

ETH Zurich's Collections and Archives

Scientific Heritage for Future Research

Monograph

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Scientific Heritage for Future Research



Foreword

The second English edition of the documentation on ETH Zurich's collections is now available. It provides an outlook and takes stock. Based on the Strategy 2015–2020 for the collections and archives, ETH Zurich consistently exploits the potential of digital technology as an additional and contemporary form that enables its collections and archives to be opened up for research, teaching and the public.

The results are impressive: extensive indexing and digitisation projects are underway in four scientific collections. In the University Archives, the final index card will soon be transferred to a modern archival information system, which will enable the entire holdings to be searched in one, single place. And the establishment of a digital infrastructure for the scientific object collections has begun. None of the new projects embodies the goal of combining ETH Library's information science expertise with the technical expertise of the departments for the benefit of ETH Zurich and thus creating attractive, publicly accessible online services better than the latter.

Restoration, preventive conservation, anti-theft and emergency planning measures are also being taken to protect Switzerland's cultural heritage and the precious analogue research data that ETH Zurich's collections and archives safeguard and curate. Significant progress has also been made in these areas, and ETH Zurich can fulfil its responsibility.

In this way, we are gradually reinforcing the dialogue with society and similarly with ETH Zurich's researchers and students. Inward anchoring and outward radiance will remain priorities in the next few years. In this sense, ETH Zurich counts on its collections and archives – and they can count on ETH Zurich.

Prof. Dr Ulrich Weidmann

Vice President Human Resources and Infrastructure

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Preface to the 2nd English Edition

Following an internal audit in 2011, the ETH Board recommended that ETH Zurich devise a coherent overall strategy for the collections and archives it owns or manages. An extensive inspection and status determination of the collections and archives subsequently conducted by an external reviewer (Dr Thilo Habel) provided an overview of ETH Zurich's impressive collections and archives.

The present results report paints a portrait of ETH Zurich's scientific and arts collections, several of which can claim to be of national or international importance.

In the age of digitisation and virtual access to research bases and data, the collections and archives – be they in analogue or digital form – continue to be a rich, useful, sensible source and basis for academic work.

Within the scope of its digital strategy, ETH Library is gradually transferring the collections and archives it has been entrusted with into the digital world without ignoring their analogue basis. Not only does this improve the indexing and usability of the analogue archival material and collections, it also enables global access to the objects in the collections and archives that are of interest to specialists and all-rounders alike.

Dr Stefan Wiederkehr, who has been running ETH Library's Collections and Archives section since 2014, is responsible for compiling the present new edition. I would like to take this opportunity to thank him sincerely for all his hard work.

Dr Rafael Ball

Director of ETH Library

Introduction

In the recent past, research has become increasingly interested in scientific collections. The study of collections as knowledge systems makes a key contribution towards the history of knowledge and the history of individual scientific disciplines. At the same time, collections of objects – especially university ones – are infrastructures and form the basis for current research. On the one hand, this is the case when existing objects are studied with new issues and innovative methods. On the other hand, the importance of newly discovered objects is often only evident if they are compared with the reference materials in the collections. A major university cannot ignore these current research discourses any more than the associated national and international network formations.

In contrast to other renowned European and American universities, ETH Zurich has long made do without a public museum or maintaining its collection tradition. Zurich lacks a large natural history or architecture museum like those run by similar universities. The same goes for specialised technical collections. As revealed below, the reasons for this lie in the university's history. The universities that have preserved and maintained their collections of objects irrespective of the conservational and technical effort involved regard this as an opportunity today, using their collections and archives – combined with modern presentation forms – specifically for their self-presentation and science communication.

After they were founded in the 19th century, the University of Zurich and the Federal Polytechnical School spent the next half a century gradually developing joint scientific teaching and specimen collections. On the one hand, this seemed evident as both institutions were housed in the same building until 1914. On the other hand, the financial costs of providing modern, lively tuition with the aid of objects were considerable. Many of the holdings could be visited in large areas of the Semper Building (the main ETH-Zurich building today), which opened its doors in 1864. In the present, however, ETH Zurich's collections display a lesser physical presence as they are predominantly stored

in stack rooms for want of sufficient display possibilities. Nonetheless, the scientific collections are extensive and internationally in demand. The fact that they only cover sub-areas in biology and the earth sciences is the consequence of collection splits between ETH Zurich and the University of Zurich around the turn of the 20th century, which prevented the foundation of an interdisciplinary research museum like those in Paris, London or Berlin. The earth science exhibition facility *focusTerra* launched in 2009 can be interpreted as an albeit incomplete course correction.

A newer part of the collections and archives supplements ETH Zurich's technical and scientific core areas, which includes the gta Archive at the Department of Architecture with its extensive personal paper, plan and image collections as a centre for architectural history research from the 19th century to the present. The Archives of Contemporary History at the Institute of History are another example. Focusing on specific areas of interest and serving both national and international research, they have archived historical source material for over fifty years and have thus become a permanent feature on the Swiss archival landscape. These two archives stand out on account of their high degree of self-organisation and involvement in research. For the two literature archives (the Thomas Mann Archives and the Max Frisch Archive), it was ETH Zurich's special reputation that led to the respective foundation or donation agreements. The hallmarks of the collections and archives geared towards the humanities are their outstanding quality and strong external impact. They are an integral part of the nationwide and international research context and greatly enrich Zurich as a scientific and cultural location.

