds are used for laminating plys into plywood. They are usually much bigger and made of different materials. I own three of them – a wooden one for longboards/cruiser boards, two form concrete for street decks (one with super high concave, the second has a mellow concave). Aluminum, concrete and wood are the most common and also best materials. Professionals in factories make their molds mostly from wood or metal. This stuff can be easily routed with CNC (computer numerical control) machines. An engineer creates a virtual 3D model which after that serves as a "template" for the final routed product. The mold is then precise. \the disadvantages are high cost and necessity of high level technical education.

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My molds are handmade from spruce wood (using customized templates from www.diyskate.com) or concrete. Making of the wooden one is more time consuming, more

73 *MOULD | meaning in the Cambridge English Dictionary.* URL: https://dictionary.cambridge.org/dictionary/english/mould. [2020-12-25]

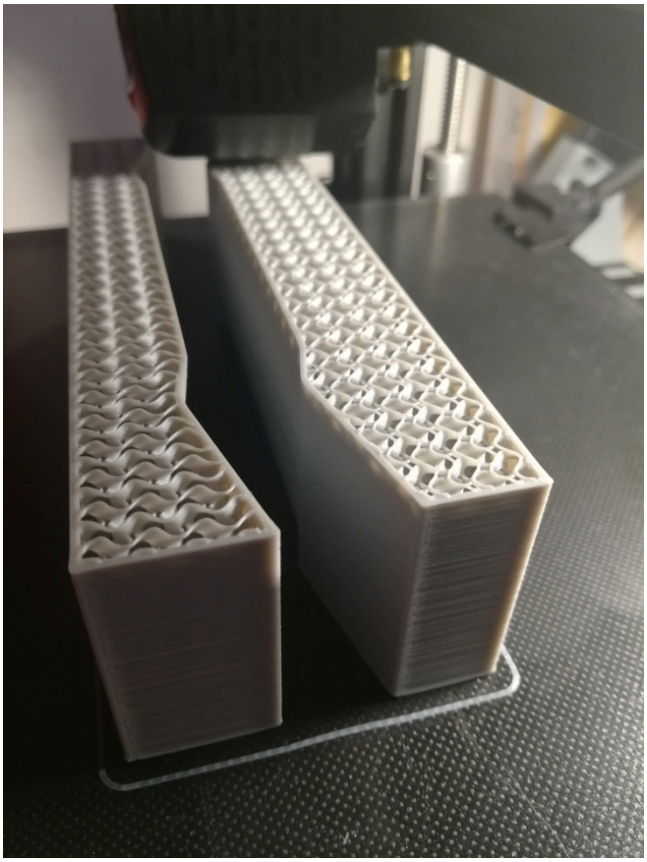
74 *Oregon CNC Router Services.* URL: http://www.oregon-cnc-services.com/gal.html. [2020-12-25]

difficult and even more expensive. For producing the concrete mold, it is essential to manufacture the shape out of a polystyrene block, put it into a box, pour concrete mixture around it and then copy the early made piece with concrete as well.

Another interesting but still quite experimental technique is 3D printing. This new way is interesting for me and I am trying to build such a mold. In a 3D modeling software I created a mold and my friend Petr Zlámal – a student of medicine and an experienced 3D printer, will help me with it. I would like to thank him this way.

Here can be seen the render of my 3D model.

Because of many duties I am not able to build a big and fully functional form. That is why I decided to print just a testing piece to show, how this method works and how the process can look like.



Molds can be installed into a press or used just with clamps. The pressing construction or hydraulic presses (factories) are capable of making more pressure. Clamps do the job as well, but it is harder to achieve a good result. Professionals laminate the boards with a big amount of pressure (40/50 tons). It has never been measured in my shop but I am sure, my equipment does not have such power.

According to Skateboard – How it's made series by the Discovery Channel, uncut deck blanks are taken out of the mold after only 3 hours. I let my product dry at least 8 hours.

4) cutting out the final shape, truck holes

Vohlej vrut: Before taking out the uncut blank the axis is marked. Then the desired paper template is chosen and copied onto the wood. Within this activity attention is paid to the length of the nose and the tail. After that, the shape is cut out using a jig saw. Now, truck holes must be drilled. The axis of the board serves as the "guide line". The correct wheelbase and holes are marked on the wood with a customized "Skate ruler" (that is how I call it) and drilled.

Factory process: Every manufacturer proceeds differently. The company Homegrown skateboards has reference holes in the mold itself which help workers align the uncut blanks in the further process. The equipment is also customized and it is not possible to describe a universal method. The drill press has pegs that fit into the reference holes. Thanks to them, precise truck holes can be drilled. Then, a wooden template is laid onto the blanks and attached with another peg/stick to the blank (peg inserted through truck

holes of each board). This setup serves the worker to cut out the shape on a bandsaw and then rout it on a table router.[75]

Safety: hearing protection and glasses

5) routing the edges and sanding

The last few steps must be executed. There is no difference in this procedure. Edges are still very sharp a has to be rounded off. Firstly, they are softly shrunk with a belt sander and then routed with a small hand router. Now, the deck is almost finished and ready for sanding. Some producers use their own customized tools. According to my opinion an orbital sander with sandpapers (120, 240 grit) is completely sufficient.

Safety: respirator FFP3

6) lacquering, painting and staining

In this chapter following points will be mentioned:

- types of varnishes, wood paints and stains
- how to lacquer and apply these chemical coatings
- brush or a piece of cloth?

Varnishes

The most significant difference can be found in the composition – acrylic and synthetic. Acrylic lacquers are water-based, more ecological, easier to work with and washable. It dries faster. The disadvantage lies in lower durability. This stuff is not as water resistant as synthetic varnishes. These contain solvents which are environmentally-unfriendly and can be harmful to health. The drying time of solvent-based lacquers is more than twice slower. These are also more durable.

The second factor in choosing the right varnish could be the type of surface finish. Lacquers divide into matte, gloss and semi-gloss. Skatedecks which lie on the shelves of skateshops are usually very glossy and shiny. That is the reason I use glossy wood varnishes for my products. The best result I have ever achieved in finishing a skateboard deck was with epoxy resin. It completely fills all gaps and the grain structure and creates a very hard and shiny surface. However the manipulation is quite uneasy, expensive and time-consuming. Since this time I coat my boards only with yacht[76] (marine) varnish which is designed to prevent water from penetrating the wood underneath.

When buying a varnish for the purposes of skateboard making, an exterior substance must be acquired.

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75 *(263) Homegrown Skateboards on Maritime Made – YouTube.* URL: https://www.youtube.com/watch?v=LY3H0z3DpU4&ab_channel=eastlinktv. [2020-12-21]

76 *Different Types of Varnish and Wood Stain and how to use Them | DIY Doctor.* URL: https://www.diydoctor.org.uk/projects/types-of-varnish-and-stain.htm. [2020-12-25]

Wood lacquers can be applied using a spray paint gun, a normal spray can, a piece of cloth or a brush. Spray painting is common in factory processes, but a good-working respirator is necessary. I always used only a brush or an old cloth. The marine varnish is a synthetic lacquer and a thinner is essential if the worker wants to save the brush from drying. That also costs some money. Considering this fact, a piece of an old cloth can be the ideal choice. It is usually free and it can be thrown away after the usage.[77]

Wood paints/colors

Within this small part I am going to talk about only two types of colors for wood. It is impossible to list all types of paints for skateboard production. It varies from the desired design and the intention of the producer.

I have always used **acrylic colors**. These adhere strongly to the veneer, are ecological and can be watered down. The purchase price is also not so high and they are washable, too.

