

The stories of
SBB-Hauptwerkstätten

0.

SBB Werkstätte

The aim of this chapter/book is to explore the site of SBB Hauptwerkstätte in Zurich in a much broader approach. In addition to the research about Jeff Wall and a text from the art historian T.J. Clark about “la peinture de la vie moderne”, which were the starting point of the research, is to bring the industrial site of the Werkstätte in relation to far more critical, political, social and cultural topics. Furthermore, the goal is to bring those insights in combination with the artwork of Wall and Clark, trying to find a way of adaption, translation and a language of their methods and bring it to an architectural realm. Thus, the result of the research will generate a personal position and end with a speculative piece of artwork, that should be able to tell all about te explored stories that are important for the further steps. Out of the research phase will emerge an architectural project.

1.0 Chimney Story

First visit at SBB Hauptwerkstätte



“ (...) das Maschinenhaus und der Aufnahmeraum hatten ein rundes Haubendach nach Art der im Renaissancestil erbauten Kapellen, und der Schlot darauf, aus schwarzen und roten Ziegeln erbaut, glich einer Mosaikspirale.”

Pictures from top:
SBB Archive, SBB Hauptwerkstätte:
Radsatzaufarbeitung (Dreherei), Schmiede,
Spenglerei (1910) mit Freiluftlager.

1.1

SBB Hauptwerkstätte 1910

SBB main workshop contains of a main wagon hall, maintenance, wheelset reconditioning (lathe shop), forge, tinsmith's shop (1910) with open-air storage, central heating station, main offices and storage, a restaurant, wood storage and drying building and so on.



A first workshop was opened in 1850 near Zurich's main train station. The location of the main Zurich workshop was originally planned in Dietikon in 1898, but difficulties in acquiring land led to a relocation to Altstetten. The administration building with a magazine was built along Hohlstrasse in 1905. In 1910 and 1911, the welfare house was built next door with a large dining room for the workers on the first floor and shower cubicles and bathrooms in the basement; the construction costs amounted to 7.5 million Swiss francs. The building of the former lumber drying plant formed another part of the street facade since 1909. The production buildings from 1910 to 1919 consisted of a painting workshop, an inspection building for wagon maintenance and a turning shop. The HW was continuously extended structurally, for example the traction unit department Hall IX was built in 1953, the wagon department Hall 3 in 1963, the heating center in 1967-1973, the traction unit department Hall X in 1967 and the apprentice workshop in 1972.



Every site, every building, every construction part tells a story. While time passes, not only society but also technology are changing constantly. So do the needs of culture, society and economy. It leaves behind a layered surrounding of different through time transformed ensemble of a mix between past and presence and also leaves a space for speculation of a certain future.

1.2

Invention of steam-engine and railway

new perspective of world, time, movement

Smoke



Die tierische Erschöpfung der Zugpferde, welche bis anhin die zurückgelegten Distanzen fühlbar machten, fällt nun als Gradmesser des Reisens weg. Der Raum scheint zu schrumpfen, sich im Takt der Motoren zusammenzuschnurren. Doch es dauert nicht lange, bis sich die Wahrnehmung umkehrt: die mechanische Gleichförmigkeit wird (...) die neue Natur, der gegenüber die Natur der Zugtiere als gefährliches Chaos erscheint.

Doch dann geschieht auch etwas Wunderbares. Die eintönige Landschaft beginnt zu tanzen, die Geschwindigkeit bildet ein Panorama, der Vordergrund verschwindet, Weite wird sichtbar. Jedenfalls für die, welche am Fenster sitzen. Und davon gibt es in der ersten Klasse mehr als in der dritten und vierten – sofern letztere überhaupt in einem überdachten Waggon zu sitzen kommen.



(...) der mit solcher Geschwindigkeit dahineilt wie ein Schienengeis unter einem mit vollem Dampfe dahinrollenden Zuge; darüber hinaus war noch immer nichts zu sehen.

“Die Hochöfen und Koksöfen in der Ferne waren mit der Morgendämmerung erblichen. Nur die Dampfausströmung der Pumpe arbeitete fort mit ihrem lauten, langen Atemzug, dem Atem eines Ungeheuers, dessen grauen Dunst er jetzt zu unterscheiden vermochte, und das durch nichts gesättigt werden konnte.”

“Not only the sense of time, but also the whole world view was turned upside down in the technical age, and with its bold constructions and its vivid mechanics, the railroad became the epitome of this new era. While the 18th century understood progress in ester line as the refinement of morals and the triumph of freedom and equality, in the 19th century one thinks in this context of the perfection of technology. The spread of the technicist worldview is closely connected with the history of the railroad.”

Text 1
A. Balthasar, Zug um Zug: Eine Technikgeschichte der Schweizer Eisenbahn, 1993.
Text 2
W. Schivelbusch, „Eintritt in die Stadt: Der Bahnhof, 1977.
Text 3
Emile Zola, Germinal, 1885.

1.2.1

The forge and the modern steam hammer



Phot. H. Nyffel. Die neuen Reparaturwerkstätten der S. B. B.: Interieur aus der Schmiede, moderner Dampfhammer (Bätz 750 kg, Schlagkraft mehrere tausend kg).



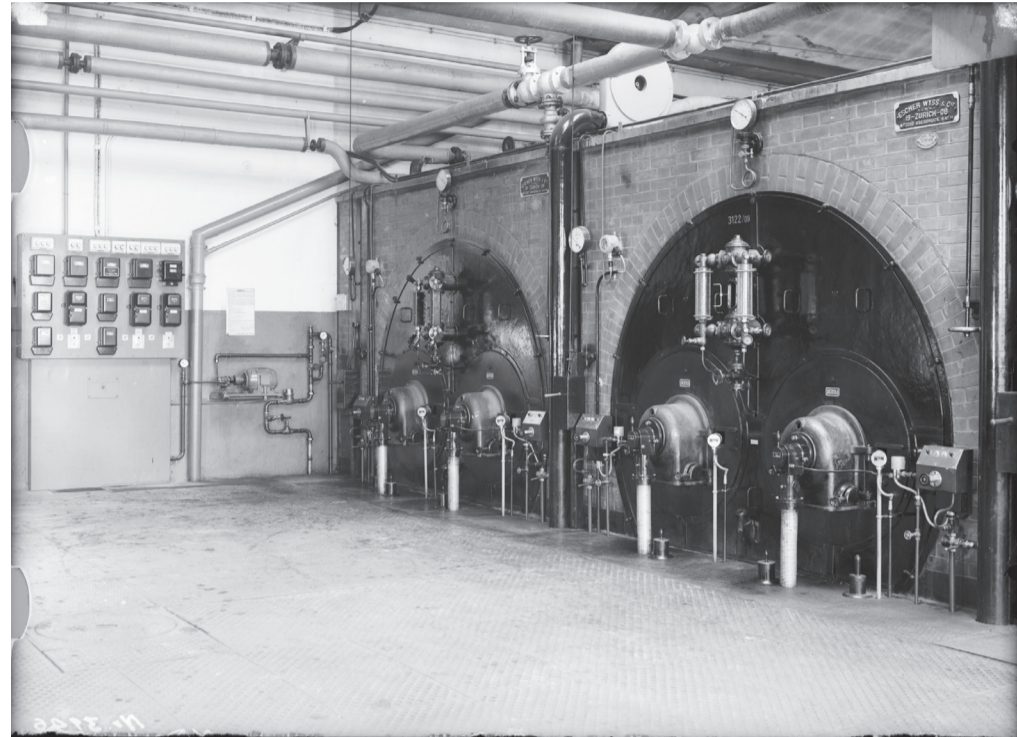
Phot. H. Nyffel. Die neuen Reparaturwerkstätten der S. B. B.: Schmiede, Totalansicht.

„Large is also the forge in this workshop complex. The mighty forges are leaned against both long sides, while the machine tools, steam hammers, rotary cranes, etc. have found their place inside the hall. A steam hammer of the latest design attracts lively interest ... The wide-span skylight roof construction of the forge also attracted attention. The large glazing of the gable facades ensured good lighting of the workplaces.”

1.2.2

Das Kesselhaus [ref. C.1]

comment

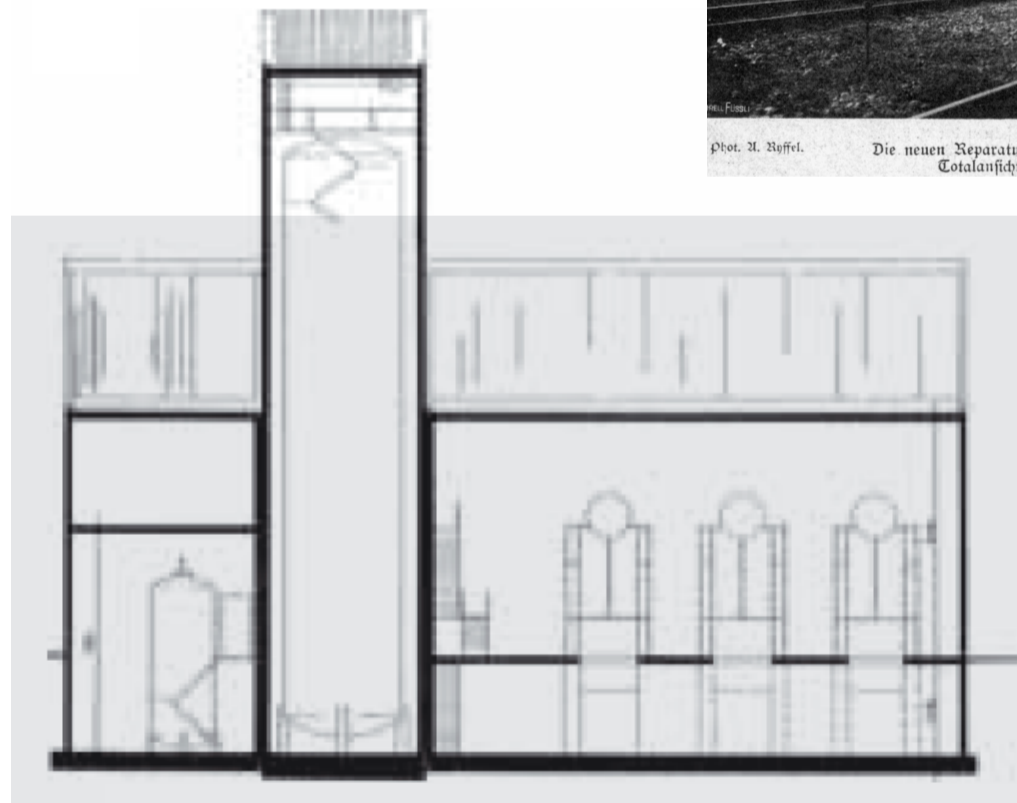


Heizkessel Fabrikat Escher Wyss der Werkstaette Zuerich

Heating center with hot water system contained of: Three radiation boilers, each with a capacity of 7.0 MW, operating pressure 1.3 N/mm² (13 atu), designed for temporary maintenance-free operation, including 1 boiler equipped for oil and waste firing. One hot water tank, 150 m³ capacity, 1.3 N/mm², water temperature 150-180°C. One electric boiler 6,0 MW, 15kV, 16 2/3 Hz for utilization of surplus energy in summer months. Steam pressure 0.8 N/mm² (8 atu). Little water in the boiler. Pump lifts the water and rains it over the electrodes. Automatic regulation to constant pressure. Water is made slightly alkaline by adding trisodium phosphate to make it conduct better.



Phot. M. Steffl. Die neuen Reparaturwerkstätten der S. B. B.: Gesamtansicht gegen Norden.



" (...) a group of low buildings, from the center of which rose the silhouette of a factory chimney; a glow of light penetrated from the few dirty windows; outside hung from the beam five or six gloomy lanterns, whose blackened timbers were strung together to form huge scaffolds; from this fantastic apparition, bathed in night and smoke, a single voice rose: the loud and long breath of a steam emission that could not be seen."

Text 1
SBB - Spezialinventar, 2005
Picture 1 and 2
Boiler house image and section

1.2.2.1

A Symbol of victory of industrialisation [ref. C.1]



Hauptwerkstätte: Heizzentrale, Westfassade (Foto OB)

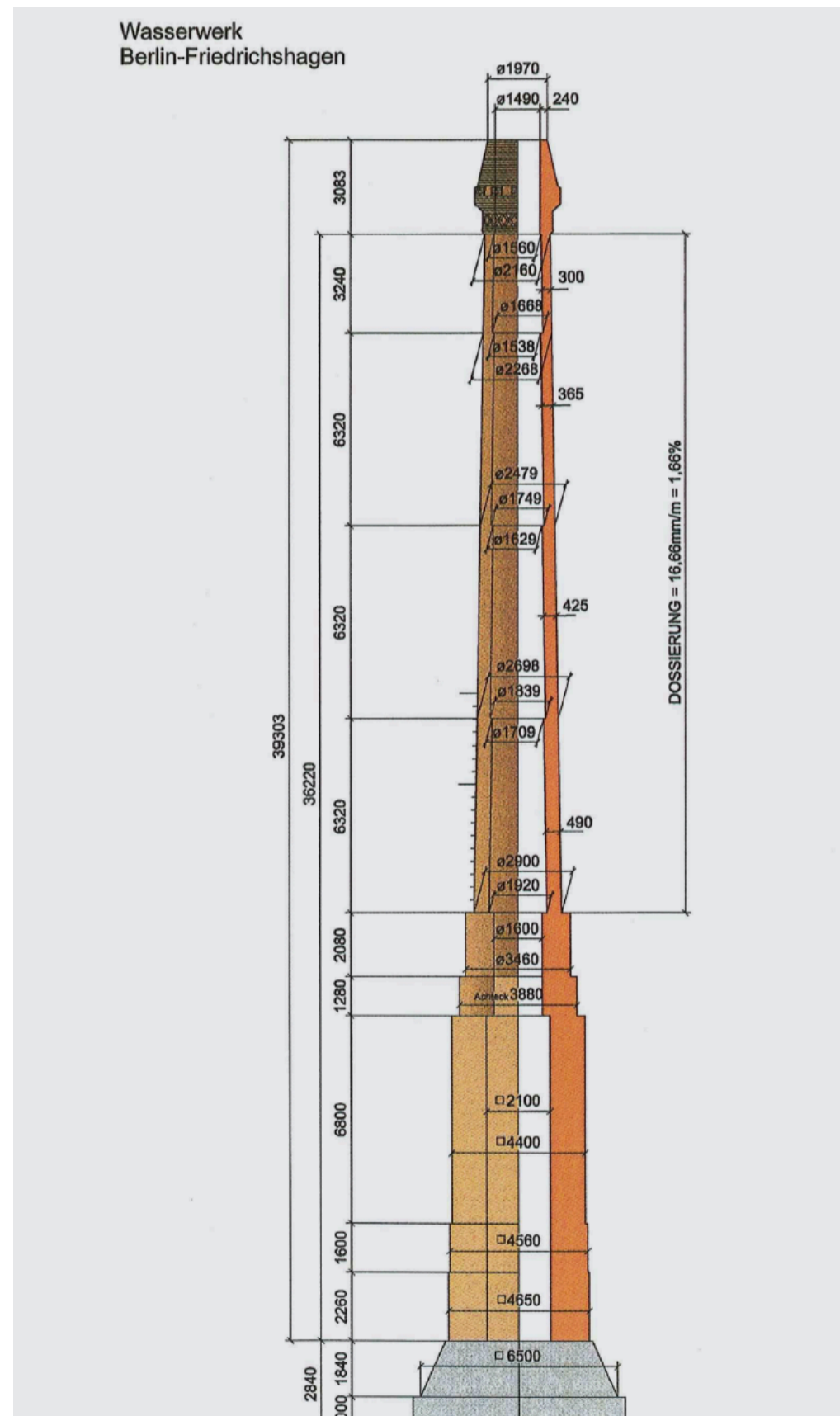
" (...) seemed to him, with its low brick buildings, its chimney rising like a its low brick buildings, its vent towering like a threatening horn, it seemed to have the ominous appearance of a greedy beast of prey that was squatting to devour the world. (...) A suddenly opened door allowed him to see the firing of the steam generators in bright light. He now explained everything to himself, even the steam discharge of the pump, this loud, long, incessant breathing, which was, as it were, the slimy breath of the monster."



Hauptwerkstätte: Schornstein des alten Kesselhauses (SBB Archiv HWS 1908)

1.2.2.1.1 Boy Falls From Tree [ref. C.1]

comment



1.2.2.1.2 Revival of Symbols



Al the chimneys dissappeared, the courtyard empty, life and character of the site got a bit lost in time..?

As the chimneys back in times of industrialisation and with Jeff Wall's approach of bringing topics into the realm of arts by combining past and present - how could SBB Werkstätten can become a symbol again? Through architecture? What elements need to be re-introduced to re-establish the character of the site?

Should it be kept, maintained?