ETH Library, ETH Zurich's central information facility, not only houses the aforementioned literature archives, *focusTerra* and the Earth Science Collections, but also the ETH Zurich University Archives, the Image Archive, the Collection of Prints and Drawings, and the Material Collection, all of which have wide appeal.

ETH Library's key role in the "maintenance and further development of the culturally and historically important



focusTerra. The Earth Science Research and Information Centre of ETH Zurich in the atrium of the NO Building. 2014. ETH Library Zurich/Frank Blaser.

collections and archives at ETH Zurich” is anchored in ETH Zurich’s Organisational Ordinance from 2003. Even more important than this policy decision on the allocation of duties, however, is the following aspect: after libraries, archives and museum collections were separated into three different institutional types with clear profiles along the dividing lines of copy versus unique specimen and text versus non-textual object in the last few centuries, these differences are now blurring before our very eyes today: in a time when an increasing number of digital copies are accessible via the internet, the distinction between originals and reproductions is becoming increasingly more meaningless. These days, three-dimensional objects can also be scanned and depicted digitally like textual “flatware”. Libraries in general and ETH Library in particular started inventorying and cataloguing their holdings electronically before archives and museums did. And their experience in data management is even greater. The same goes for digitisation in high quality and great quantities, and the handling of material that exists exclusively in digital form. The reversal of the historical divergence of the library, the archive and the museum predestines ETH Library, with its expertise, to assume a leading role in making accessible

and mediating the holdings of ETH Zurich’s collections and archives in the digital age.

In the first section, this brochure embeds the development and role of the collections and archives at ETH Zurich in their entirety in a broader international context. The second section provides a brief portrait of the individual facilities.

Up-to-date information on contact people, locations and opening times at the individual facilities is available on ETH Zurich’s website (www.ethz.ch/collections-archives).

ETH Zurich's Collections and Archives at a Glance

The Foundation of the Federal Polytechnical School in a Golden Age of Collecting

Founded as the *Eidgenössisches Polytechnikum* (Federal Polytechnical School) in 1855, by European standards ETH Zurich is a relatively young university. However, it would be wrong to conclude that its scientific collections are any less developed than its older counterparts. After all, collecting based on systematic scientific principles only began in the 17th century and was primarily a matter for doctors, chemists and international tradesmen. If universities possess items of natural history or art from the Early Modern Age today, they can usually be traced back to the activities and purchasing power of these private individuals and usually did not come into public ownership until the 19th century.

Pioneering scientific tuition, observational learning and drawing from originals only caught on via scientifically and technically minded educational facilities after the French Revolution. As a result, the accumulation of documentary and visual material also became the responsibility of the revitalised universities and newly founded polytechnics in the German-speaking world. The Federal Polytechnical School was established in a golden age of scientific collecting. The success of the new foundations in the 19th century is due in no small part to object-related and experimental research on the one hand and an aggressive professor recruitment policy on the other.

The collections took up a substantial, if not the lion's share, of the floor space in the university buildings erected in the 19th century. And Zurich was no exception. The school and museum exhibition rooms formed a unit. However, it should be pointed out that the term "collections" in the minutes of School Board meetings was not solely taken to mean precious individual items from nature and



Visual learning. Microscopy theatre in the Polytechnic's chemistry building, 1901. Photographer: Johannes Barbieri. ETH Library Zurich, Image Archive, Ans_00397-FL, DOI: 10.3932/ethz-a-000013176.

technology, but far more the entire material teaching and research apparatus, i.e. from technical visual models to the course microscopes and laboratory facilities.



The Polytechnical School and the University shared the Semper Building from 1864 to 1914. 1934. Photographer: unknown. ETH Library Zurich, Image Archive, Ans_00025, DOI: 10.3932/ethz-a-000012899.

From the “Joint Scientific Collections of the Two Universities” to the Separation Agreement between the University of Zurich and the Polytechnical School

In the 19th century, the Cantonal University (founded in 1833) and the Federal Polytechnical School were housed in the same building, including in today's main ETH-Zurich building from 1864. In subjects that were represented at both the University and the Polytechnical School, the joint usage of the collections was a matter of course.

The “Joint Scientific Collections of the Two Universities” were already developed from 1856. Who actually owned the individual objects could usually be discerned from different inventory codes. In the years that followed, the financial obligations and rights of usage on the part of the city, canton and federal government were arranged for the various collection sections. However, scientific collecting was always a process-based affair. The collections' holdings were in flux; they were rearranged, shrank and grew. For instance, the mounting need for teaching space in the Polytechnic's main building led to the relocation of the zoological holdings.