The second type is **solvent-based** paints for screen printing.

Factory paints

A very common way of transferring a design onto a skateboard deck is silk screen printing – a technique based on the color penetrating the silk cloth, oozing through it and being imprinted to the board.

For the production of a silk screen press a frame, silk, photo-emulsion, design printed on a transparent plastic film and solvent-based paint (basic, universal for a wide range of materials) is needed.

The silk stretched in the frame is covered with the photo-emulsion and dried in a dark room. The film with the design is laid onto it and this setup is exposed bright light. The procedure prepares the silk to be washed. Water cleans the area, where the light could not go through the design on the plastic film and creates a hollow place in the silk. Now, paints can ooze through it and be transferred to the skateboard.

Wood staining

- water-based stains – in powder form, must be thinned down with water, longer drying time
- alcohol-based stains – most common, dominate on the market, dry faster

The main reason for why wood workers stain is to protect the product of nature against molds or fungi. Plywood (laminated veneers) is resistant against these natural threats already thanks to the glue. Skateboard manufacturers do not do it to protect the wood. The purpose is modification of the artistic/graphical design of the final product. Nowadays “transition staining” is popular. The worker coats the uncut blank with more stains and spreads/fades the borders with a cloth to make a color transition.

77 *Laky na dřevo: Jaké druhy vybrat?.* URL: https://www.drevostavitel.cz/clanek/laky-na-drevo. [2020-12-25]


78

7) designing

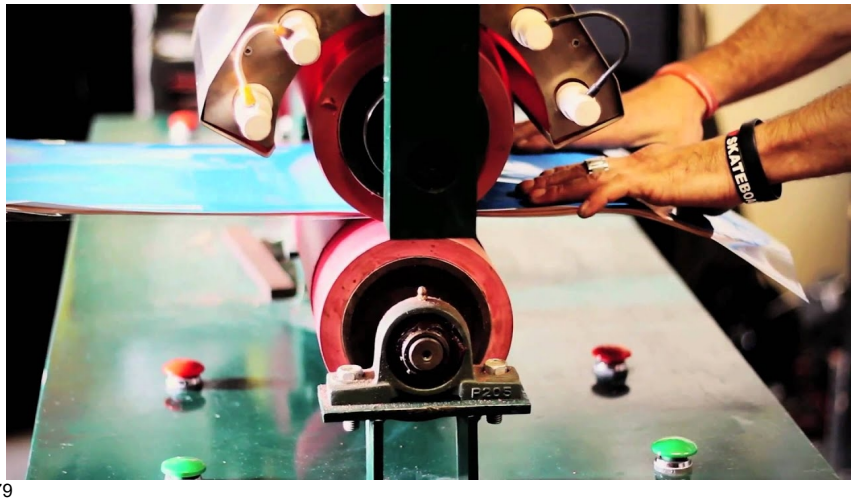
My friend enjoyed painting when she was a child and her passion remained to this day. I always ask her for help when a customer feels desire for a specific design. She always uses acrylic colors and the result is perfect. Acrylate can be coated with a lacquer without damaging the picture.

We also tried burning the graphics with a soldering iron – a DIY version of CNC laser burning. It is the almost the same machine as the CNC router. The only difference is the tool. Routers have a milling cutter and the second appliance burns with a laser.

A couple of times, I experimented with ammonium chloride (also sal ammoniac). It is a white powder which is easily soluble in water. Such liquid can serve as a painting substance using a brush or pen. After that it must be heated and the combination leads to a chemical reaction that burns the wood. Disadvantages – wood soaks it and blurs the image and the extreme heat (flame of a gas cooker or a hot-air gun) delaminates plywood which makes this technique unusable for skateboard building.

I left the most popular method for the last paragaph. It is called heat transfer. A blank plastic foil carries ink printed design. It is laid onto the deck and inserted into heat transfer machine (two silicone cylinders, one is hot). The heat unsticks the graphic and moves it to the wood.

78 *custom - Owl Boards.* URL: https://owlboards.com/custom/. [2020-12-26]



79

Now, the skate deck is complete and ready for mounting trucks, wheels and the griptape.

The plywood/board you could see in the pictures above was made from rotary-cut Canadian maple (acer saccharum) veneer which is hard to get in the Czech Republic. It can be purchased either from the USA or China. I decided to choose the giant Chinese company Alibaba to order two sets of maple veneer.

10. Shopping on Alibaba + problems with customs

The Alibaba website is organized and clear. The search engine lists all the supplies after typing the key word (“skateboard veneer”). Choosing the correct item was not difficult either.

A few years ago, I found the company Dongguan E&R Wood Co., Ltd.. I contacted the sales representative but I was not satisfied with the price for the business purposes back then. When scheduling the plan for my bachelor thesis I remembered and ordered two sets of veneer.

Here is a brief manual how to do so:

- choose the product
- contact the supplier – email/chat
- make an arrangement
- order and pay
- wait for the package

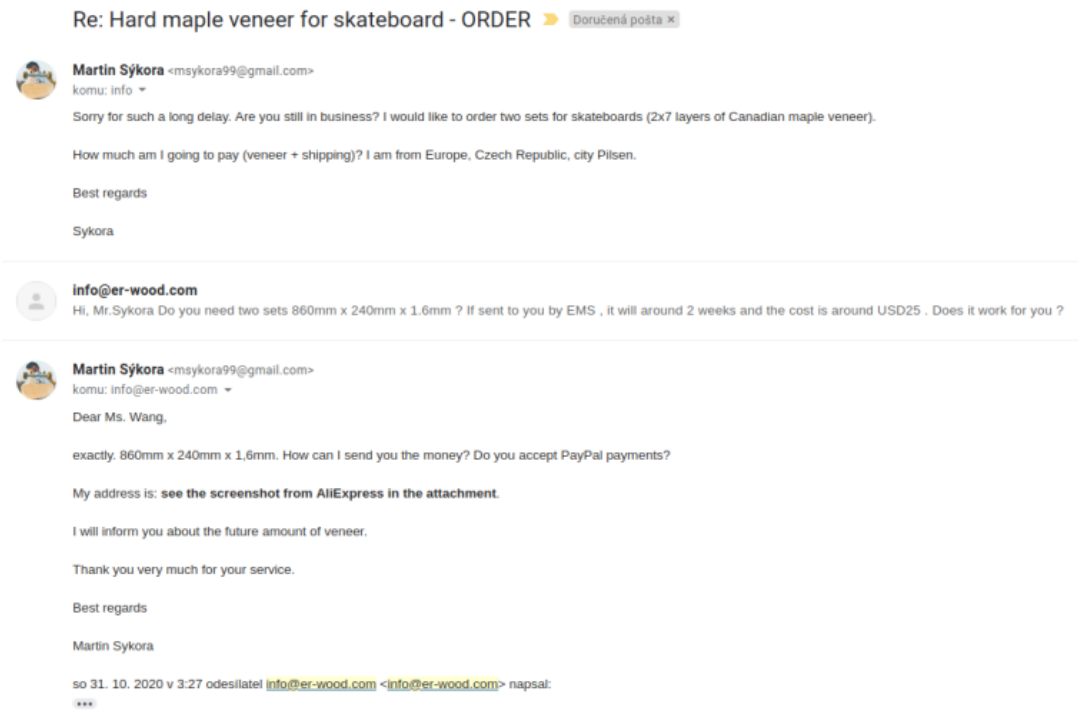
Everything was going smoothly, until the parcel arrived into the Czech Republic. The Czech post should take the goods and deliver them to me. However, the Customs Service did not allow the Czech post to do so and instead of the package, I received a letter explaining the issue. The authority offered me two choices – go to Prague and pick it up or

79 *Heat Transfer application to a Skateboard Deck by Ideally Suited – YouTube.* URL: https://www.youtube.com/watch?v=sY4zqwznieg. [2020-12-26]

empower the Czech post and provide information about payment and purpose of the order.