“A chimney is not so different from a tree or a mast; the shape and consistency of a trail of smoke can be taken up in other, stronger traces – the edge of a reflection or the body of a cloud. The factory is a minor note, and the smoke serves to provoke various analogies – between smoke and paint, smoke and cloud, cloud and water – all of them guaranteeing the scene’s coherence. The chimneys, in other words, are made part of landscape as Monet imagined it. And landscape, for Monet as for many other painters in the later nineteenth century, was the one genre left.”

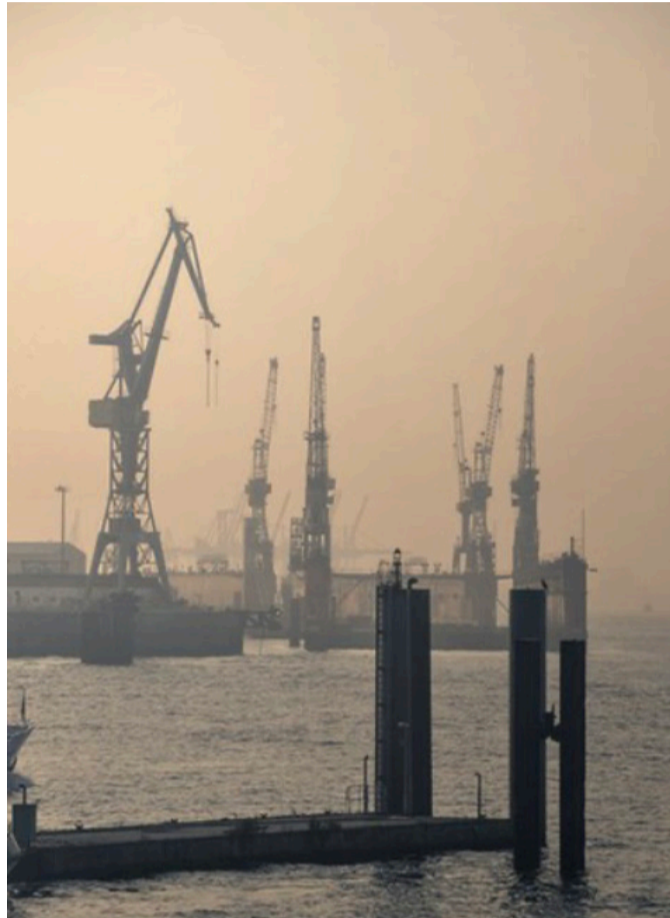
**Meaning of symbols
(today)? reconstruct?
speculation?**



1.2.2.1.2.1

Analogies - past and present

Are the new symbols of modern times cranes and lifting jacks?

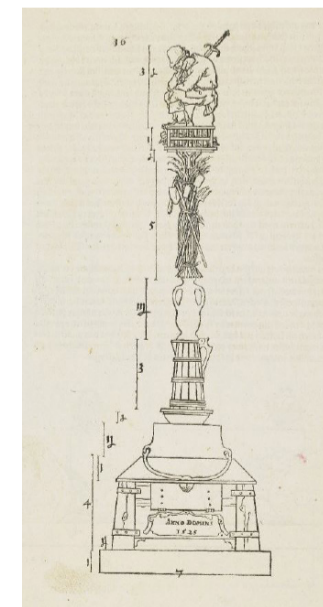


1.2.2.1.2.2

Jeff Wall's translation of Symbols



The title of *The Thinker* (1986) itself of course is a reference to Rodin. One of Wall's reinterpretations of a famous work from art history that he pictures render in a manner that seems so timelessly contemporary. With his *Thinker*, Wall transfers the figure in the typical *Thinker* pose to a contemporary urban setting and introduces the "grotesque" element of a knife in the protagonist's back, which in turn alludes to Albrecht Dürer's *Peasants' Column* from 1525, a proposal for a monument that was never built. Wall describes the peasant who sits atop the column, the sword in his back a symbol of betrayal and defeat, as 'mourning for the fate of his and his class's hopes for emancipations'.



Text 1
Painting of modern life, T.J. Clark.

2.0 Tower Story

Power and domination [ref. C.1]

Being on the site, it leaves a kind of strange feeling, a mix of emptiness, of ongoing industry and construction, a feeling of a larger entity behind the scenes of SBB Hauptwerkstätten. The view over the whole site, above from one of the higher storeys of the former office building lets you not only feel but see the greater context of the site. High towers of main city Zurich seem like to watch down to the old almost abandoned SBB site, like dominating and controlling them. Modernism laughing about the small industrial production sites that had to be moved out of the city during the time of industrialisation of the 18th and 19th century. ambiguity?



überleitung Tower?
noch keine Skyline sichtbar
Industrie war draussen
Chimney, Railroad etc war machtdemonstration
Stadt dominiert heute - übernimmt auch the countryside
Tower as analogie zu Chimneys
Braucht Werkstätte wieder neue, überragende symbole?



2.1

Tensions & Multilayer [ref. C.1]

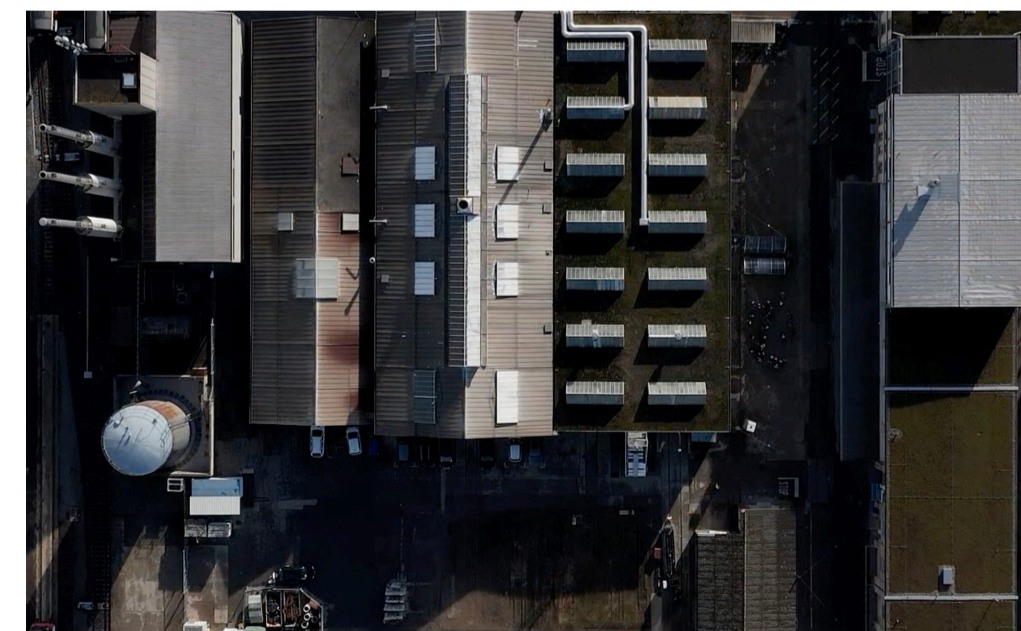
The main workshops have witnessed the entire development of the railroad in Switzerland: from former steam locomotive overhauls to today's repair center (1998), which is responsible for the repair of complex damage to rail vehicles of the SBB Passenger Traffic Division. As a building ensemble, all the buildings on the site form a compact urban structure with streets and courtyards. The unifying element is the uniform materialization with yellow brick facades.

Over the past 100 years, manufacturing and industry have settled primarily on the outskirts of cities. With the shift from an industrial society to an increasingly knowledge-based economy, new needs, conditions and opportunities for inner-city craft and manufacturing locations are emerging.

the city came out to the countryside...

industry distance not in distance or space anymore but in time industry dealing with it became different

what should be kept? how to deal with cultural heritage? what is the meaning of it? how did the meaning shift from the past to present to future? what is stage what is backstage of an empty industrial site?



2.1.1

SBB as backstage of Hauptwerkstätte

Who is behind the stage of SBB Werkstätten?

"Back then" means towards the end of the 19th century, when after fifty years of competition and several bankruptcies of private railroad companies, it was decided by referendum to nationalize the railroads. Competing cantons and municipalities offered large tracts of land to the railroad companies for little money.

A century later, in 1999, the federal government turned SBB into a joint stock company under special law and divided it into four divisions: Passenger Traffic, Freight Traffic, Infrastructure and Real Estate. With around 3,500 buildings in its possession and some 4,000 plots of land, the Real Estate Division is now one of the largest real estate companies in Switzerland.

The federal government owns all of SBB's shares and sets the goals accordingly. And that's the crux of the matter: the Real Estate Division is required by the Confederation's performance mandate to generate profits in order, among other things, to help finance the SBB's ailing pension fund. Last year, SBB's Real Estate Division earned a total of 246.7 million Swiss francs, almost a third of which (79.2 million) went into the company's own pension fund.

According to Lang, the responsibility does not lie solely with the railroad, but also with the authorities that carry out the rezonings: "In the transactions that SBB Real Estate handles, it should be obliged to guarantee a certain proportion of social housing." Another example he cites is the levy of added value: "If SBB makes a higher profit thanks to rezoning alone, i.e. without its own performance, then this profit could be levied on the municipality. So there is definitely political leeway."



2.2

History of industrialism

SBB HWZ as a Part of the city - bigger scale

Sometimes the sequence of their emotions was quite explicit in the text. Here, for example, is a writer called "Y" in La Vie Parisienne, beginning an essay entitled "Un Dimanche d'été":

I had been in the countryside for a week, and I was bored, tired of the silence, when at last the village bells announced the morning of the seventh day, the day of rest and rejoicing. And soon a shudder went through the woods, and the hills echoed with the sound of the day's first pun.

– The Parisians are coming! I cried out in delight. Nature will leave off its role of mute and mysterious nymph, and become a barmaid to whom commercial travellers somewhat brutally pay court. Hour by hour the invasion mounted, taking possession of the countryside as of a vast guinguette, a café-concert even larger than those on the Champs-Élysées. These people came to handle the hillsides as if they were breasts, to look up the skirts of the forests, and disarrange the river's costume. The breeze began to murmur jokes and catcalls. The smell of fried fish and fricassée of rabbit rose in the air along the riverbanks and wafted across the fields. A concert of popping corks began, of knives clinking against glasses, and dirty songs; and it went on till nightfall, getting louder all the time....

When I had seen the countryside given over to those who alone understand and know how to enjoy it, when I had had my fill of the spectacle, I took the train and went back to Paris...

3 Worker's Story

Working in the past

comment



3.1

Labour conditions of industrialisation [ref. 1.1]



“The patient figures at work were swarthy with the filings of iron and steel that danced on every bench and bubbled up through every chink in the planking.”

Alexander Stanhope Forbes, *The Munitions Girls*, 1918



“Morning, noon, and night, morning, noon, and night, each recurring with its accompanying monotony, always the same reluctant return of the same sequences of machinery, like a dragging piece of clockwork.”

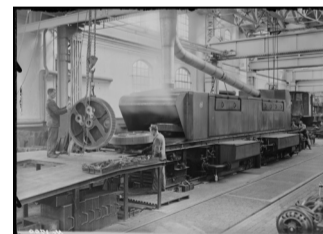
Peder Severin Krøyer, *In der Gießerei*, 1885

Text 1
Ch. Dickens, *Little Dorrit*, 1855-1857.
Text 2
Emile Zola, *Germinal*, 1885.
Pictures

3.2

Working in the halls and workshops of SBB

comment

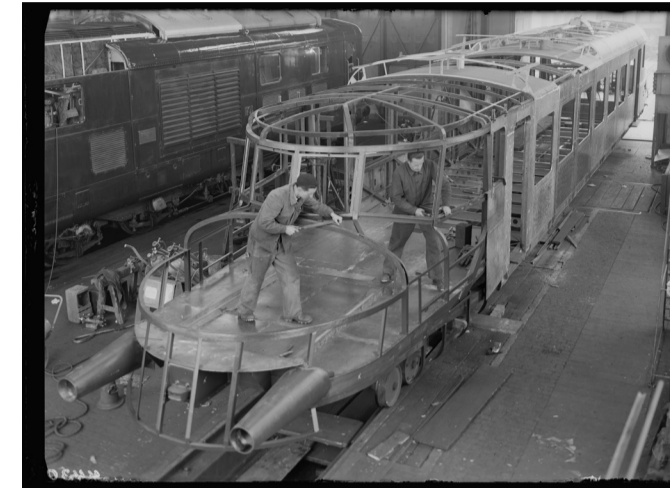


"Morning, noon, and night, morning, noon, and night, each recurring with its accompanying monotony, always the same reluctant return of the same sequences of machinery, like a dragging piece of clockwork."

Text 1
Ch. Dickens, Little Dorrit, 1855-1857.
Pictures

3.2.1

Production and Reparation



In the case of repairs, a distinction is made between technical damage and operational damage. In both cases, these are repairs that cannot be carried out in the depots because special tools and equipment are required or the scope of work exceeds the capabilities of the depots. Since the Zurich depot is also the depot of the Zurich depot until the entire marshalling yard is transferred to the Limmattal depot, the number of freight cars handled is large. In individual cases, the cost of repairing damaged vehicles can be extremely high, so that the scheduled work has to be adjusted.



Text 1
Hauptwerkstätte SBB Zürich, Bericht, 1973

3.3

The workers of SBB HWZ

comment

Workers are paid a fixed salary. They work 44 hours per week and have 3-5 weeks of vacation depending on their age. There are no bonuses or piecework. There are wage classes for skilled workers and craftsmen, which are classified according to age and performance. They receive 1 - 2 free dresses per year, depending on their work. Total number of employees in 1972: 820, of which 100 are foreigners.

Number of employees in SBB Hauptwerkstätte in the year 1972: total 820 of which 100 were foreigners.

Supervision, management and administration 22%
General department 17%
Traction unit department 28%
Carriage Department 33%
Apprentices and trainees 85%



“The little counting-house reserved for his own occupation, was a room of wood and glass at the end of a long low workshop, filled with benches, and vices, and tools, and straps, and wheels; which, when they were in gear with the steam-engine, went tearing round as though they had a suicidal mission to grind the business to dust and tear the factory to pieces. A communication of great trap-doors in the floor and roof with the workshop above and the workshop below, made a shaft of light in this perspective (...) The noises were sufficiently removed and shut out from the counting-house to blend into a busy hum, interspersed with periodical clinks and thumps.”

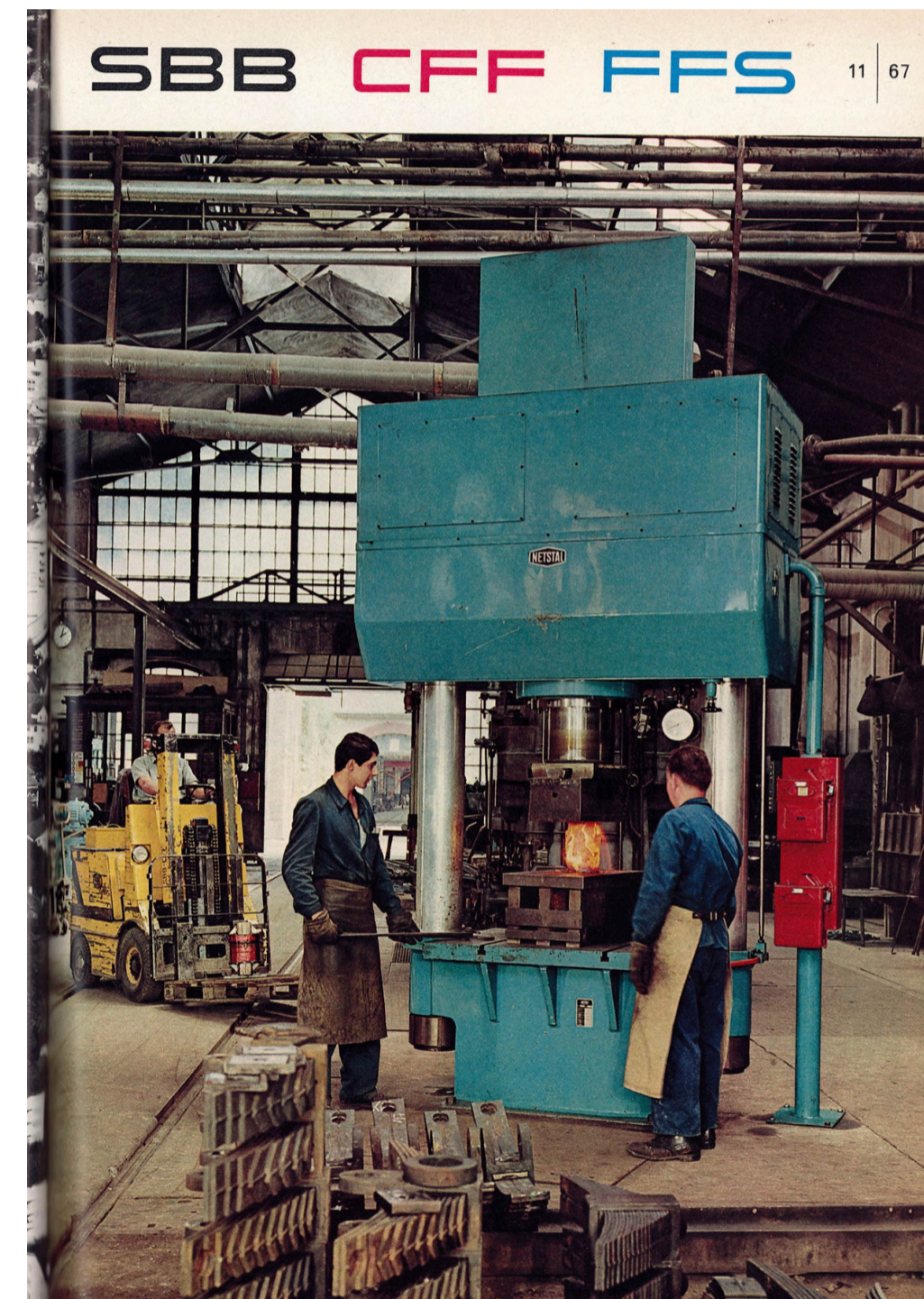


Text 1
Hauptwerkstätte SBB Zürich, Bericht, 1973.
Text 2
Ch. Dickens, Little Dorrit, 1855-1857.