I did everything I was supposed to do and my parcel arrived within few days. The customs declaration services cost only 103 CZK.

Here is a compilation of screenshots I collected within the duration of the whole delivery and the customs declaration process.



Re: Hard maple veneer for skateboard - ORDER Doručená pošta ×

Martin Sýkora <msykora99@gmail.com>
komu: info

Sorry for such a long delay. Are you still in business? I would like to order two sets for skateboards (2x7 layers of Canadian maple veneer).

How much am I going to pay (veneer + shipping)? I am from Europe, Czech Republic, city Pilsen.

Best regards

Sykora

info@er-wood.com
Hi, Mr.Sykora Do you need two sets 860mm x 240mm x 1.6mm ? If sent to you by EMS , it will around 2 weeks and the cost is around USD25 . Does it work for you ?

Martin Sýkora <msykora99@gmail.com>
komu: info@er-wood.com

Dear Ms. Wang,

exactly. 860mm x 240mm x 1,6mm. How can I send you the money? Do you accept PayPal payments?

My address is: **see the screenshot from AliExpress in the attachment**.

I will inform you about the future amount of veneer.

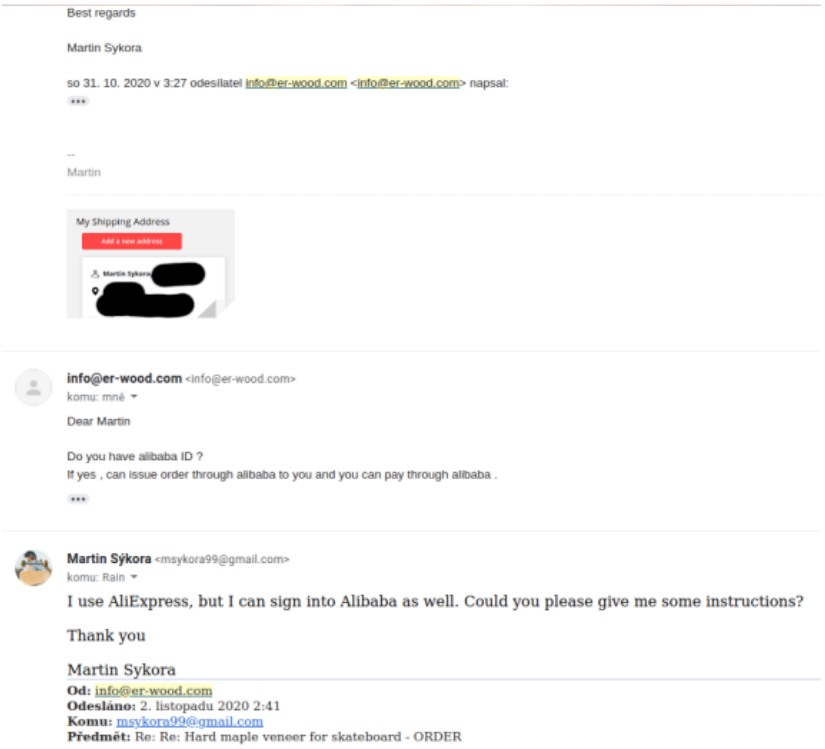
Thank you very much for your service.

Best regards

Martin Sykora

so 31. 10. 2020 v 3:27 odesílatel info@er-wood.com <info@er-wood.com> napsal:

the e-mail communication with the supplier



Best regards

Martin Sykora

so 31. 10. 2020 v 3:27 odesílatel info@er-wood.com <info@er-wood.com> napsal:

Martin

My Shipping Address
Add a new address

info@er-wood.com <info@er-wood.com>
komu: mně

Dear Martin

Do you have alibaba ID ?
If yes , can issue order through alibaba to you and you can pay through alibaba .

Martin Sýkora <msykora99@gmail.com>
komu: Rain

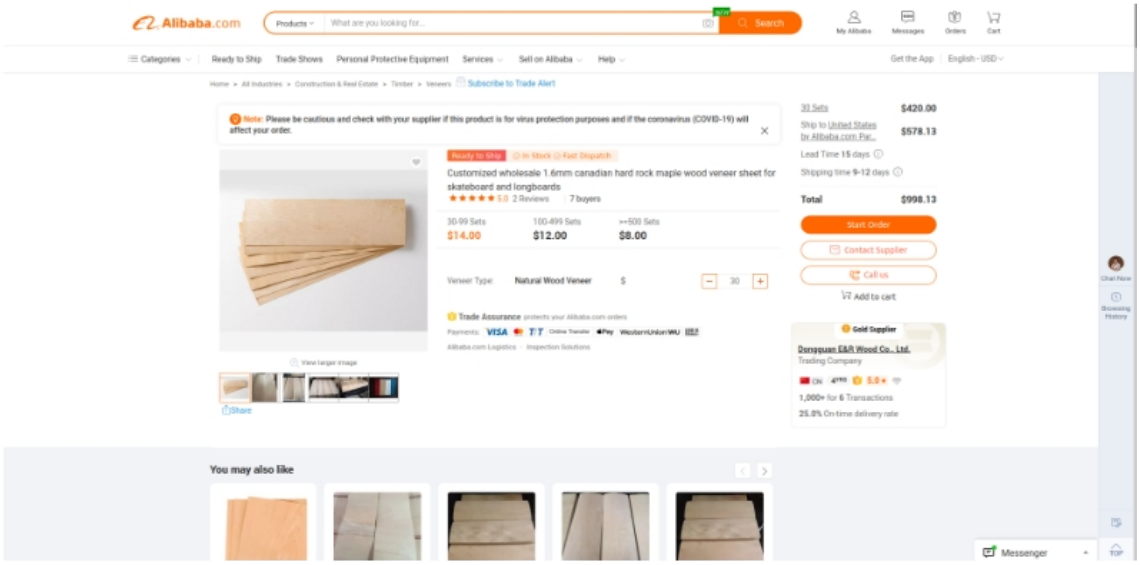
I use AliExpress, but I can sign into Alibaba as well. Could you please give me some instructions?

Thank you

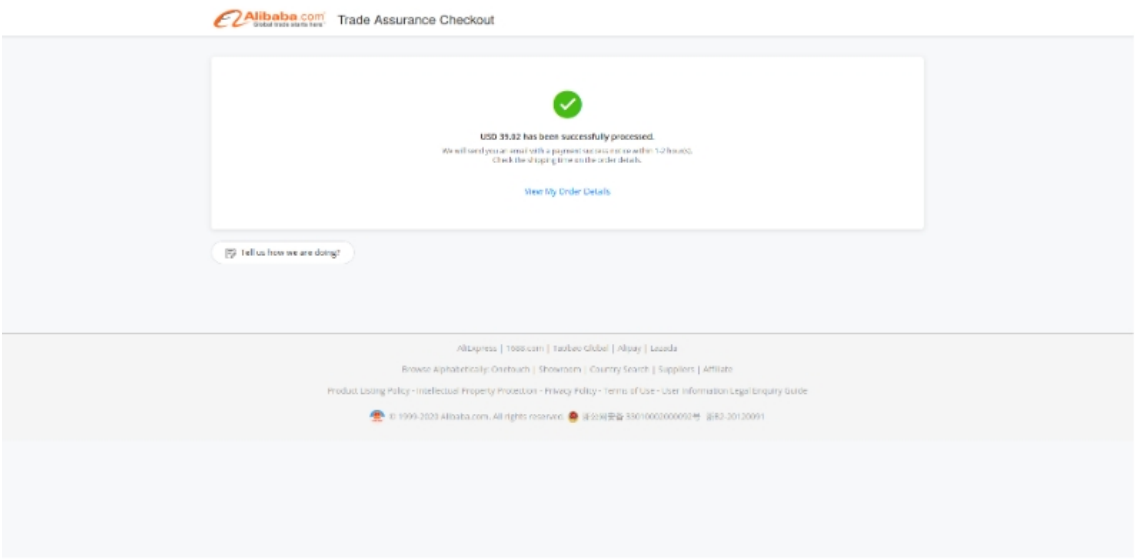
Martin Sykora

Od: info@er-wood.com
Odesláno: 2. listopadu 2020 2:41
Komu: msykora99@gmail.com
Předmět: Re: Re: Hard maple veneer for skateboard - ORDER

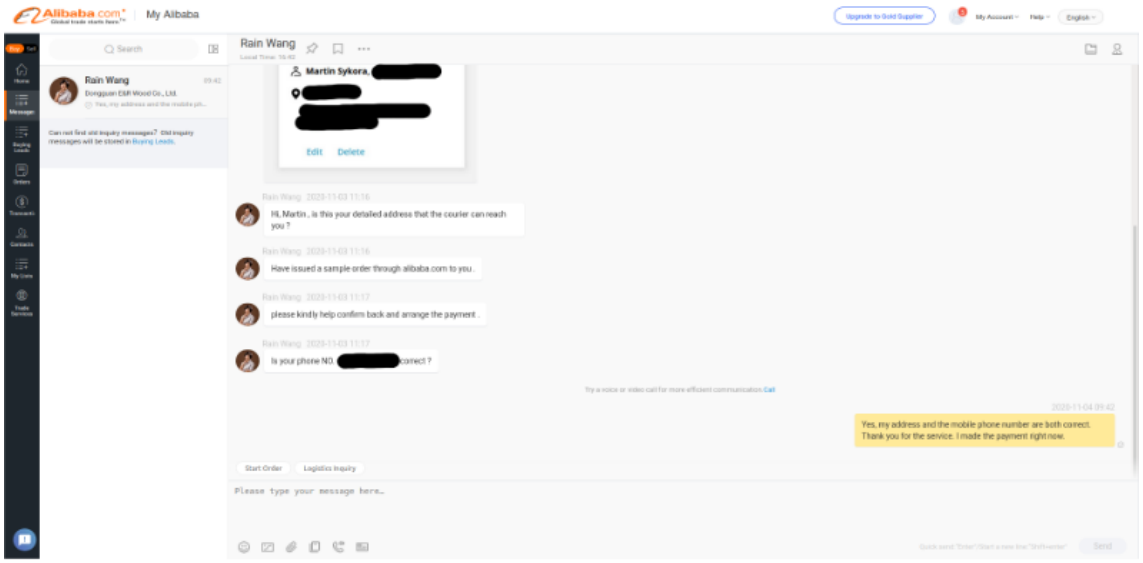
I already communicated with this supplier in previous years. When scheduling the writing plan of the bachelor thesis I remembered and decided to contact the Er-Wood company once again.



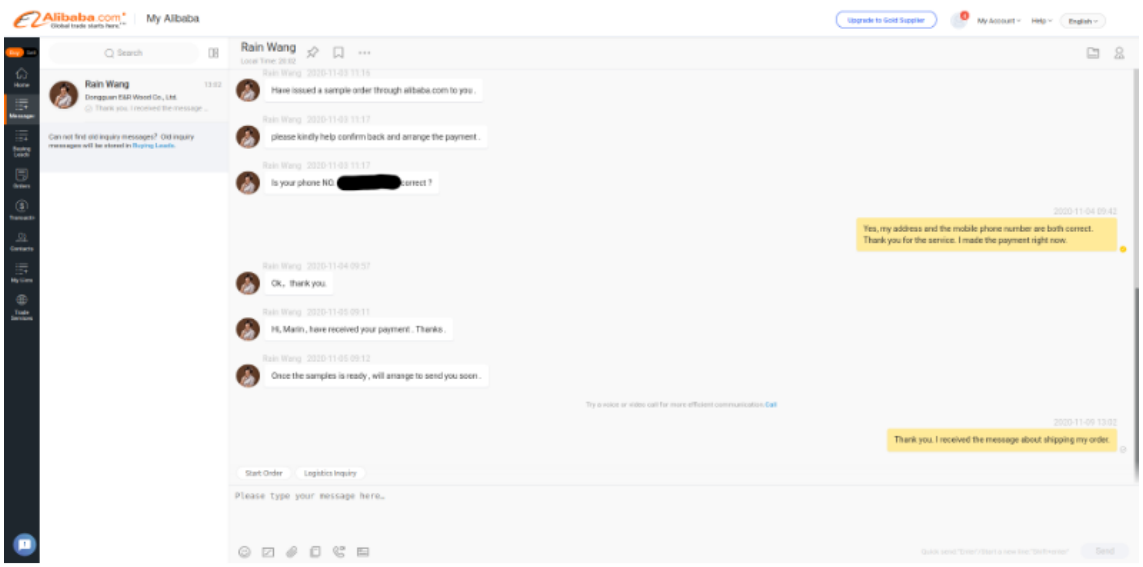
1. selecting the goods
2. ordering & payment



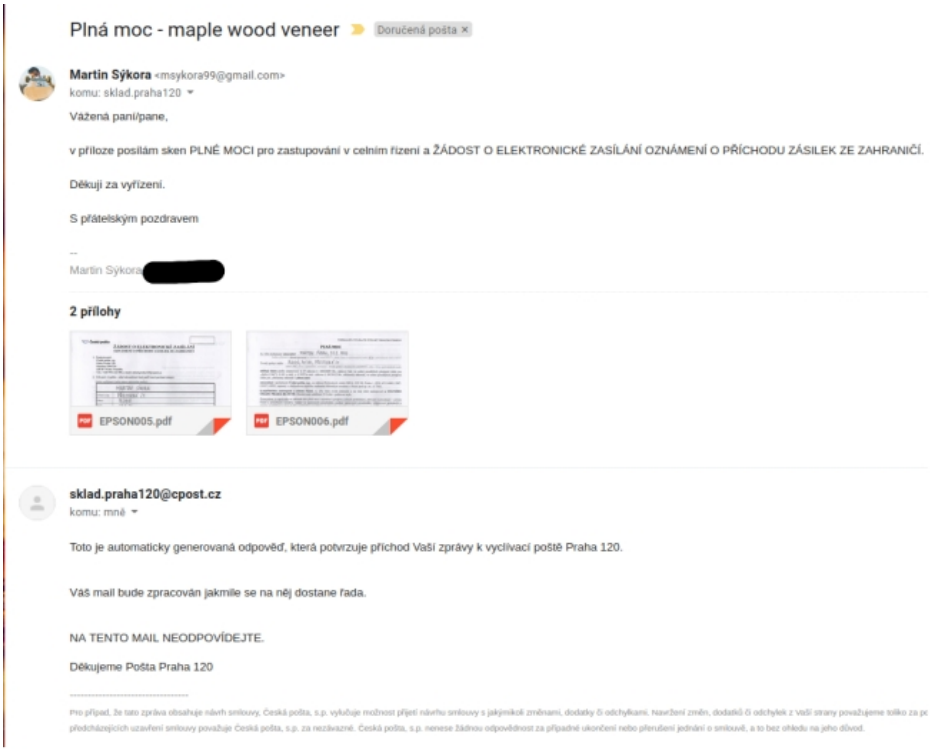
These were the easiest steps for me. The ordering and payment work just the same on Alibaba as on a usual e-shop.



chatting with the supplier



Details have been discussed and clarified via the chatting platform on the Alibaba website.