3.3.1

Workers on the steam hammer

“When the machine started to move at each descent, the shafts, the two giant wheels of five meters in diameter, on the nears of which the steel cables rolled up and down in opposite directions, turned with such rapidity that they resembled a gray dust.



An iron framework, resembling the beams of a bell tower, supported the wheels. It was like the flight of a bird without a sound, without a bump; the tearing fast run, the incessant up and down of a thread of tremendous weight, which was able to lift twelve thousand kilograms at a speed of ten meters per second.”

In the turning shop, the previously common transmissions, which severely restricted free movement in the working area and repeatedly led to serious accidents, were abandoned. They were now replaced by electric motors. An overhead crane system was used to transport heavy loads.

Text 1
Emile Zola, Germinal, 1885
Text 2
Hauptwerkstätte SBB Zürich, Bericht, 1973.
Picture
Working on steam hammer, HWZu, 1968.

3.3.1.1

Worker in the wheelset reconditioning [ref. C.1]

comment



Worker assembling a locomotive transformer

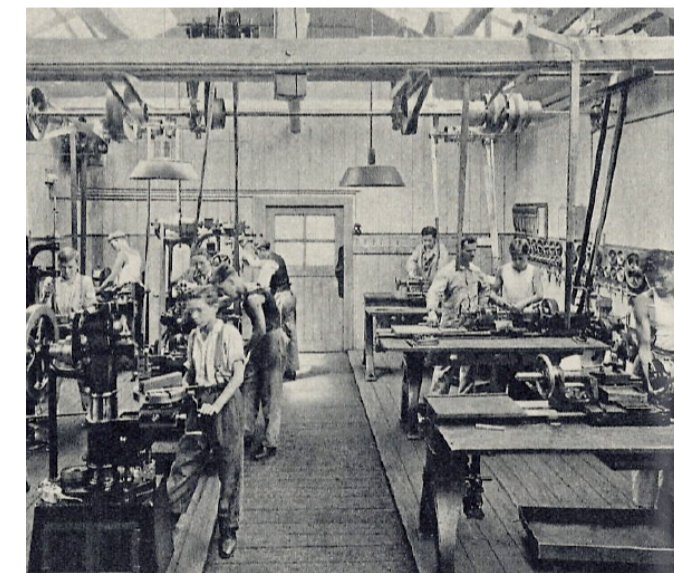


In 1972, 3841 wheelsets were treated on the wheelset turning machines. The wheelset turning shop is equipped with the following machines: One wheelset lathe MFD 73,5 kW, year of construction 1963. One portal wheelset lathe Hegenscheidt 106 kW, year of manufacture 1972. The profile machining operations are carried out automatically, and the measurement of the wear profile by means of the diameter probe and the copying supports controlled by it allow a minimum chip removal. Bottom-to-bottom times of 12 minutes are achieved for wheel sets of 900 mm diameter. A chip breaker is installed under the lathe, and the broken chips are transported on a conveyor belt into containers that can be emptied directly by crane into the railroad wagons. Two vertical lathes 37 and 44 kW. One wheel press 4000 kN (400 t). One electric belt warmer 60 kW primary: voltage 400 volts) 16 213 Hz current 100-160 Amp.) The wheel tire forms the secondary winding. Necessary drum temperature approx. 300° C. Heating time per drum 10-20 minutes.

Text 1
Hauptwerkstätte SBB Zürich, Bericht, 1973.
Picture 1+2

3.3.1.1.1

Workers washing and learning



Lehrlingswerkstatt

The workshop has 40 workstations with workbenches, 4 lathes, 1 planing machine, 3 milling machines, 6 drilling machines, 1 surface and 1 cylindrical grinding machine, a forging and welding room and a theory room. For the weekly gymnastics lessons, a well-equipped sports field is available in the workshop area.



Waschraum

The machine is a two-chamber unit in which the cleaning material is first sprayed with 2.5 - 2.8% caustic soda solution of 80-90° C under a pressure of 0.6 N/mm² (6 atli). In the splitzone, which is separated from the Wvrschzone by a neutral zone, the material is sprayed with hot splilwater of 80-90° C under a pressure of 0.6 N/mm² as well. The spray nozzles of both zones are slowly moved back and forth by a swivel motor. Illic transport level is at shop floor level, the parts to be cleaned on their own wheels or on transport trolleys or roller pallets are pulled through the machine by means of a transport chain with carriers.

Text 1
Hauptwerkstätte SBB Zürich, Bericht, 1973.

3.4 Empty halls

“Die finstere Masse der Gebäude lag schwerfällig im wachsenden Dämmerdunkel da. Es war inmitten des verödeten, von großen, unbeweglichen Schatten erfüllten Werkhofes gleichsam das Stück einer aufgelassenen Festung. Wenn die Fördermaschine stillestand, schien die Seele aus diesen Mauern zu entweichen.



(...) war nichts Lebendes mehr da, keine Laterne und keine Stimme. Selbst die Dampfströmung der Pumpe klang wie ein entferntes Röcheln, von dem man nicht wußte, woher es kam (...).”

Text
Emile Zola, Germinal, 1885

3.4.1 “Die Werkstätter”



On the project website, the workers of the companies that are now located in the former workshops are called WerkstätterInnen, so both in text and pictures the comparison to the former use is emphasized.

3.4.2

Past and Presence - What is the future?

comment

smart future, smart management systems, the dematerialising industry,

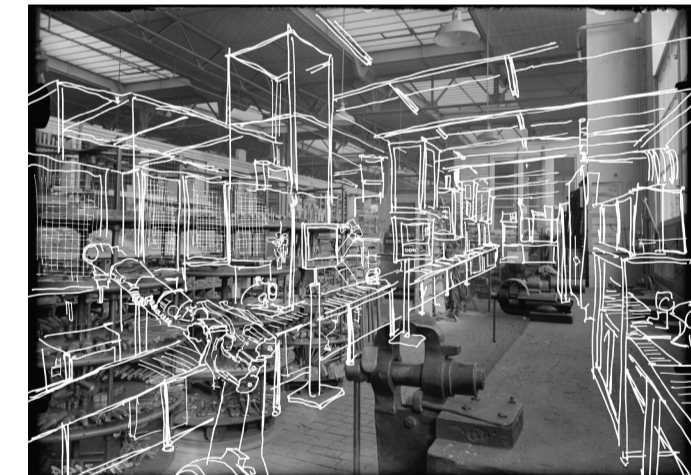
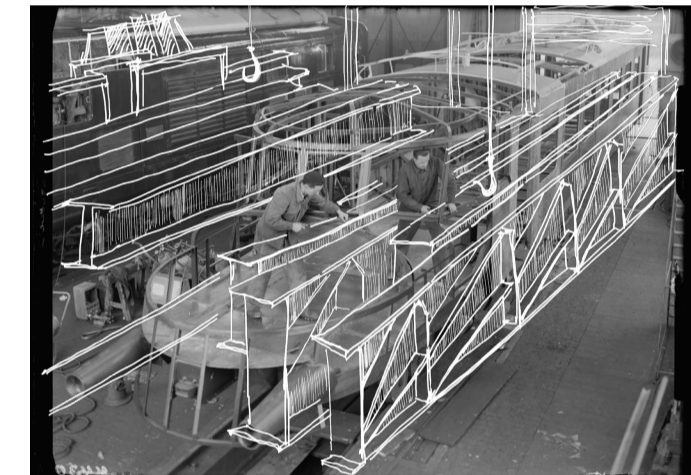
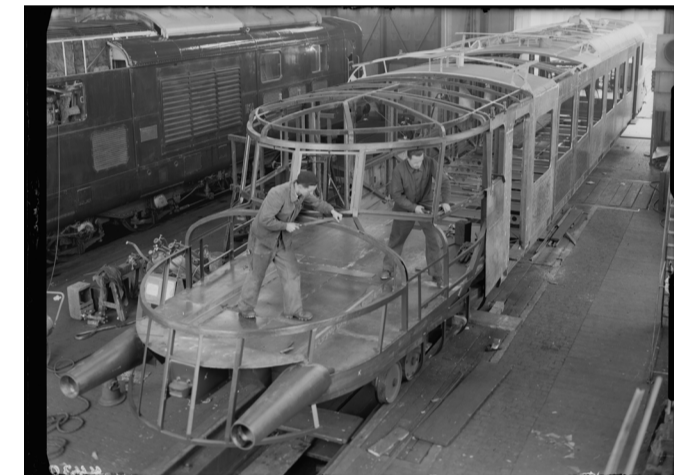
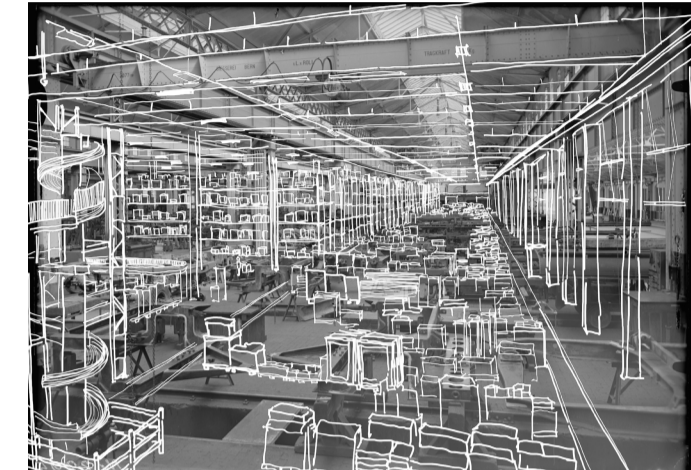
embraced the spectacle of production with numerous "showroom" factories

(...) where visitors and employees share the entrance to a "Main Street" providing access to the entire facility. An open production office and 10,000-square foot "communication plaza" encourage teamwork and visual communication among assembly, quality-control, and support function



3.4.2.1

Future stories - translation and speculation



It is possible that no translation, however good it may be, can have any significance as regards the original. Yet, by virtue of its translatability the original is closely connected with the translation; in fact, this connection is all the closer since it is no longer of importance to the original.¹

- Walter Benjamin

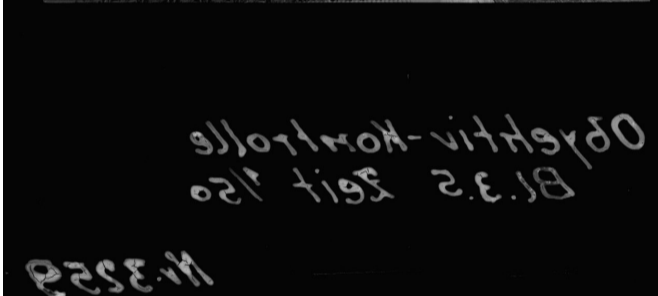
4 The Yard Story

The SBB yard

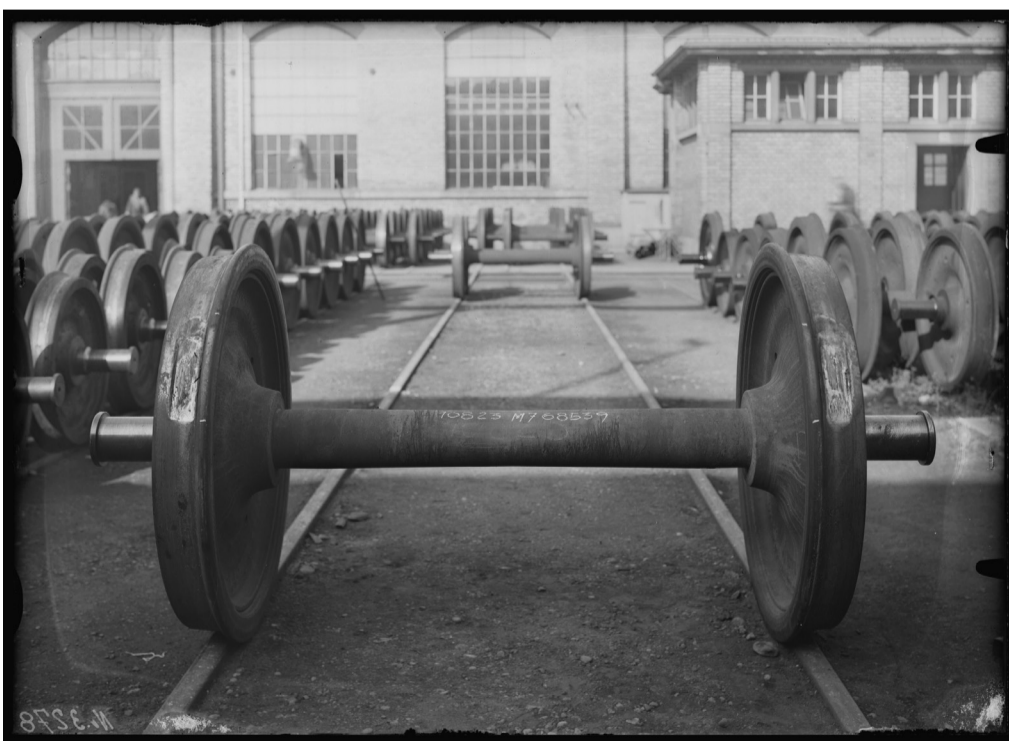
Qualitäten
 Aussenraum ist Teil der
 Produktion
 Yard = enough space =
 storage
 Anbindung an Gleis /
 Bahnverkehr

Ort: Zentral, Stadtnähe

As visible part of the
 production work going
 on in inside space of the
 hall.



"The workshop was arrived at by a step- ladder from the outer yard below, where it served as a shelter for the large grindstone where tools were sharpened."



Text 1
 Ch. Dickens, Little Dorrit, 1855 - 1857
 Pictures

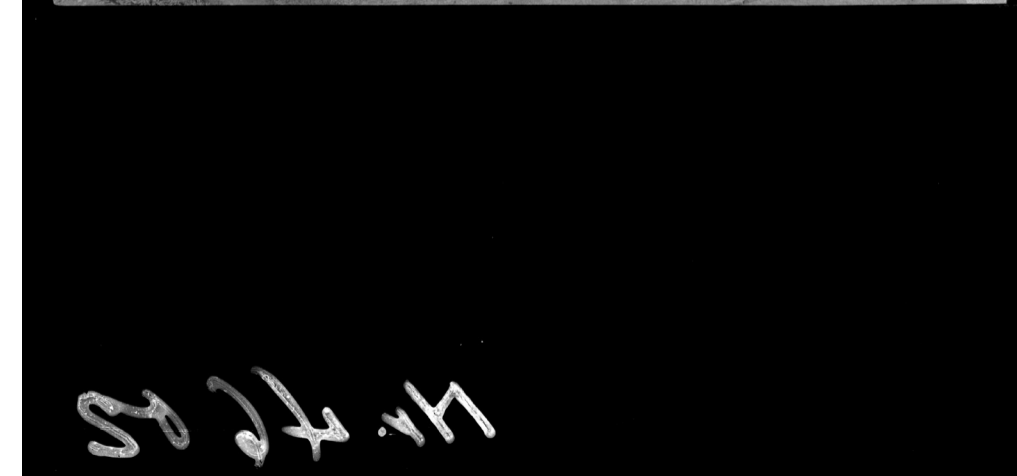
4.1

Transparent production space

shift of factory inside orientated to the factory of spectacle

Recent factory architecture reflects these cultural and economic phenomena. At one end of the spectrum, corporations have tailored factory design for "spectacle" by reconceiving the workplace as a marketing and public-relations tool; at the other end, some companies disregard image by building anonymous factory sheds and outsourcing production.