Plná moc - maple wood veneer Doručená pošta ×

Martin Sýkora <msykora99@gmail.com>
komu: sklad.praha120

Vážená paní/pane,

v příloze posílám sken PLNÉ MOCI pro zastupování v celním řízení a ŽÁDOST O ELEKTRONICKÉ ZASÍLÁNÍ OZNÁMENÍ O PŘÍCHODU ZÁSILEK ZE ZAHRANIČÍ.

Děkuji za vyřízení.

S přátelským pozdravem

--
Martin Sýkora [redacted]

2 přílohy

EPSON005.pdf EPSON006.pdf

sklad.praha120@cpost.cz
komu: mně

Toto je automaticky generovaná odpověď, která potvrzuje příchod Vaší zprávy k vyclívací poště Praha 120.

Váš mail bude zpracován jakmile se na něj dostane řada.

NA TENTO MAIL NEODPOVÍDEJTE.

Děkujeme Pošta Praha 120

Pro případ, že tato zpráva obsahuje návrh smlouvy, Česká pošta, s.p. vylučuje možnost přijetí návrhu smlouvy s jakýmikoli změnami, dodatky či odchylkami. Navržení změn, dodatků či odchylek z vaší strany považujeme totiž za pc
předcházejících uzavření smlouvy považuje Česká pošta, s.p. za neplatné. Česká pošta, s.p. nenese žádnou odpovědnost za případné ukončení nebo přerušení jednání o smlouvě, a to bez ohledu na jeho důvod.

the e-mail communication with the Czech Post

Zásilka - skladové č. [redacted], podací č. [redacted] Doručená pošta ×

sklad.praha120@cpost.cz
komu: mně

Dobrý den

Děkujeme za Váš e-mail.

Zaslaná „Plná moc" byla předána k zaevidování.

Vaše žádost o elektronické zasílání „Oznámení o uložení zásilky ze zahraničí" byla zpracovaná a emailová adresa zaevidovaná.

K celnímu řízení dále doložte (v případě zakoupeného zboží):

- **Prohlášení, že zásilka** (uveďte skladové i podací číslo) **obsahuje zboží pro soukromou potřebu fyzické osoby.**
- **Specifikaci dováženého zboží** (o jaké zboží se jedná, materiál, k jakému použití je určeno).
- **Doklad o druhu a ceně zboží** - faktura s rozpisem zboží, ceny, dopravy (poštovné) a uvedeným prodejcem a kupujícím.
- **Doklad o platbě** (Paypal, výpis z účtu, transakce platební kartou, atp.).

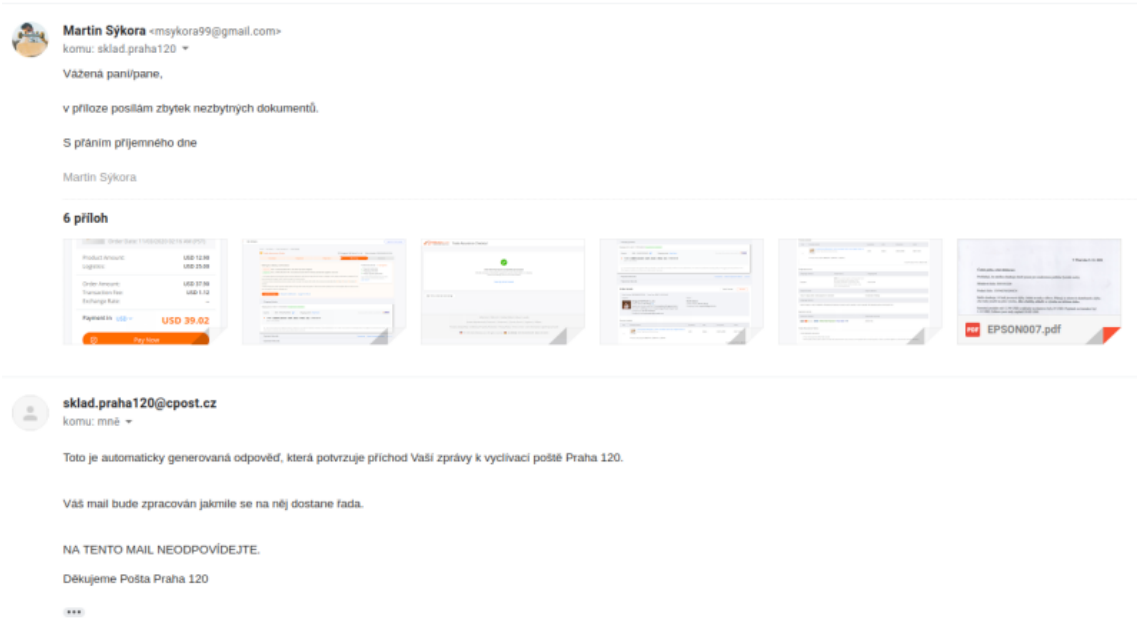
Faktura nebo objednávka musí obsahovat:

- Kupujícího
- Prodávajícího
- Specifikaci zboží + počet kusů
- Hodnotu zboží + měnu
- Výši poštovného

Zásilka [redacted]

UPOZORŇUJEME, že v termínu do 20.12.2020 , je nezbytné dodat požadované podklady, jinak bude zásilka vrácena zpět odesílateli, v případě dispozice odesílatele "Nevracet" (Abandonné) bude zásilka úředně zničena. Tato lhůta může být na základě Vaší písemné žádosti, zaslané **e-mailem** na adresu sklad.praha120@cpost.cz (nejpozději 2 pracovní dny před jejím uplynutím), prodloužena. Vaši žádosti bude vyhověno v souladu s pokyny odesílatele a pokud

Czech post reminded me about depositing the Canadian maple veneer in the customs store in Prague.



Martin Sýkora <msykora99@gmail.com>
komu: sklad.praha120

Vážená paní/pane,

v příloze posílám zbytek nezbytných dokumentů.

S přáním příjemného dne

Martin Sýkora

6 příloh

EPSON007.pdf

sklad.praha120@cpost.cz
komu: mně

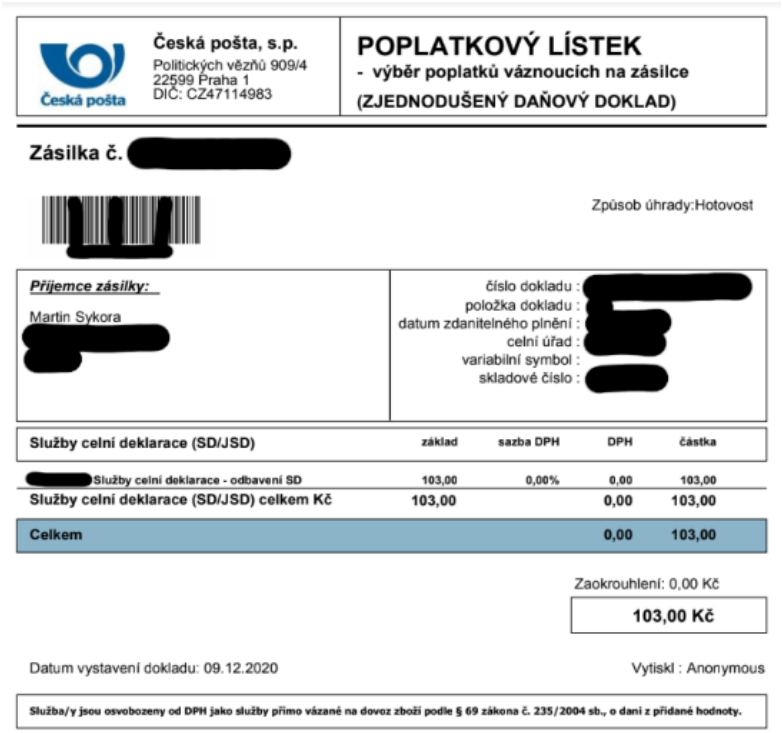
Toto je automaticky generovaná odpověď, která potvrzuje příchod Vaší zprávy k vyclívací poště Praha 120.

Váš mail bude zpracován jakmile se na něj dostane řada.

NA TENTO MAIL NEODPOVÍDEJTE.

Děkujeme Pošta Praha 120

1. the e-mail communication with the Czech Post
2. the fee invoice



Česká pošta, s.p.
Politických vězňů 909/4
22599 Praha 1
DIČ: CZ47114983

POPLATKOVÝ LÍSTEK
- výběr poplatků váznoucích na zásilce
(ZJEDNODUŠENÝ DAŇOVÝ DOKLAD)

Zásilka č. [redacted]

Způsob úhrady:Hotovost

Příjemce zásilky:
Martin Sykora
[redacted]

číslo dokladu : [redacted]
položka dokladu :
datum zdanitelného plnění :
celní úřad :
variabilní symbol :
skladové číslo :

Služby celní deklarace (SD/JSD)	základ	sazba DPH	DPH	částka
[redacted] Služby celní deklarace - odbavení SD	103,00	0,00%	0,00	103,00
Služby celní deklarace (SD/JSD) celkem Kč	**103,00**		**0,00**	**103,00**
Celkem			**0,00**	**103,00**

Zaokrouhlení: 0,00 Kč

103,00 Kč

Datum vystavení dokladu: 09.12.2020

Vytiskl : Anonymous

Služba/y jsou osvobozeny od DPH jako služby přímo vázané na dovoz zboží podle § 69 zákona č. 235/2004 sb., o dani z přidané hodnoty.

I had to empower the Czech post to pick up my parcel from the customs store. Evidence of buying the veneer and my letter of attorney was necessary. The customs declaration services cost 103 CZK.

11. Gallery – the manufacturing process

On the following pages a gallery with pictures describing the manufacturing process can be seen.

I did not have to state any sources, because the images have been taken by me with my own camera in my workshop. Thank you for understanding.

1. 5 sheets with longitudinal arrangement of fibres
2. 2 sheets with cross grain

Every typical skate deck consists of 7 sheets of veneer. 5 of them have the longitudinal arrangement of fibres and 2 with cross grain.

coating layers with glue

For coating the sheets with glue I am using a foam paint roller. On one deck 0,5 l of glue is spent. I coat every layer (except from the face veneers) from both sides.

stacking

Precision in stacking is very important. Precisely stacked veneers help with future measuring of truck holes and deck dimensions.

putting into press

I always put a sheet of camping mat under the wood layers. It smooths any imperfection of the concrete mold.

pressing

When tightening the “bolts”, the two parts of the mold get together and press the set of veneer sheets into the desired shape. The tighter the press, the better the shape of the plywood.

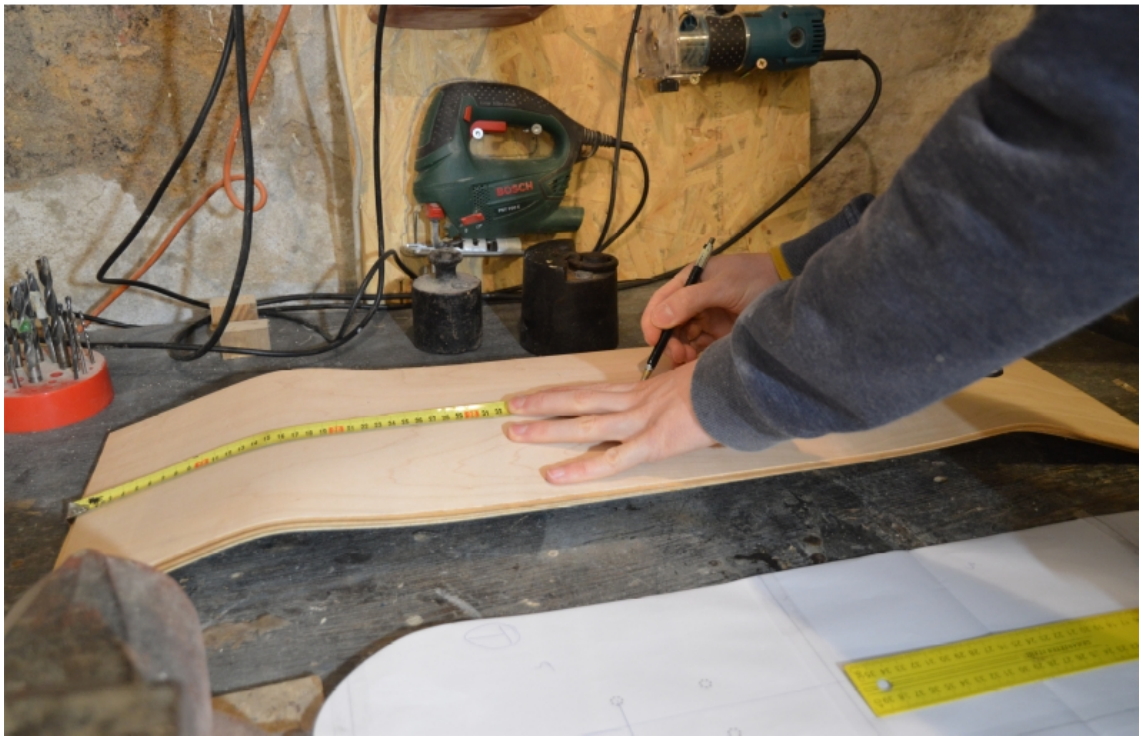
the excess glue flows out

This flowing out of the glue is a sign of a good pressing technique and sufficient pressure.

1. taking out the uncut blank
2. marking the axis of the uncut blank

The lower part of the mold has a vertical center line on itself. That helps me determine the axis of the uncut blank.

1. drawing the longitudinal axis/line of the uncut blank
2. marking the transverse axis of the uncut blank