(...) companies frequently call on architects to design factories that would display the manufacturing process. To dramatize the consumer-commodity relations contemporary factory design foregrounds production visible, watchable (...)



The yard as a open/
 transparent working
 space
 - Production as part of
 outdoor space

4.2 Yard as material & component storage

A problem we face today is the one of storage space. There is always a lack of enough affordable storage space in several different economical sectors. Storage needs a lot of area, surface, space, time and money. Space that cannot be used else in the time of elements being there just to wait to get transported to their end destination.



outlay - part of components



4.2.1 Logistics as a spatio-temporal practice



Logistics is a curious kind of industry, as it is not concerned with the transformation of things in a material sense. Instead it is concerned with their location in space and in time, all of which requires a substantial apparatus. Compared to manufacturing industries that tend to be concentrated around an available and stable labor pool and access to raw materials, logistics is diffuse and depends on access to infrastructure.



Its labor needs require drivers, attendants, pickers, putters, and technicians (and increasingly less of them as the industry shifts to automated models). However, the transmissive, topological, and abstracting tendencies of logistics have yet to find a counterpart in architectural expression. How might the "architecture" of logistics be understood in the face of a system increasingly automated, increasingly uncontainable, and increasingly illegible?

4.2.1.1

A historical storage tradition

comment



Traditionally, the fish was laid out to dry on rocks by the seaside, in cold winter time.

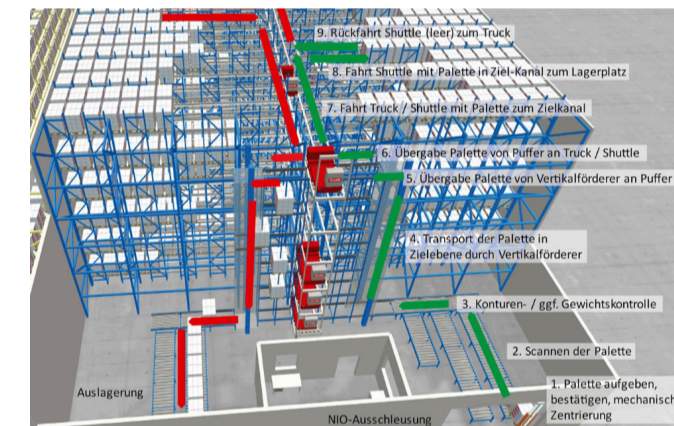


Dried fish—here defined broadly as aquatic animals preserved using simple techniques, such as sun-drying, salting, fermentation, and smoking that permit storage as foods at ambient temperature for extended periods without specialized packaging. (...) The dried fish sector provides employment for millions of people, particularly women, who comprise most of the fish-drying workforce in many locations. However, the sector also confronts and creates significant challenges including food safety concerns and exploitative labour conditions.

(Dried fish at the intersection of food science, economy, and culture: A global survey Ben Belton, Derek S. Johnson, 2022)

4.2.1.2

Storage today - Highly engineered?



Palettenregal	Hochregal (Ortbeton)
<ul style="list-style-type: none"> • Regallagerung • Statische Lagerung 	<ul style="list-style-type: none"> • Zellenregallagerung • Stückgut mit Ladehilfsmittel
Hochregal (Stahl)	Behälterregal
<ul style="list-style-type: none"> • Regallagerung • Statische Lagerung 	<ul style="list-style-type: none"> • Zellenregallagerung • Stückgut mit Ladehilfsmittel
Kragarmregal	Kragarmregal mit beweglichen Armen
<ul style="list-style-type: none"> • Regallagerung • Statische Lagerung 	<ul style="list-style-type: none"> • Zellenregallagerung • Langgut mit und ohne Ladehilfsmittel

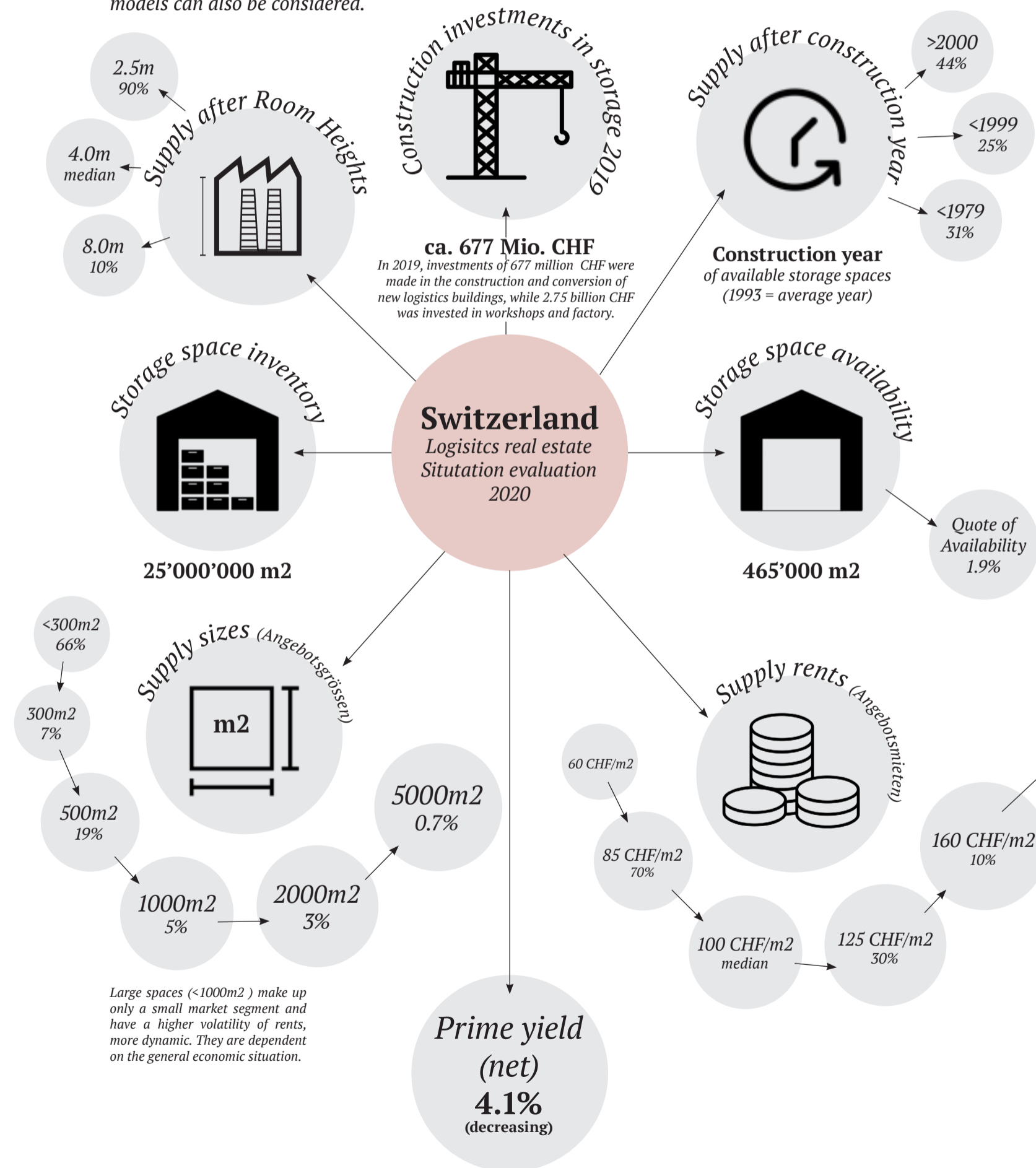


4.2.1.2.1 Storage & logistics in Switzerland

comment

In new projects, investors and clients are increasingly looking for flexible usage options and contemporary construction methods. Many older logistics buildings have a very poor energy balance. Many a warehouse resembles a cardboard box in terms of thermal insulation. Temporary or permanent conversion of existing buildings whose space is suitable for logistics purposes and which are waiting for innovative utilisation concepts and business models can also be considered.

Among the special real estate, which includes warehouses and distribution centres, logistics counts as an attractive niche. Admittedly, many pension funds and insurance companies do not yet dare to enter this field. But initial yields of up to 3.65% for 1A warehouse space and 3.9% for purely commercial buildings are increasingly attracting investors. Individual investment funds, including CS REF Logistics Plus or Streetbox by Procommo, are focusing on such buildings.



Large spaces (<1000m²) make up only a small market segment and have a higher volatility of rents, more dynamic. They are dependent on the general economic situation.

4.2.1.2.1.1 Logistics real estate as investment?

The industrial and logistics sector is one of the most popular real estate investment areas especially by European investors. Not so in Switzerland. Many market players are still prohibited from investing directly in production facilities, warehouses or distribution centres due to regulatory or statutory investment guidelines. But they stated to further increase investing in logistic properties in coming years.

A large part of the estimated net absorption of around 200,000 m² per year is covered by tailor-made new developments, especially as the Swiss market is characterised by a high owner-occupier rate of around 60-70% of today's inventory. But there are examples of huge Rental properties (objects) for Logistic and Distributioncenter, which are tailored exactly for the purpose of the tenant company and they are under a long-term rental contract.

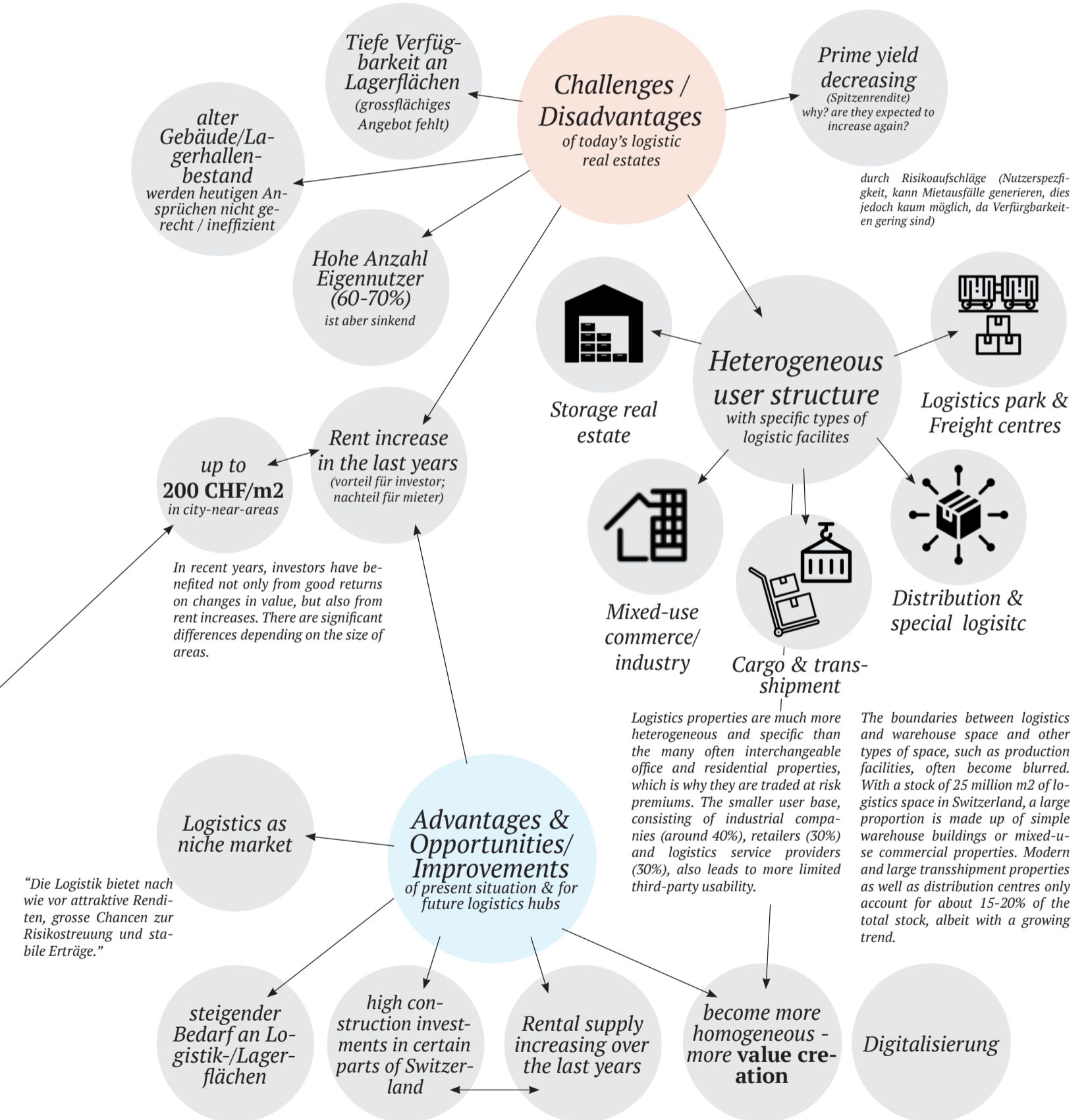
- high investment interest in dynamic but not very liquid market environment

- big investment potential and high demand for storage and logistic real estates

- large-scale offers from 1,000 m² show the strongest growth in rents, but are the smallest market segment with a great demand (only 25% of market)

- in Switzerland storage spaces often come in mix with other use such as offices or production and are small-scale

- often near or along highway networks, suburban areas, agglomeration



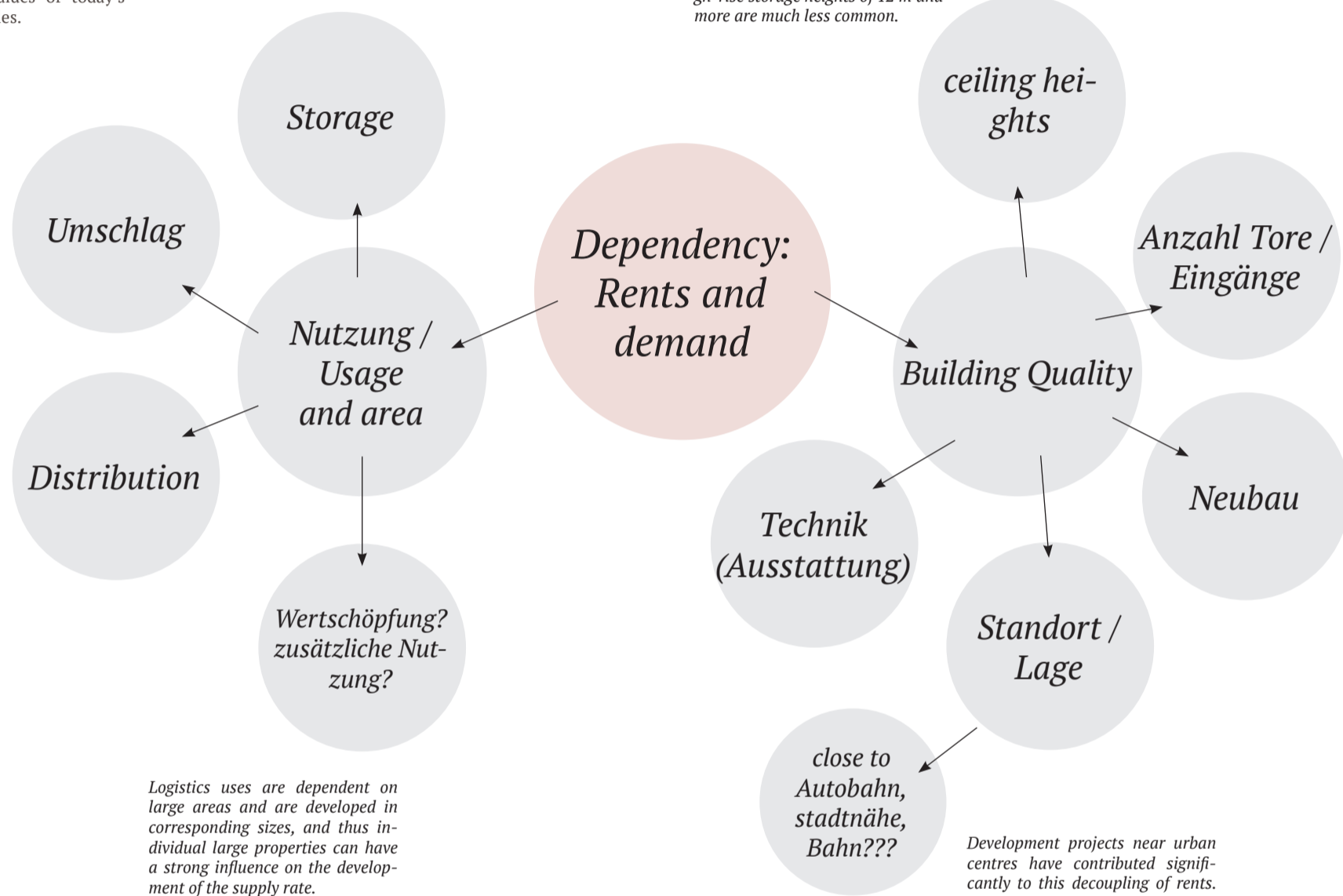
4.2.1.2.1.1

Logistic- and storage space dependencies

Factors and criteria how to define the rent of a logistic real estate property based on current rent values of today's examples.

The offer still consists mainly of small areas with low room heights. Classic logistics room heights of 8 - 12 m are rarely seen (...), and high-rise storage heights of 12 m and more are much less common.

The continuing high volume of new construction is evidence of good demand for space of a corresponding quality and size.



Logistics uses are dependent on large areas and are developed in corresponding sizes, and thus individual large properties can have a strong influence on the development of the supply rate.

The supply of logistics space in the Central Plateau is concentrated in the triangle between Zurich, Upper Aargau and Basel, as well as in the border cantons. 585,000 m2 or 2.2% of the inventory was advertised in the current year. About a quarter of this space was located in the cantons of Zurich and Aargau. For companies renting new space, good transport connections are the decisive criterion. Depending on size and location, annual rents per m2 range from 65 to 170 Fr. The median is 110 Fr. per m2 per year. Larger units in particular have recently seen high rent increases.

Turnover of all logistics service providers in Switzerland this year at around CHF 40.5 billion, the number of employees is 185,000.

Micro-hubs for the centres

There is a need for intermediate storage facilities, especially in urban areas where suitable land is scarce and expensive. (...) a trend towards multi-storey logistics and mixed-use industrial buildings. These are currently being built more frequently, especially in the Geneva region. The fine distribution in the centres and agglomerations is increasingly becoming a political issue.

Development projects near urban centres have contributed significantly to this decoupling of rents. Various urban cantons have designated industrial zones in which offers for logistics close to the city are being created. (...) It is becoming increasingly difficult to develop large areas due to building and zoning restrictions as well as traffic limitations.

4.2.1.2.1.2

SBB (Cargo) and future investments

The transport of large and heavy goods is steadily decreasing, while the transport of small, light goods continues to increase. Freight customers' desire for flexibility, speed and digitalisation is growing. At the same time, demand and requirements for more ecological, CO2-neutral and energy-efficient transports are increasing. As a result of these changing market needs, new solutions are required in rail freight transport.

«Für mehr Güter mehr Bahn» – SBB will im Kerngeschäft Güterverkehr wachsen

Die SBB setzt auch in Zukunft auf den Güterverkehr und baut ihn aus. Sie will für mehr Güter mehr Bahn und schafft mit Swiss Cargo Logistik die Basis für eine effiziente, automatische und nachhaltige Logistik in der Schweiz. Bis 2050 können so 60 Prozent mehr Güter auf der Schiene transportiert werden.

4 Minuten
28.09.2022

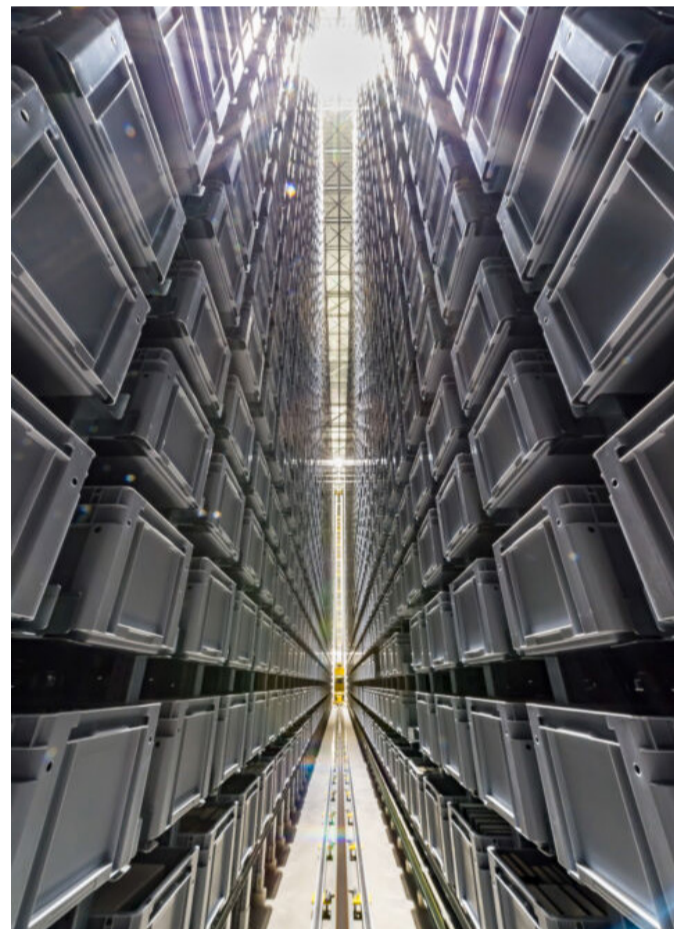


4.2.1.2.2 Storage tomorrow - Automation

Warehouse robotics



High Storage as a library to be the future physical brain of society?



The world has witnessed the digital transformation and Industry 4.0 technologies in the past decade. Nevertheless, there is still a lack of automation and digitalization in certain areas of the manufacturing industry; in particular, warehouse automation often has challenges in design and successful deployment. The effective management of the warehouse and inventory plays a pivotal role in the supply chain and production.

As the world is advancing toward the future, technology is rapidly shifting its shape. Automation is taking over industries, and gone are the days when technology was merely used in hi-tech labs by scientists. Currently, almost every item in a household can be controlled with just one click, and nothing is untouched by the marvel of automation. Internet-of-Things (IoT)-based automation has opened up a huge number of applications and is the key technology for the Industry 4.0 revolution.

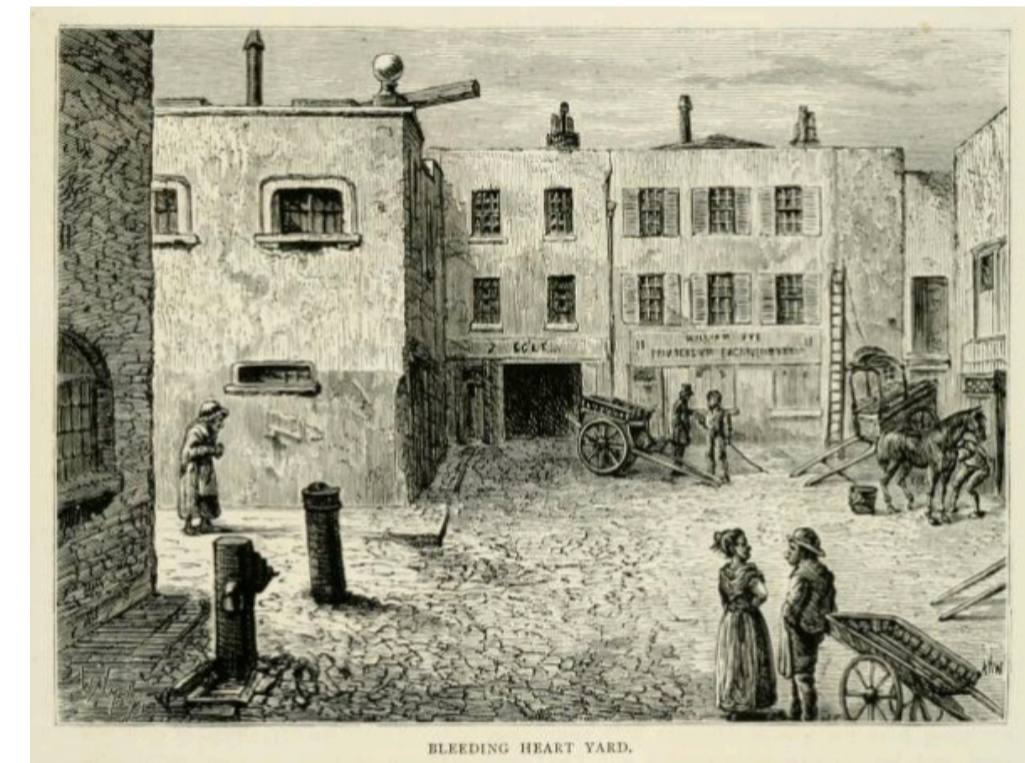
(...) can be defined as a network of automated systems that enable the user to control and coordinate devices in the mesh of the Internet. It helps in decentralizing control and management. In this era of the progression of industry into the digital world (...)

Die Kooperative Speicherbibliothek Schweiz entstand als innovatives Gemeinschaftsprojekt von ursprünglich 5 Kantons- und Hochschulbibliotheken aus akuter Platznot in den Magazinen der Bibliotheken. Sie ist sowohl Bibliothek als auch Dienstleisterin für ihre Mitglieder und Kunden. Neben anderen Dienstleistungen verschreibt sie sich der raumsparenden, effizienten Lagerung von Schrift- und Kulturgut aller Art im modernen Hochregallager zu konservatorisch optimalen Bedingungen.

4.3 Yard in literature - The bleeding heart yard

Bleeding Heart Yard was to be found; a place much changed in feature and in fortune, yet with some relish of ancient greatness about it. Two or three mighty stacks of chimneys, and a few large dark rooms which had escaped being walled and subdivided out of the recognition of their old proportions, gave the Yard a character. It was inhabited by poor people, who set up their rest among its faded glories, as Arabs of the desert pitch their tents among the fallen stones of the Pyramids; but there was a family sentimental feeling prevalent in the Yard, that it had a character.

The opinion of the Yard was divided respecting the derivation of its name. The more practical of its inmates abided by the tradition of a murder; the gentler and more imaginative inhabitants, including the whole of the tender sex, were loyal to the legend of a young lady of former times closely imprisoned in her chamber by a cruel father for remaining true to her own true love, and refusing to marry the suitor he chose for her. The legend related how that the young lady used to be seen up at her window behind the bars, murmuring a love-lorn song of which the burden was, 'Bleeding Heart, Bleeding Heart, bleeding away,' until she died.



Charles Dickens writes about a famous and saga envoven yard in the middle of london.

....text explaining ...

Bleeding Heart Yard features in the Charles Dickens novel Little Dorrit as the home of the Plornish family. Dickens describes the yard and its name.

Much of the narrative of Little Dorrit occurs in a neighborhood called Bleeding Heart Yard where several of the characters live and work. Businesses and homes are combined in here, and although it is not luxurious or prosperous, it is a place of industrious work.

As if the aspiring city had become puffed up in the very ground on which it stood, the ground had so risen about Bleeding Heart Yard that you got into it down a flight of steps which formed no part of the original approach, and got out of it by a low gateway into a maze of shabby streets, which went about and about, tortuously ascending to the level again. At this end of the Yard and over the gateway, was the factory of Daniel Doyce, often heavily beating like a bleeding heart of iron, with the clink of metal upon metal.



4.4

SBB Yard today - a terrain vague



“The structural fabric of the workshop buildings as well as the location on Hohlstrasse and the track area offer good conditions for the gradual opening and conversion of the site. An important component of this transformation strategy is the synergy between the identity-creating, historic building fabric, the public use of the outdoor spaces, and the possible structural densification. Behind this is the idea of an open, flexible urban development that prepares the site for new uses and challenges in several stages and with careful structural measures and connects it as an urban space with the adjacent neighborhood.”

Jeff Wall and the Terrain Vague: “Staged in the manner of classical paintings, Jeff Wall’s photographs subvert the celebratory and idealising politics traditional to that genre. Characters in his works of the 1980s represent, and subtly comment on the plight of, ethnic minorities, the working class poor and other traditionally abject aspects of society. Where he represents landscapes, Wall selects locations in which nature is impinged upon by suburbia or industrialisation.”

4.4.1

Past and Presence - What is the future?



“Landscape” is not equivalent to “land” or “environment”; Landscape is less a quantifiable object than it is an idea, a cultural way of seeing, and such it remains open to interpretation, design, and transformation. In constructing landscape, landscape architects provide some of the most revealing explorations of the interface between culture and nature, thus forging essential components of the construction of reality.

Symposium “Constructing Landscape” University of Pennsylvania in 1993

4.4.1.1

The SBB Yard in use over time

comment



transformation
former activities as a
mirror or representa-
tion of future events/of
the future site?

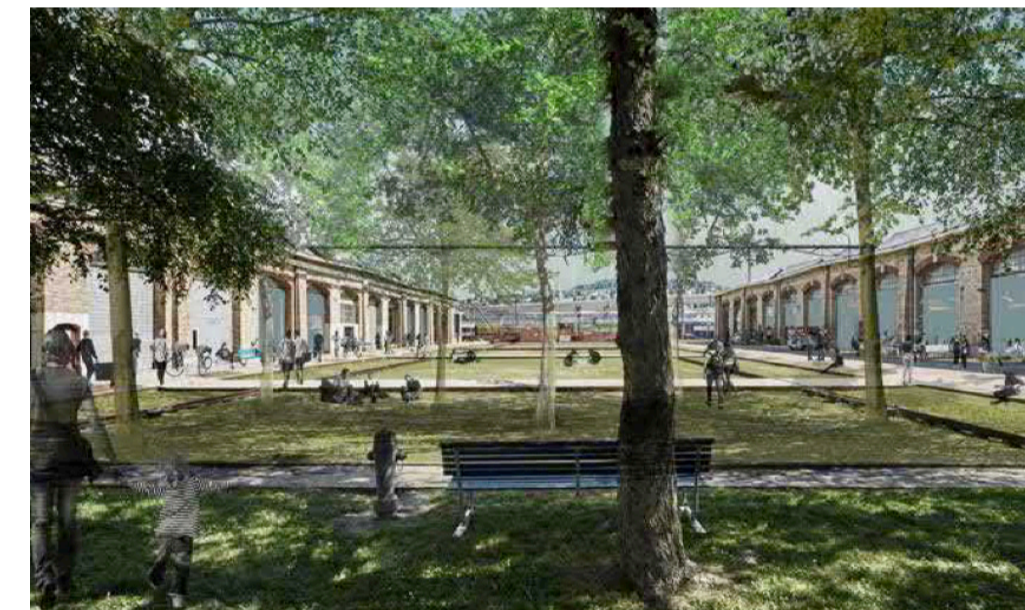


4.4.2

The SBB Yard in the masterplan



Werkhof zwischen Hal-
le Q (links) und Halle D
und Neubau E (rechts),
Sicht Richtung Gleisfeld
(Visualisierung).



Rangierhof zwischen
Halle R (links) und Q
(rechts), Sicht Richtung
Gleisfeld (Visualisie-
rung).

“A particular focus of the transformation is on turning the outdoor areas into public meeting zones. Places are to be created that invite people to linger. In addition, the craft activities in the buildings are to be opened up to the outside space and become visible. The area should thus be an inspiring place for work, leisure and recreation, which allows activities of the most diverse kind.”

5 Construction Story

A long history of construction [ref. 1.1]



Today's facility consists of several historical construction phases. Along Hohlstrasse, the administration building with a magazine was built in 1905. It is the oldest building on the site. In 1910 and 1911, the "welfare house" was built next door with a large dining room for the workers on the first floor and shower cabins and bathrooms in the basement. The building of the former lumber drying plant has formed another part of the street facade since 1909. The production buildings from 1910 to 1919 consist of a painting workshop, an inspection building for wagon maintenance and a turning shop.

"The actual purpose of the workshops was the construction and maintenance of locomotives and railroad cars. However, this task could not yet be tackled, since the track had to be laid on the line and in the stations before the railroad could run at all."

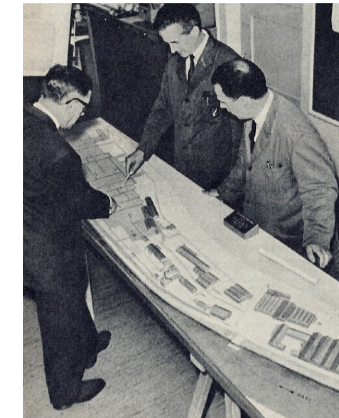


comment

5.1

Development in stages

"Since the rationalization measures in 1926 and 1927, in the course of which, among other things, the maintenance of steam locomotives in the workshop was discontinued, the field of work has remained essentially the same. It mainly included the maintenance of passenger cars, baggage cars, railroad mail cars and dining cars. In 1932, a department for overhaul and repair of rail vehicles, trolleys, automobiles and forklifts was added to the workshop."



"(...) At the same time, tools, equipment and the steam boilers were ordered as a precaution. This was not as easy as it is today; in our country, industry was still in its infancy, specialized firms did not yet exist, much had to be procured abroad and transported by road; some of what was needed had first to be invented and manufactured."