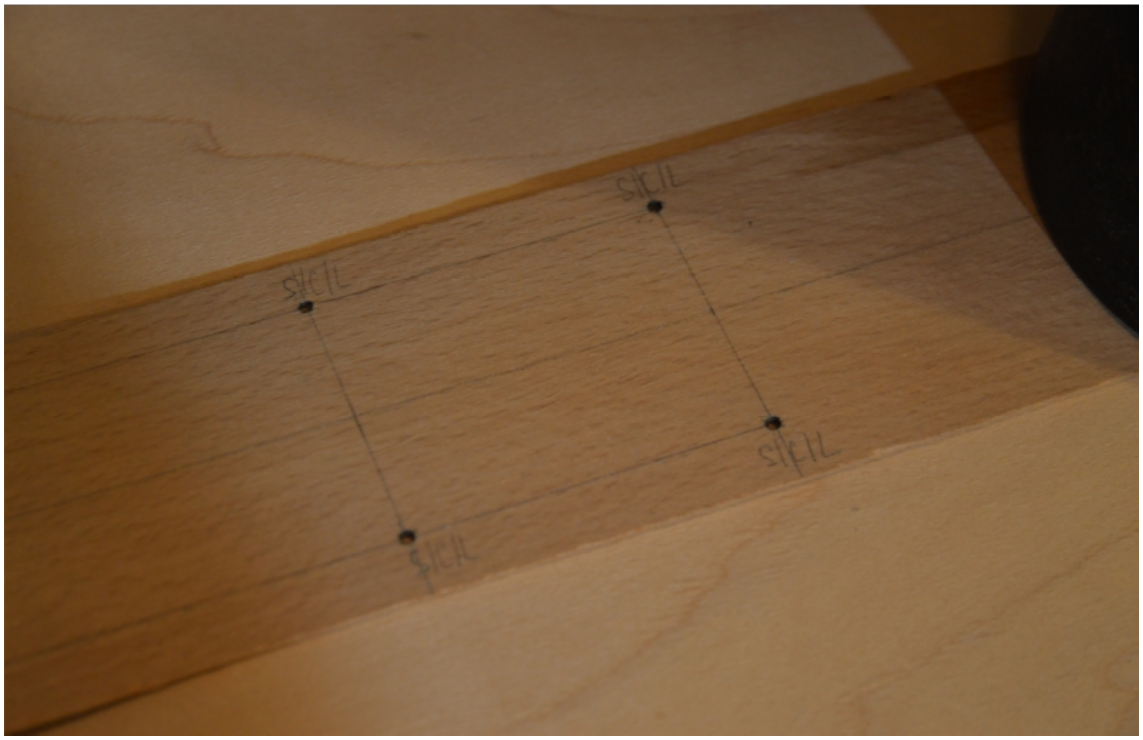


In this step I am drawing the longitudinal and the transverse axis of the blank.

1. drawing the transverse axis/line of the uncut blank
2. the final cross with the point of intersection

This is how the final intersection cross looks like.

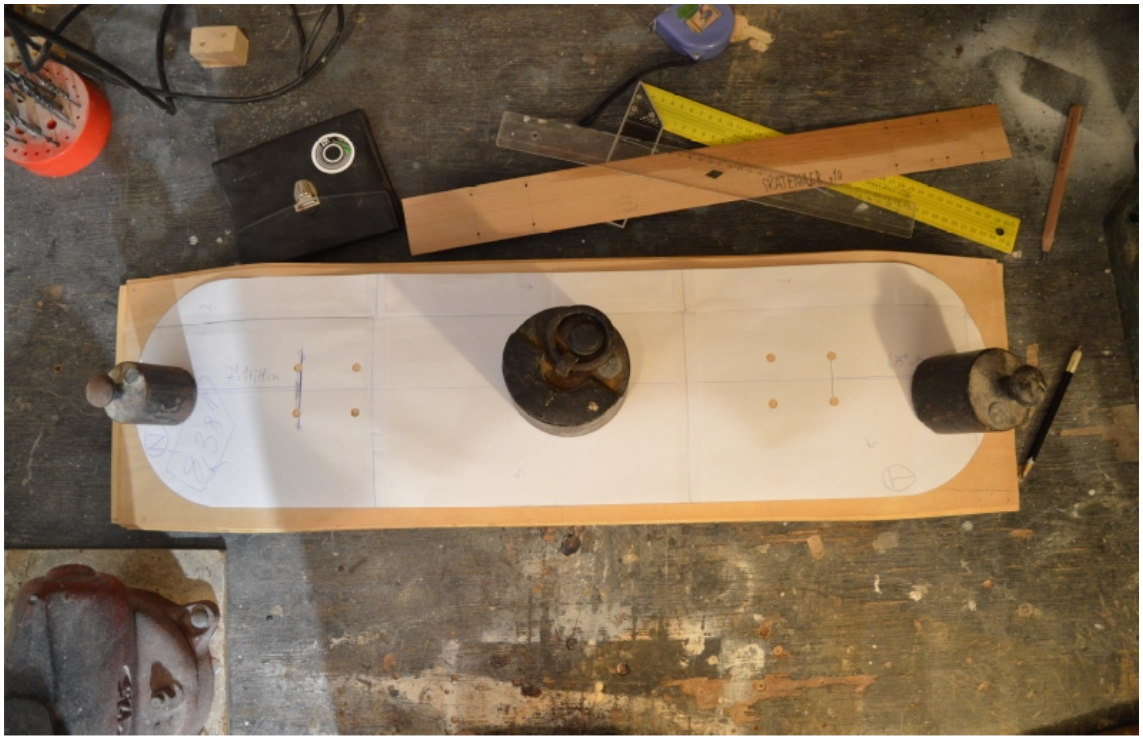
marking the truck holes



Marking the truck holes is the most time consuming part. My custom made template serves the purpose, but the best option would be to have predrilled holes in the mold itself.

1. connecting two outer truck holes
2. measuring the length of the nose and the tail

Here I am drawing marks on to the uncut blank according to precise dimensions of each part of a skateboard.



aligning the paper template

Precise marks are essential but without correct centering of the template it is pointless.

1. copying the shape onto the uncut blank
2. cutting out the board

For cutting out the final shape a jig saw or a band saw are the best performing tools.

1. the cut out deck
2. sanding and shrinking the sharp edges

The sharp edges must be shrunk before routing, otherwise the milling tool tends to tear out the wood.

1. drilling truck holes
2. routing the edges

Holes for bolts for mounting the trucks must be drilled before the final assembling process. The second picture shows the routing using a hand milling machine with a radial cutter.

sanding all surfaces

One of the last steps is sanding which creates a smooth surface. A vibrating or an orbital sander is the best performing machine.

smoothing remaining imperfections

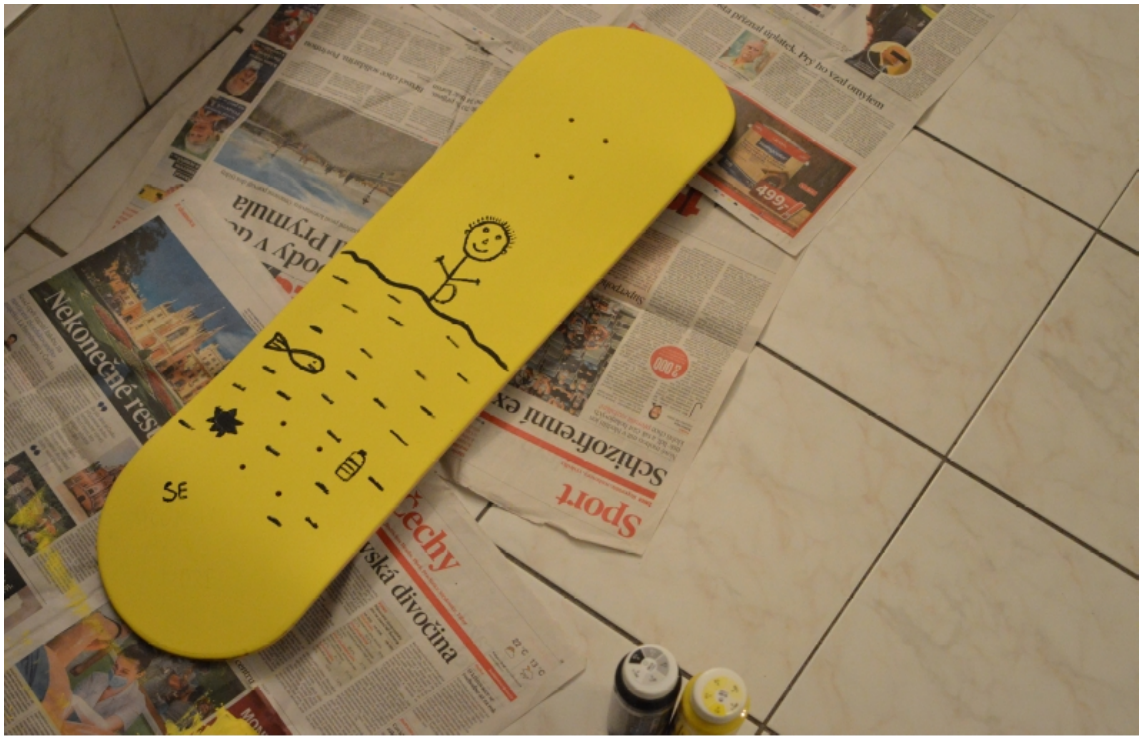
Even a high quality sander does not remove all imperfections of the wood. In this step I am making the final touches with hand sanding.