5.2 Transformation

comment



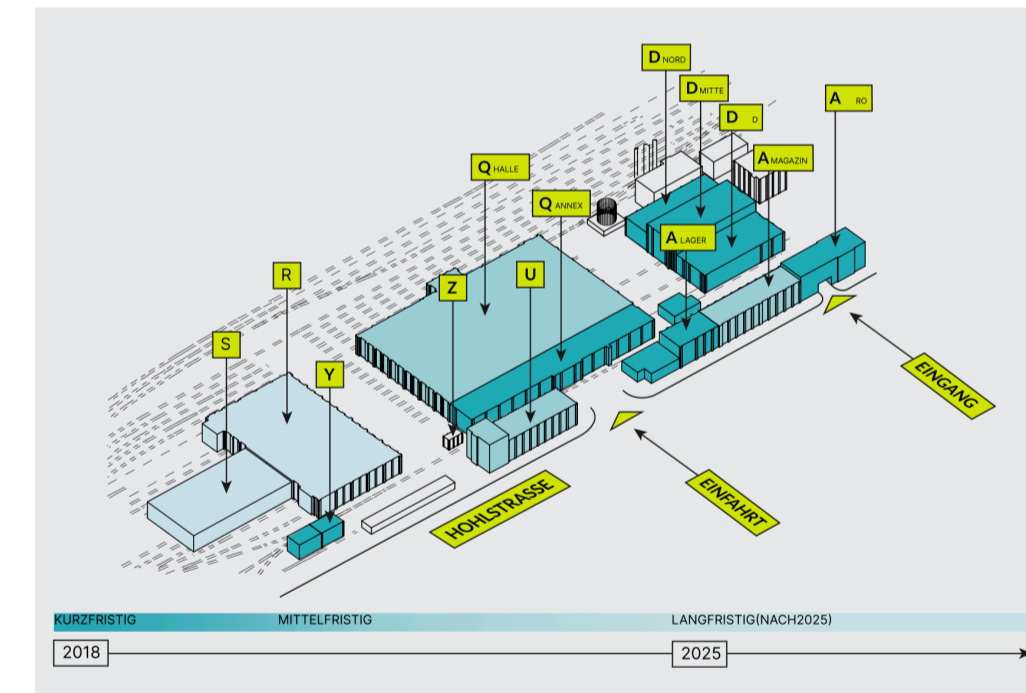
The focus of the transformation is also on minimizing the consumption of resources and energy. Thus, the stakeholders involved have jointly defined a basic attitude that, in addition to respectful treatment of the historical stock, also includes a commitment to sustainability, in particular to the circular economy. To fulfill this promise, the transformation follows a systemic approach. This considers the buildings and the site over their entire life cycle in order to keep CO2 emissions as low as possible, from construction to operation and deconstruction. The recording of all buildings and components on the Madaster platform also ensures the circularity of the materials used. The client and the in situ construction office responsible for the renovation of the existing buildings pay particular attention to the reuse of building components. For example, in Building Q, a listed building built in 1911, disused catenary poles are used as steel scaffolding. They form a 100-meter-long gallery and divide the interior into three floors. Steel stairs, gratings, beams and lights are also given a second life.

5.2.1 Masterplan

The transformation from a closed industrial site to a lively piece of the city, a neighborhood for work and leisure, is taking place step by step. The first commercial uses have already been established in Building A/Magazine. The same applies to the gastronomy use in Building Y. At the beginning of 2023, Building A/warehouse will be put into operation for permanent commercial uses.

Another major step toward an urban work city focuses on Hall Q with approximately 10,000 square feet. The focus is on commercial space for craft businesses, production companies as well as CleanTech companies. The preliminary studies on the spatial requirements of "urban businesses", which were developed with the participation of approx. 80 prototypical users, will serve as the basis for the realization, which is scheduled to run until 2023 and will be based on the most efficient structural, ecological and economic solution. In Building U, the second floor is still used by SBB Intervention and can only be renovated after the move. Interim uses will be possible from 2023.

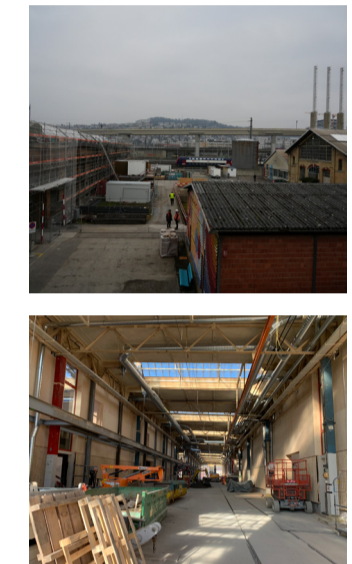
In the long term, Halls S and R will be added, which will continue to be used by SBB until 2025. With the second stage, the focus will also be on urban production - this will then also include laboratories or clean tech operations.



Das 42'000 Quadratmeter grosse Gebiet mit ehemaligen SBB-Reparaturwerkstätten soll für gewerbliche und industrielle Firmen und Start-ups attraktiv werden. Die Bauten, die als überkommunale Schutzobjekte gelten, werden dabei vollständig erhalten, wie der Zürcher Stadtrat am Mittwoch mitteilte.

Ein Teil des Areals wird heute noch bahnbetrieblich genutzt. Einige gewerbliche Drittnutzungen sind trotzdem schon eingezogen, darunter eine Bierbrauerei, ein Kaffeemaschinenhersteller sowie eine Autosattlerei.

The Werkstadt Zürich project offers the opportunity to establish a sustainable mix of classic and innovative commercial, service and leisure offerings directly in Zurich. In close cooperation with the city of Zurich, the planning process is being driven forward on the current basis.



The Swiss Federal Railways (SBB) plan to transform one of their inner-city workshops into an urban production center. The Werkstadt Zürich project offers the opportunity to establish a sustainable mix of traditional and innovative trade, services and leisure facilities in a central location in Zurich. The city government is committed to creating good conditions for the "urban workplace of the future". With the upcoming redevelopment of the SBB workshops, the 42,000 m2 site will become home to innovative commercial and industrial enterprises and start-ups, as well as a place of culture.

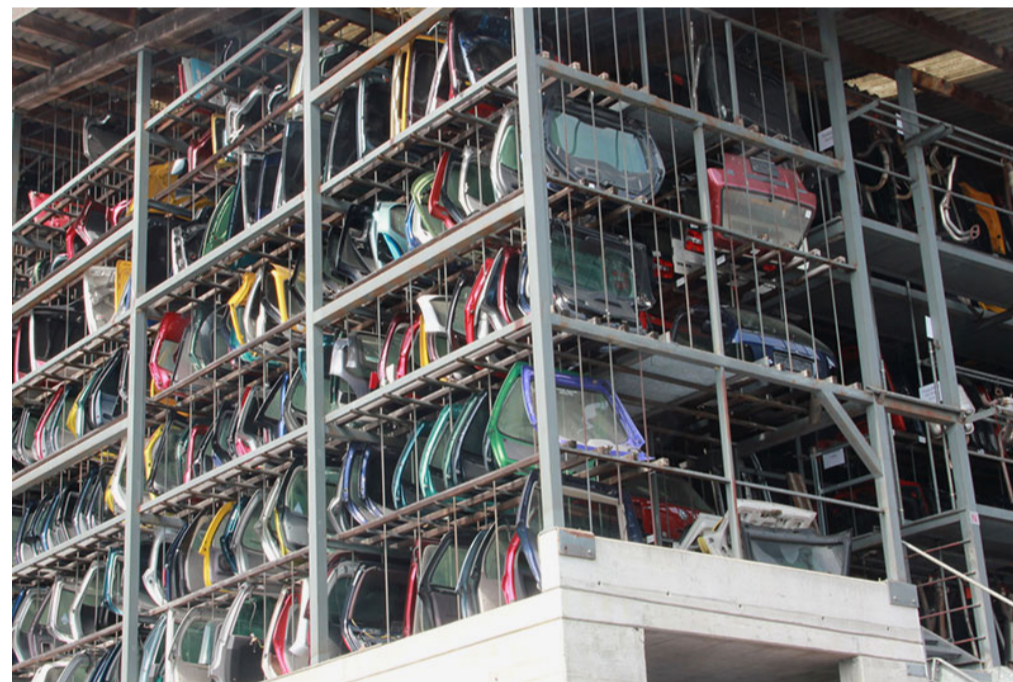
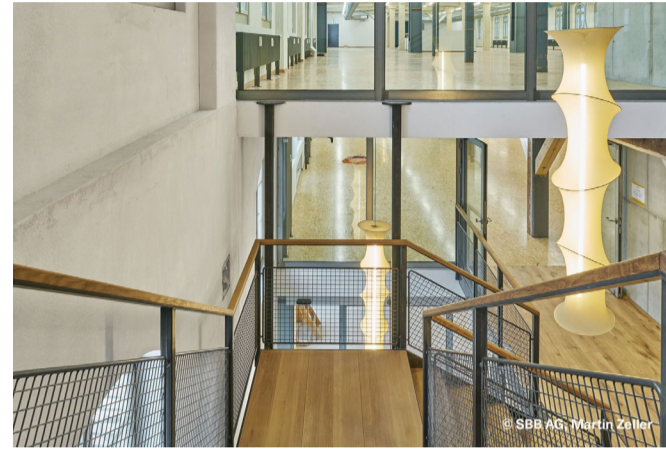
5.2.1.1

Dealing with existing - reusing elements

keeping production in the city, showing/display the production/ the work (what is going on)

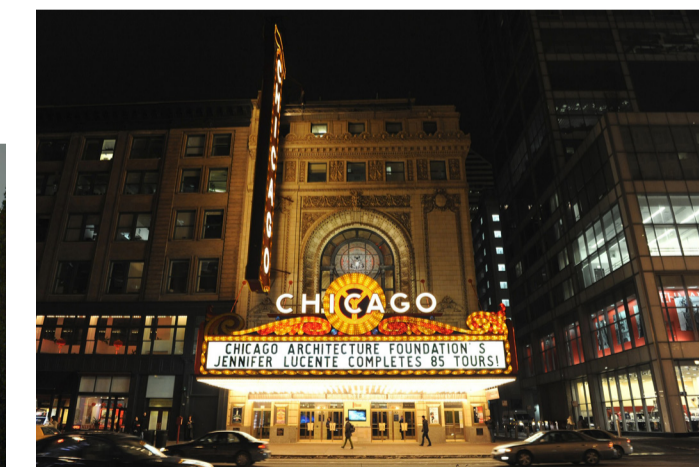
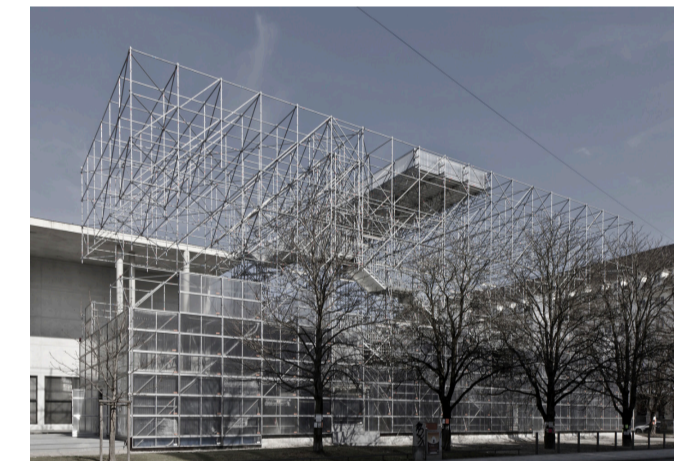
bauteil-wiederverwendung = neue industrie, neues handwerk, erfordert umdenken, handeln und neue perspektiven, forschungsfelder, technologien etc.

The careful development of the site and the preservation of the existing buildings and infrastructure make a decisive contribution to the energy balance of the project. Two premises lead to a sustainable overall solution: On the one hand, the existing buildings are modularly linked with the new buildings to be constructed in order to generate utilization synergies for the infrastructure investment. On the other hand, the focus of the transformation is on the lowest possible CO2 emissions for the entire site. The "gray energy" stored in the materials used in their production is accounted for in the CO2 requirement in the same way as the operation of the entire site. This approach enables a balance between economy and ecology during the transformation. Not only innovative technologies alone, but also different forms of use, materialization and socio-economic processes result in a sustainable energy concept under these conditions.



5.2.1.2

Scaffolding, cladding, covering



Light as a curtain and giving architecture a smooth covering? Like a textile? A Light curtain?

6 Organisation Story

Operating statement

Economical and organisational view and investigation of the former SBB Hauptwerkstätten site in Zurich.

“The credit for the maintenance of the workshop and the inventory in the 2.64 million in 1973. In order to assess the economic efficiency, the cost price of the services is calculated in the hourly costs are based on the real costs of the working hour of the individual cost centers. These real costs of the working hour are calculated in the month of April on the basis of the of the previous year and the current operating account.

With the services invoiced in this way on the basis of the calculated hourly and material costs, the aim is thus to achieve a balance between the expenditure in the expenditure account and the costs recorded in the cost account. If there are small differences, these are balanced to the debit or credit of the vehicle maintenance. (In most cases, there is a small surplus, since a small safety margin of approx. 1-5 centimes is added when calculating the hourly costs). The Werkstätten themselves therefore do not show a return in their operating account. (The operating account is mainly charged to the vehicle maintenance account of the SBB account.)”

Anlagen und Einrichtungen	
Eröffnung der ersten Werkstätte 1850 beim Hauptbahnhof. Neue Werkstätte am jetzige Standort erbaut 1905-11 für 7,5 Mio Fr.	
Erweiterungsbauten	1923 Halle VIII Triebfahrzeugabteilung 1953 Halle IX Triebfahrzeugabteilung 1963 Halle 3 Wagenabteilung 1967-73 Heizzentrale 1967 Halle X Triebfahrzeugabteilung 1972 Lehrwerkstätte
Werkstätteareal	125'000 m2
Gleislänge	16 km
Jahresverbrauch 1972 an:	Elektrischer Energie 50 Hz 3'400'000 kWh 16 2/3 Hz 1'000'000 kWh Heizöl 2'400'000 kg Gas 5'200 m3 Wasser 117'000 m3 Sauerstoff 14'000 m3 Acetylen 9'000 m3 Kohlendioxid (CO ₂) 700 m3

Financial calculation 1972

6. Finanzrechnung	
Personal-, Sachausgaben und Annuitäten pro 1972	= 48,2 Mio Fr.
Ausbezahlte Jahreslohnsumme pro 1972	= 19,5 Mio Fr.
Anlagewert der Werkstätte am 31.12.1972	= 40,7 Mio Fr.
davon sind amortisiert	= 15,7 Mio Fr.
somit Buchwert	= 25,0 Mio Fr.
Als Abschreibsätze sind vorgeschrieben für:	
Wege, Gleise, Gruben	1,5%
Gebäude	2,0%
Einrichtungen	3,0%
Maschinen	10,0%
Kalkulatorische Abschreibungen pro 1972	Fr. 1'097'625

6.1 Workshops and Organisation

Die wichtigsten Werkstattegruppen sind:

Allgemeine Abteilung:	Werkzeugmaschinen Radsatzaufarbeitung Werkzeugnachei Metallspritzerei Maschinenschlosserei Arrnaturenschlosserei Kleinrnechanik Konstruktionsschlosserei Spenglerei Schweisserei Schmiede Bauarbeiter Heizzentrale
Triebfahrzeug-Abteilung:	Mech. Lok.-Rev. und -reparaturen Elektr. Lok.-Rev. und -reparaturen Apparateschlosserei Motorenschlosserei Wicklerei Elektr. Prüfstand Elektronik und Messinstrumente Malerei
Wagenabteilung:	Demontagegruppe Reinigung Betriebselektriker Wagenrevisionen und -reparaturen Bremsorgane Reparaturschlosserei Schweisserei Zugheizung und Beleuchtung Schreinerei Zimmerei Malerei Sattlerei Schleif- und Eloxieranlage Schnellreparaturen Manöver

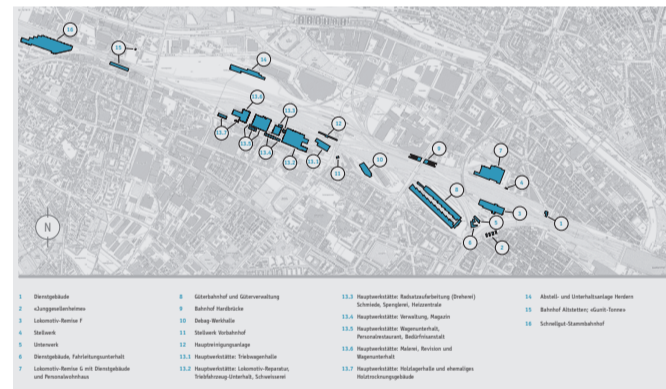
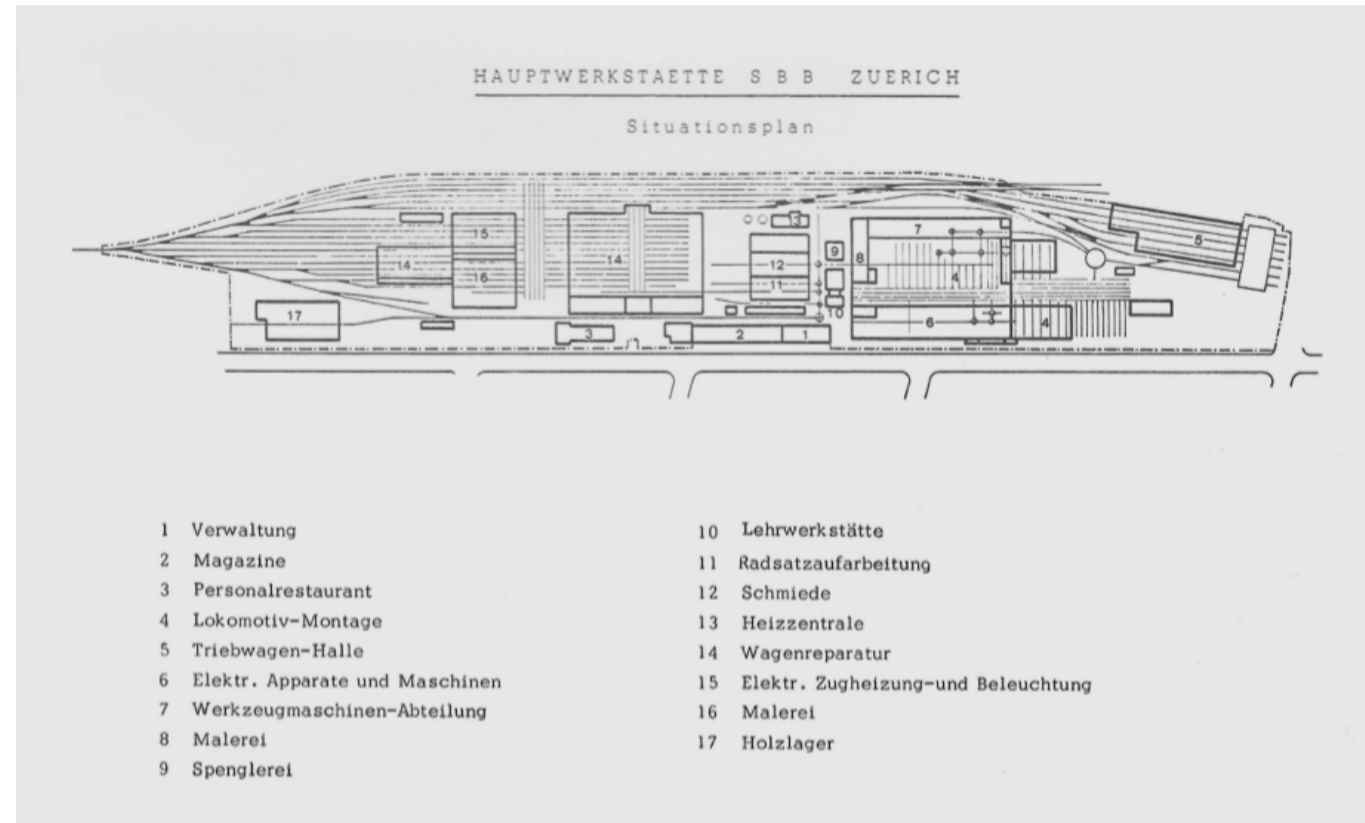
The mainline locomotives, railcars, multiple units and double-deck trains, passenger cars and low-loader cars were assigned to the Zurich HW. In addition, superstructure management and switch assembly were concentrated in Zurich and Olten. Until the transfer of the marshalling yard to the RB Limmattal, the HW Zurich was also the operating car workshop of the Zurich marshalling yard. From 2015, the SBB main workshop was further developed into the Zurich-Altstetten repair center for locomotives and passenger coaches.

Railroads are required by law to keep their rolling stock in good working order. They therefore have main workshops that carry out scheduled overhauls and major repairs. About 70% is spent on scheduled overhauls, 20% on repairs of technical damage and 10% on repairs of collisions and derailments. Minor maintenance and repairs are carried out by the depots and district offices.

Economical maintenance of the vehicles is only possible if the individual main workshops are assigned as large a series of similar vehicles as possible for maintenance. Larger exchange parts that are used on different vehicle types are also centrally assigned to a workshop for reconditioning.

6.1.1 Site plan 1911

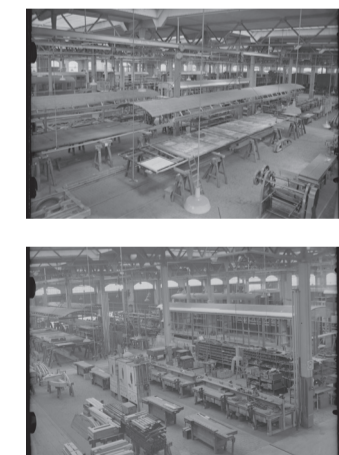
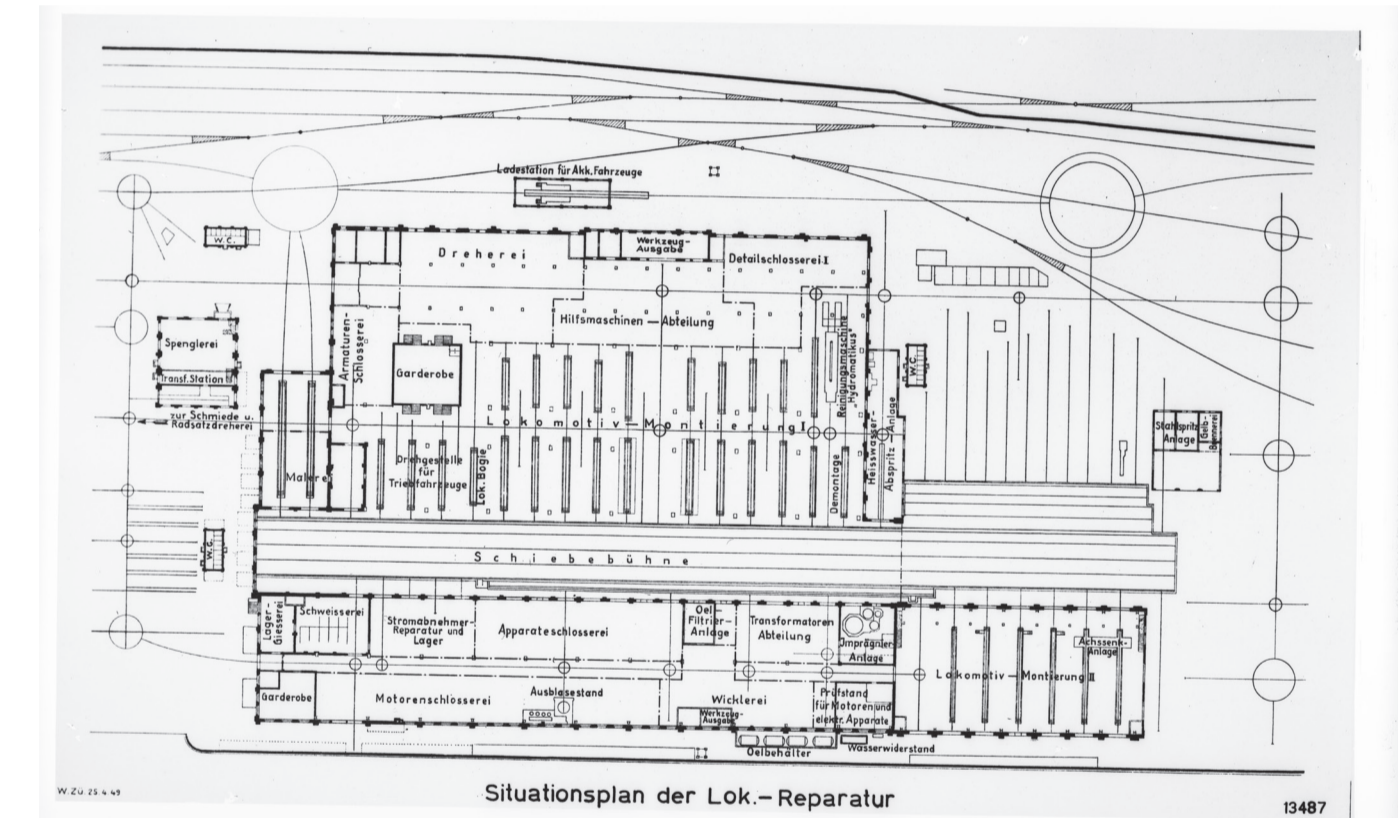
comment



6.1.2 Locomotive montage



The locomotive halls are equipped with various devices for lifting entire vehicles and assembling and disassembling individual parts. Lifting jacks with 20 t or 25 t capacity each. Up to 4 coupled vehicles can be lifted simultaneously by 16 remote-controlled jacks. 6 cranes with 2 x 20 t or 2 x 25 t lifting capacity each are controlled individually or in pairs by a radio remote control van a mobile control unit from the ground. Various fixed or mobile hydraulic lifting platforms facilitate the assembly of vehicle parts under or next to the boxes and bogies.



6.2 Storage

comment

The warehouses run a stock account that is independent of the operating account, as they have to pay interest on the average stock levels for reasons of economy. As a consequence, they try to keep the material stocks as low as possible. (The magazines turn over their stock about 1 time per year). The interest on the stock (4% of the average annual stock), as well as the other expenses of the magazine such as salaries, wages, equipment, etc. are covered by a percentage surcharge on the cost prices (currently 15%), so that these prices, charged to the rolling stock, correspond to our cost price.

Approximately 18'000 articles with a total value of about 13 million Fr. are stored in the magazines of Werkstätte Zurich. Monthly 13'000 receipts and issues. 22'000 orders per year. Approximately 20% of the magazine articles are produced in the HW Zurich itself..



The rack system of 7.5 m height includes: 2 pallet racks of 42 m length each, served by 1 stacking crane of 1000 kg capacity. 2 roller conveyors combined with 1 lifting table for pallets each. 7 rack racks and 1 drawer rack of 16 m length each for manual storage. They are fed from 4 serving machines of 350 kg capacity each.

6.2.1 Material management 1972

Holztröcknerei

Die WZü ist zentrales Laubholzmagazin und besitzt aus diesem Grunde eine leistungsfähige Holztröcknerei.

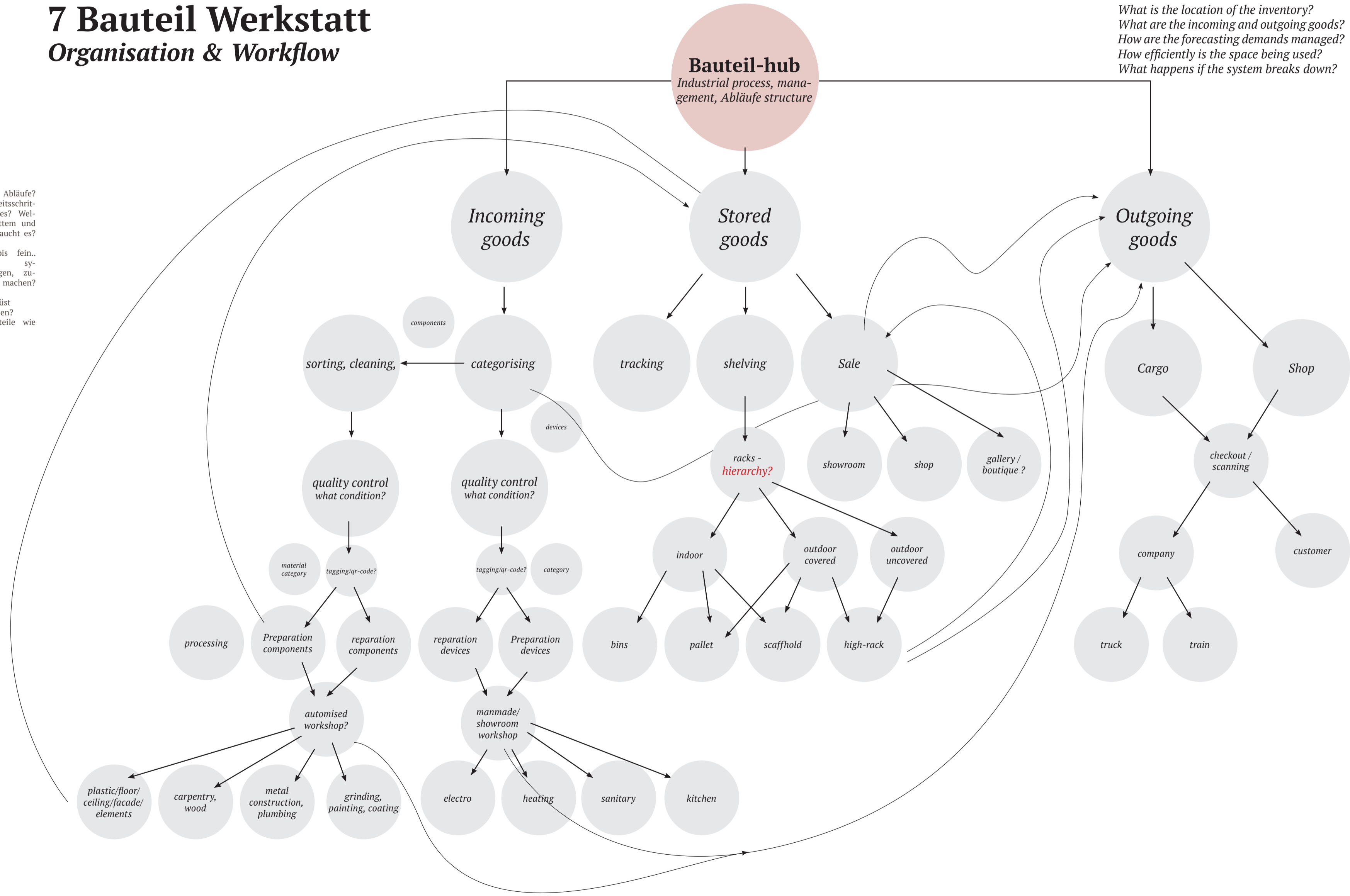
Trocknen von Holz durch Einspritzen von Dampf in die 3 Trocknungskammern. Dieses Verfahren verhindert ein vorzeitiges Schliessen der oberflächlichen Poren, so dass das Holz sich weniger verzieht und besser durchtrocknet.

Trockenkammertemperatur ca. 60-90° C (je nach Holzart) Trockenzeit je nach Holzart 24 Stunden - 3 Wochen Vorteile der Ofentrocknung gegenüber der Lufttrocknung: bedeutend kleinere Holzlager Ersparnis total ca. 6%



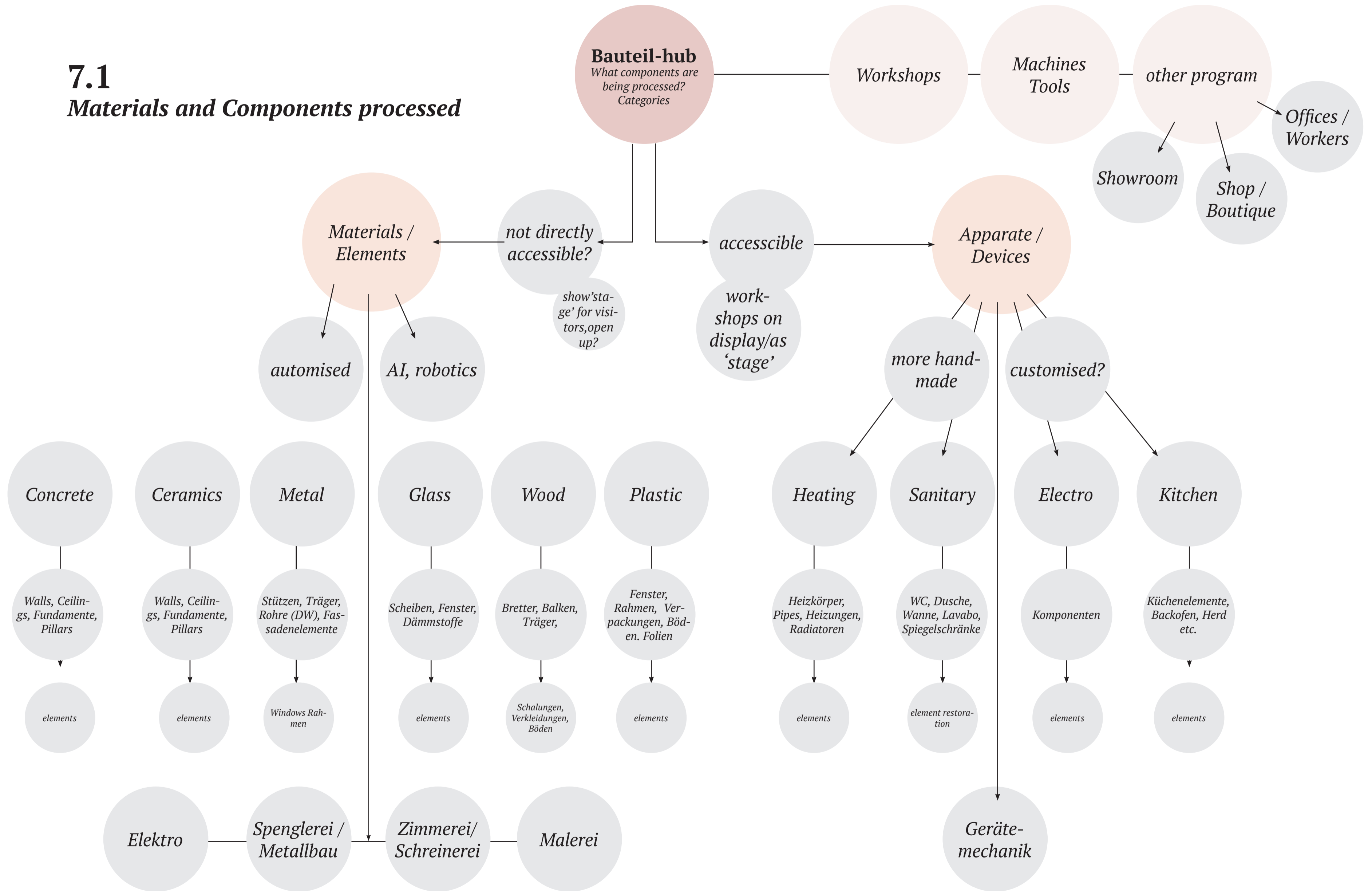
7 Bauteil Werkstatt Organisation & Workflow

Stufen
Prozesse
Was sind Abläufe?
Welche Arbeitsschritte benötigt es? Welche werkstätten und Werkzeuge braucht es? Fläche?
Von grob bis fein... vereinfachtes system aufzeigen, zugänglich machen?
Filigranes Gerüst
Aussen ansetzen?
Massive Bauteile wie gelagert?