1. first coat of paint
2. sanding

For coating I use a foam roller. The material is built up of small air bubbles. When the worker presses while painting, the air is leaking out into the color and that creates a rough and unusual but quite interesting type of surface.

1. burning the width and other information onto the top
2. applying the second coat of paint

The wood burning looks like an additional/unnecessary step. The opposite is the truth. All street skateboards should inform the rider about its width and the production place.



1. creating the graphics
2. lacquering using the yacht varnish

The yacht varnish is a suitable lacquer because of its water resistance. It is designed to protect boats against water. An occasional rain or puddle should be no problem for the layer of the yacht varnish.

12. Conclusion

My bachelor thesis is reaching its end, therefore let me summarize it briefly.

The first part is clear. It is very important to know the history in order to understand the upcoming chapters.

In the early version of the writing schedule I wanted to state the information about production of skateboards in front of the processing of veneer. I realized it would not make any sense. The principal is same – 1. understand basics; 2. further education.

Technical but still theoretical sections are behind and now the practical part comes – 1. supplying veneer; 2. manufacturing.

Normally it is not possible to order sets of veneer just for two skateboards. Fortunately Ms Rain Wang I communicated with offered me samples. I had to promise I will let her know about the amount of veneer I will be ordering in the future. I think I am not going to make any deals with them any more. It was just an experiment and useful experience, too. I would consider the opportunity in case of starting a bigger and more serious business.

Before I had some basic knowledge but thanks to the writing this piece of work I greatly educated myself in history of skateboarding and in the veneer processing methods.

It was not easy to find adequate literature either. In the Education and Research Library of Pilsener Region only:

Příručka pro překližkáře by Spirit V. and Skateboarding by Martin Karas and Jaroslav Kučera. I actually did not use these titles much. The content did not match my needs.

The internet was the richest source. The historical part consists mostly of information paraphrased from the book Brooke, M., 2005. The Concrete Wave. Toronto: Warwick Publ. I borrowed it in the Internet Archive – a non-profit online library – https://archive.org/

The archive of old Skateboarder Magazines is available on:
Skateboarder Magazine Archives 1964-1979 | *Transworld SKATEboarding.* URL: https://skateboarding.transworld.net/skateboarder-magazine-archives/. [2020-12-30]

The Drápela 1980 guided me through the veneer-processing methods.

The last source I would like to mention is 1977. Woodveneer : logselection, cutting, and drying. U.S. Dep. Agrie, Tech. Bull. No.1577, p. 137. I have found this piece online and it helped me with the description of wood veneer production.

The experiment

For my thesis a bit different production method was chosen. I always made the length of the nose and the tail just by guesstimate. This deck has precise dimensions (nose, tail and wheelbase) based on careful work with the paper template and good measuring technique. The best to do it would be having an almost finished (with unrouted edges) board which would be lied down onto the uncut blank and cut out using the hand router with a straight bearing milling tool. The result looks similar to my other products. It has a slightly shorter tail. That means it should have a better pop. The shorter the tail, the higher

gets the nose while popping and the bigger/higher can the skateboard go when performing a trick.
Another interesting fact – when I step on the upturned deck I can feel, it is much stiffer than plywood made out of ash wood. It is also thinner thanks to the right thickness of individual layers.
The production was successful. Now the stress test will show the durability of this new skateboard deck.

The original idea was to insert pictures of some tricks the rider attempted to do in the skatepark in Doudlevce – Pilsen. Because of the unfavorable COVID-19 situation, the skatepark is closed. The Pilsener streets became a suitable alternative:

I did not expose the board any extreme conditions. I simply gave it away. My brother and some of his friends tested it in everyday “skatelife” situations. It survived with no problems. Even after “ollieing” down 8 stairs no signs of cracking or chipping of are noticeable.

From my point of view, there is only one difference between the beech and the Canadian maple wood deck – the sound of the pop. Popping on the maple skateboard has a more resonant, ringing and stiffer sound. When the beech deck is popped, it sounds like it all vibrated in the moment when touching the concrete ground. The maple board jumps up with a fresh and ringing pop. According to my opinion other properties are the same – the stiffness and even the look of the wood structure.

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14. Abstract

The bachelor thesis The history of skateboarding and the production of skateboards in connection with the processing of veneer in the USA is divided into two main parts. The first one talks about the history of skateboarding. It is very important to read it carefully in order to understand the second part of the work.

The second part is rather descriptive and includes technical information about the woodworking industry, production of skateboards and other branches that are connected with this topic.

Skateboarding was founded by young American generation as a leisure activity and throughout time it developed into an extreme sport / art or lifestyle. Many people do it for living. Somebody is a professional skateboarder who participates in contests. The sport is becoming more and more popular and winners get more and more price money. Someone is running a skateboard business and earns money this way. Everything is possible. An original idea is the key factor of success.

The thesis should not only help me finish the studies at the Faculty of Philosophy and Arts. It also conducts a survey of a few years of my life, the inventions that have been created and knowledge I gained within the time period.

The 11th chapter consists of pictures showing the whole production process of one skateboard deck. Specialized tools (jigsaw, vibrating sander, router...etc) are necessary to build a quality board. A considerable amount of money and hundreds of hours were invested into the Vohlej vrut project and this bachelor thesis is one of its biggest results.

15. Resumé

Ve své bakalářské práci *Historie skateboardingu a výroba skateboardů v souvislosti se zpracováním dýhy v USA* popisuji a shrnuji veškeré své znalosti ohledně skateboardingu, které jsem za posledních několik let nasbíral.

Mé dílo se skládá ze dvou hlavních částí – teoretické a praktické, přičemž ta praktická má ještě dvě podkapitoly – výroba dýhy v USA a samotná produkce skateboardů.

Část teoretická se věnuje především historii tohoto sportu/umění/životního stylu. Vždy jsem považoval historické úvody různých prezentací nebo referátů za nadbytečné a nepříliš zábavné. Až díky vlastní tvorbě jsem však pochopil, že dějiny jsou pro pochopení čehokoliv naprosto zásadní. Doporučuji tedy této části věnovat maximální pozornost. Veškeré komponenty moderních kompletních skateboardů musely projít sáhodlouhým vývojem, který jejich vynálezce stál nemalé úsilí. Jenom díky historii je možné dojít uvědomění, proč se dnešní desky lisují jako překližky a proč současná kolečka pískají při powerslidu.

V praktických kapitolách druhé poloviny textu jsou detailně popsány principy výroby dýhy i skateboardových desek. Ohledně produkce skateboardů jsem se zaměřil pouze na dřevěné desky. Kdybych se stejně detailně věnoval i dalším komponentům, pak by délka textu značně překročila doporučený rozsah práce.