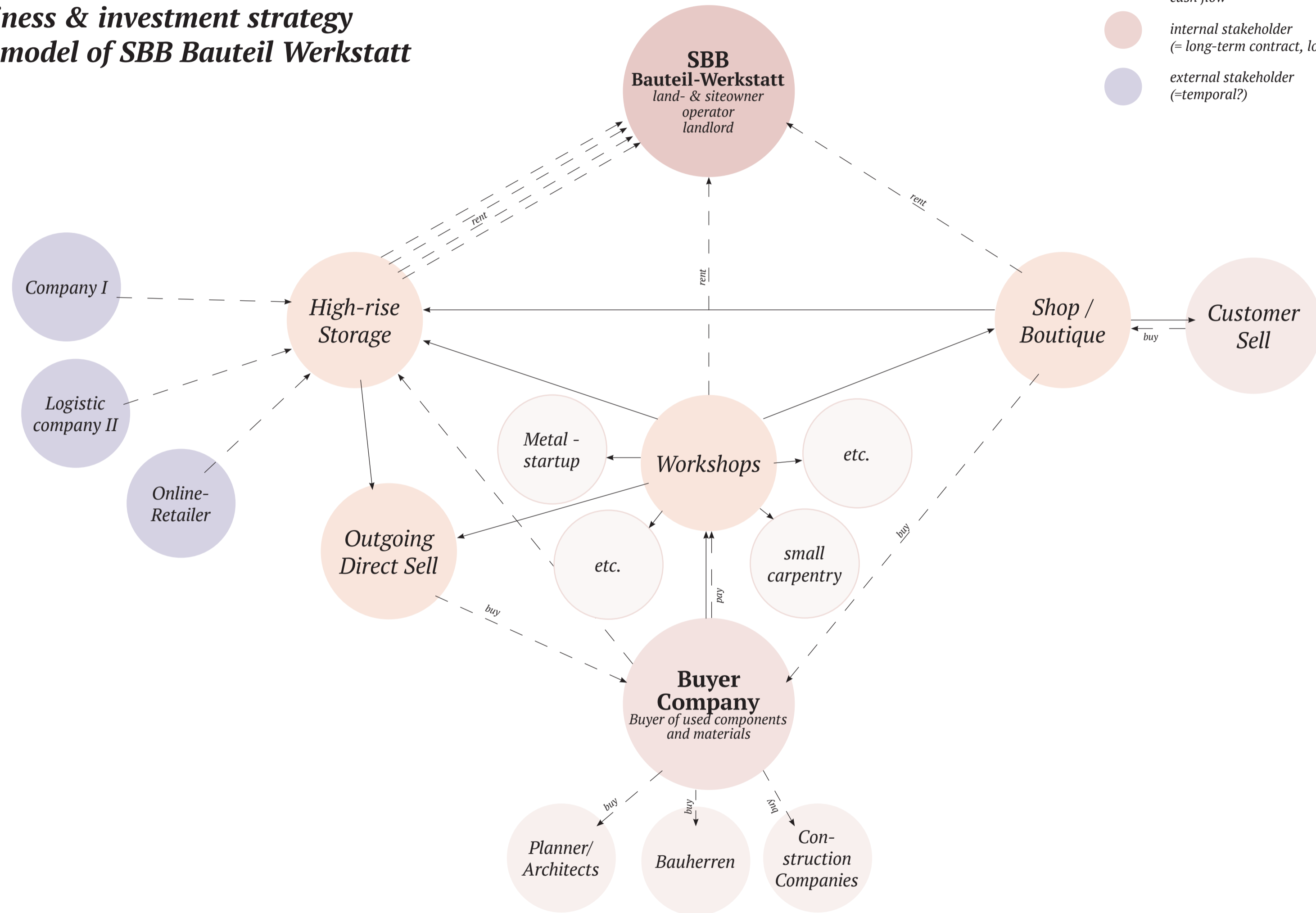
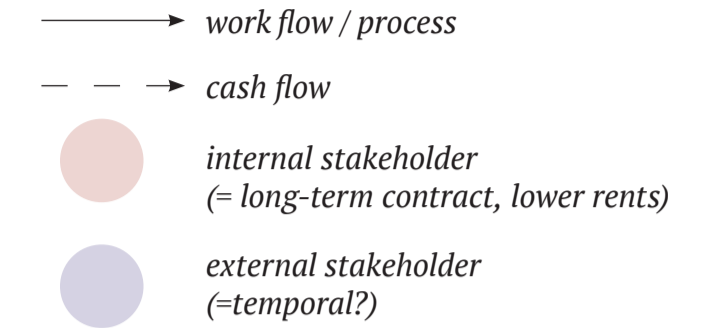
What is the location of the inventory?
What are the incoming and outgoing goods?
How are the forecasting demands managed?
How efficiently is the space being used?
What happens if the system breaks down?

7.1 Materials and Components processed



7.2

Finance - Business & investment strategy New business model of SBB Bauteil Werkstatt



Is the project profitable? How is it financed? How does the business model work? a plausible explanation is needed, a story that justifies the interventions and justifies a profitable return.

What could a concept look like that, for example, compensates for SBB's own investment without making excessive profits?

How does future storage architecture look like? Where does it make the most sense to build storage and logistic spaces and areas, without taking too much space/area of nature?

X Archive

A collection of interior furniture

comment



X.1

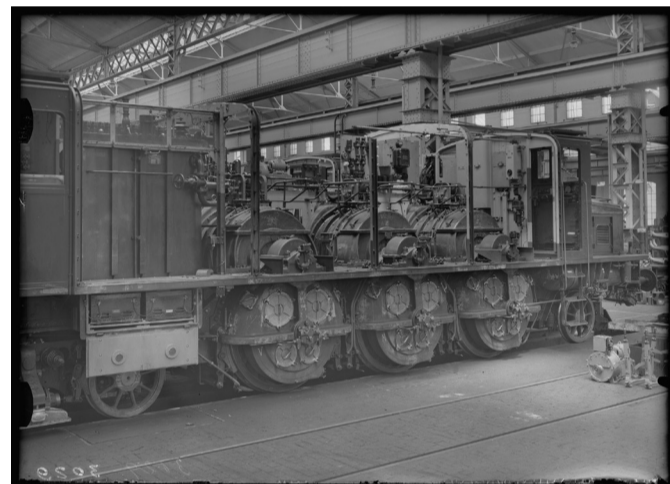
A collection of interior furniture



X.2

A collection of locomotives [ref. C.1]

comment



X.2.1

Miscellaneous collection



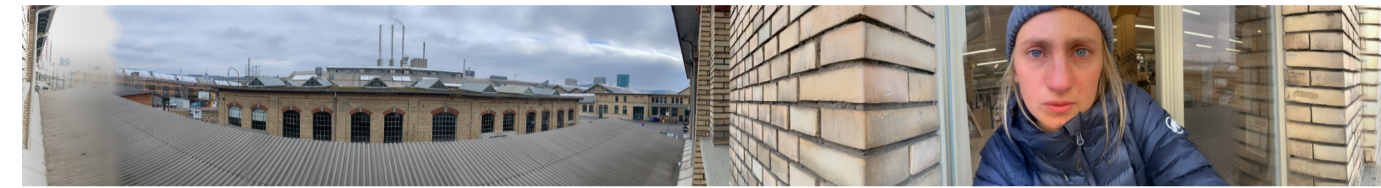
X.3 Working method & process

Pictures of the site



X.3.1

Panoramas of the site



X.3.2 Speculative Piece

Speculative Piece - Original pictures



X.3.2.1 Transformation process

Merging past and presence - first try

What is new and what is old? What should be kept, what should be staged and what translated?



X.3.2.1.1 Coloring process [ref. C.1]

Different methods of coloring the black and white, historical image.

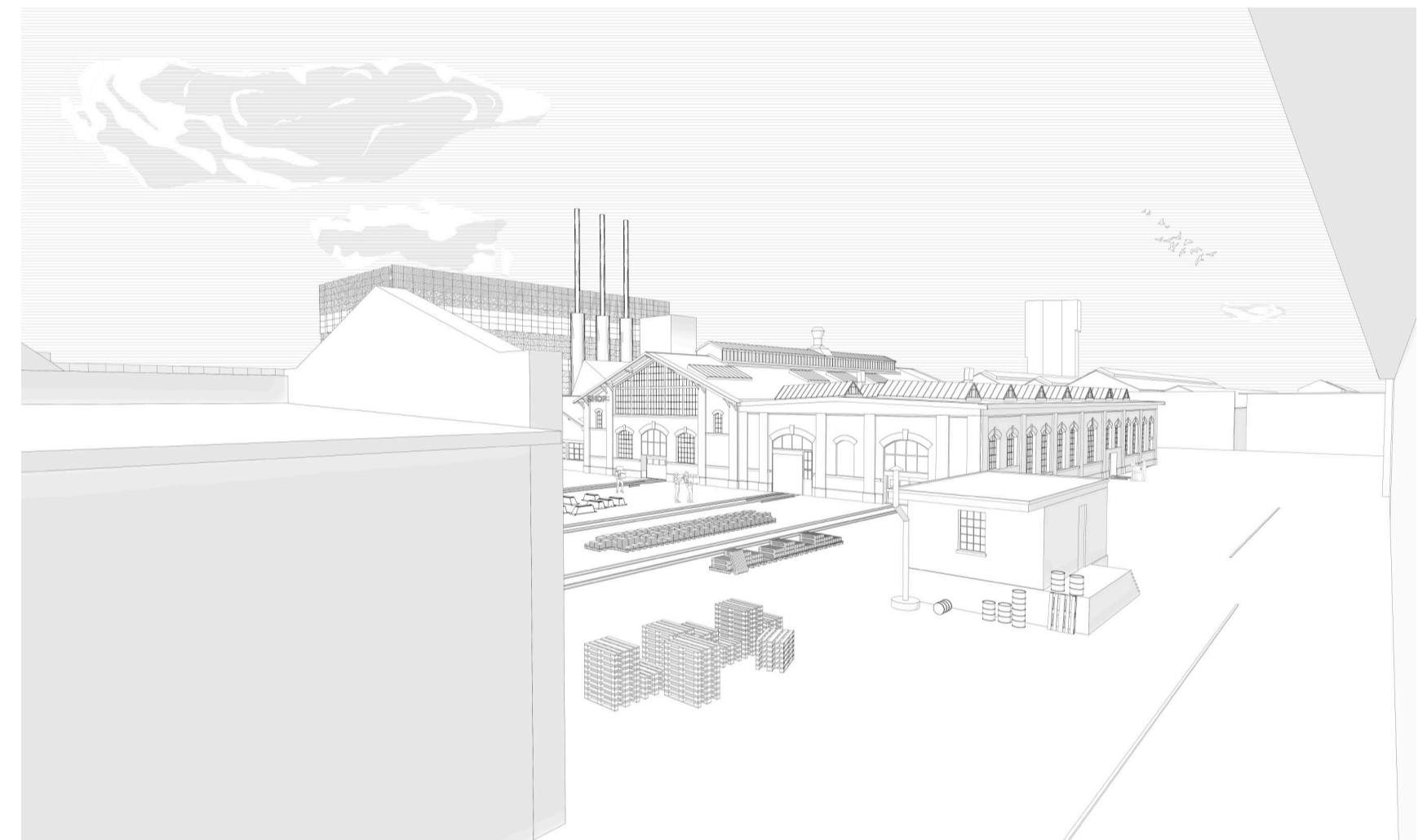
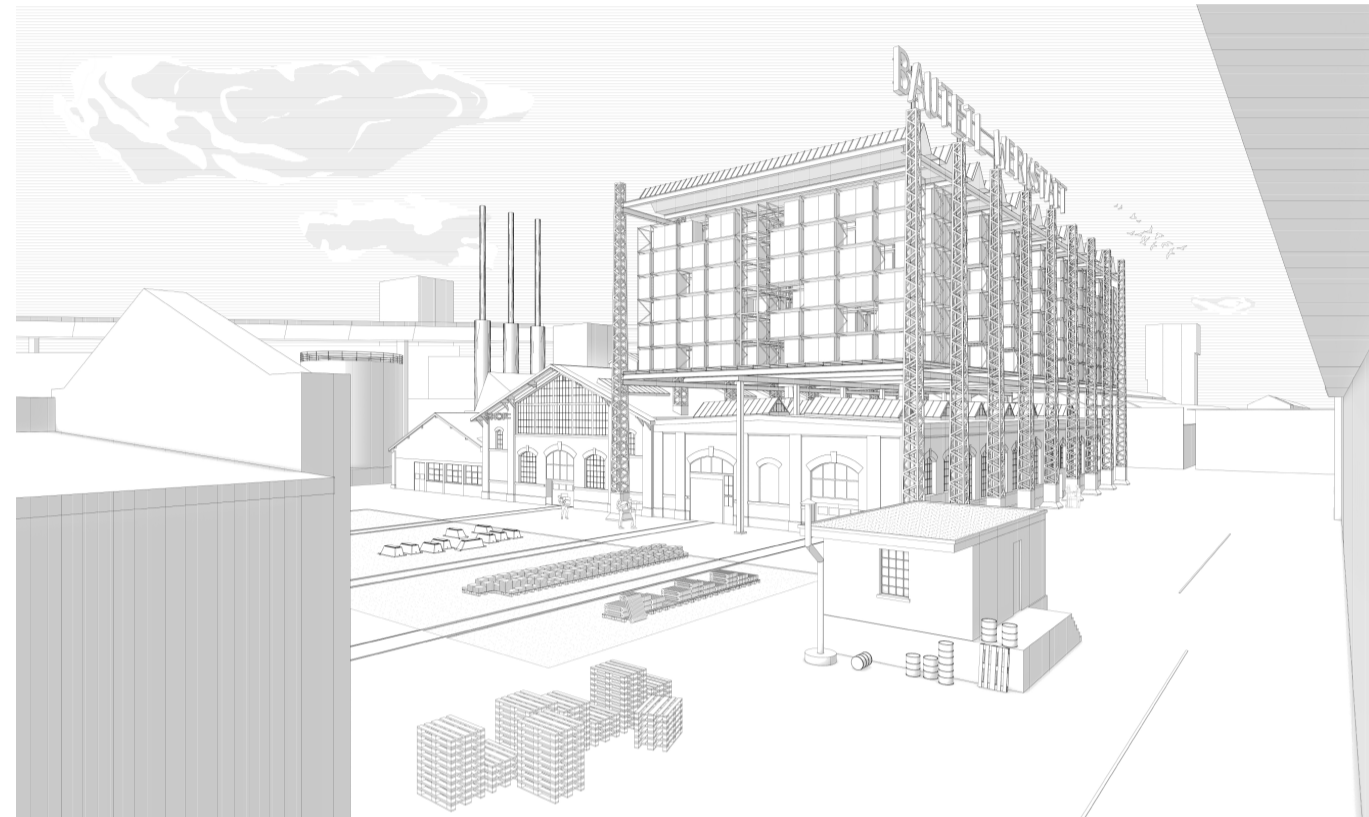


X.3.2.1.1 Picture as a Painting - transforming image



X.3.2.1.1.1

Line drawings



Text 1 and transcription of blablabla
Picture of bla bla bla
text of bla bla bla

X.3.2.1.1.1

Final image