Precisely at a time when large natural history museums were being constructed or expanded in many other European cities, the Zurich universities decided to separate their collection areas. With the separation agreement that came

into force in 1908, the general collections were divided up according to topics and provenance: the zoological collections of extant and fossil vertebrate species went to the university, the insect collection and the palaeobotanical holdings to the Federal Polytechnical School, which also received the majority of the herbaria and the entire geology and mineralogy collections. While this clarified the ownership issue, any hope of developing a large interdisciplinary research museum like in London, Paris, Vienna and Berlin was dashed.

The Closure and Re-Launch of Collections

Today, ETH Zurich owns teaching, scientific research, historical and art history collections, as well as archives for different text types and image media. Collections of professionally compiled and purchased teaching materials from serial production were key factors of modern scientific teaching in the early days of the Polytechnical School. However, the fact that technical teaching models were already deemed outdated after a relatively short period of time back in the 19th century (just like today) had a negative impact on the ongoing upkeep of the collections.

As a whole, ETH Zurich's collections are no longer comparable to those of other technical universities founded in the 19th century. After all, the historical holdings of teaching materials on the engineering disciplines are (probably) entirely missing today. Valuable collections of machine models, transmission types and architectural models and parts no longer exist. The same goes for many sections of the scientific public and teaching collections. The sparse remnants of what were once extensive and highly significant collections of visual scientific material are all the more

worthy of protection. After all, they provide insights into the university didactics of previous decades and the production history of models and other ways of visualization. Only one teaching collection, namely the veterinary medicine collection of the former Agricultural Institute, can still be visited in the atrium of the LFW Building, together with the remnants of a zoological teaching collection at its original location.

Painful losses – like the earlier, premature dispensation with the material collection in architecture – had to be undone through a complete reconstruction and reorganisation. The Polytechnic's Bauschule at the time owned a remarkable collection of plaster casts of sculptural artworks and architectural pieces, which form part of the University of Zurich's archaeological cast collection today.

As a result of various closures, liquidations, outsourcing and transfers, the scientific and technical collections have shrunk to a core holding in the last 150 years, which was regarded as vital for research, teaching and above all the scientific exchange. However, this also means that there is a lack of sources and factual information on teaching and university culture from the 19th and 20th centuries. Today, some fields seem to be new foundations without any history whatsoever. This important university history aspect has not yet been researched adequately. Nevertheless, it would be a big mistake to shrug off collections as only being of interest from a scientific and media history perspective. Their value for the visualisation of complex contexts in teaching is not to be underestimated today, either.

The systematic collection of personal papers that are of scientific, architectural and historical interest in the University Archives, the gta Archive and the Archives of Contemporary History is comparatively new at ETH Zurich. In the second half of the 20th century, these were joined by the two major literature archives on Max Frisch and Thomas Mann, which were donated to ETH Zurich especially by their founders because they saw a guarantee against their transfer or neglect in the Swiss Confederation. This reputation aspect is also relevant for other research



A traditional exhibition setup. Federal Polytechnic School, main building, Geological Collection, around 1910. Photographer: unknown. ETH Library Zurich, Image Archive, Ans_05040, DOI: 10.3932/ethz-a-000033039.

collections, such as the biological and earth science collections. These were – and still are – also significantly enriched by donations from private collections, whereby ETH Zurich's esteem as a state science institution is pivotal for the donors. By upgrading the Image Archive to an independent unit, ETH Library, the holdings of which already included image material beforehand, responded early to the “iconic turn”, the rediscovery of the visual in research and the mounting interest in the image as a medium in general.

The collections and archives that remain and have often been reorganised, and those that have been added in the last sixty years are predominantly of national, if not international, importance and thus constitute a special responsibility on the part of ETH Zurich. In their uniqueness, they harbour the potential to boost ETH Zurich's identity.

Changing Presentation Forms

Collections are not solely object holdings in particular orders. Instead, they form a unit with the rooms they take up and the furnishings used to store, showcase and process them. From this perspective, none of the old collection facilities is in the condition it was in the first 100 years of its existence anymore. There is barely any old presentation and storage furniture in the form of display cases or wooden collection cabinets in the entire university. Nowadays, for reasons of space and safety, practically all the holdings are stored in mobile shelving systems. However, there is little to support recreating the original condition and displaying the holdings in a way that has historical appeal.

After all, the old collection environments were deliberately scrapped in the second half of the 20th century. The earlier forms of presentation conformed to rules that survive in many other places around the globe and can still be observed there.

At ETH Zurich, the cuts were so deep in the 20th century that they have to be deemed irreversible. With the disappearance of collection rooms and exhibition halls, the holdings became inconspicuous and were no longer perceived as self-evident facilities of a university steeped in tradition.

ETH Zurich's extensive dispensation with public museums and keeping collection traditions alive sets it apart from other major universities. Undoubtedly, this is linked to ETH Zurich's self-image as an agent capable of "Transforming the Future", as the commemorative publication to mark the 150th anniversary is aptly captioned. However, precisely the long-term view can sharpen the consciousness for the changeability of progress optimism and visions of the future, and give an institution that is committed to scientific self-reflection a unique identity. Harvard University demonstrates how to seize this opportunity, for instance. It merged six museums in 2012 to form a network with public appeal, Harvard Museums of Science & Culture (HMSC), deploys its historical heritage specifically for PR and uses its collections and archives in the communication of current research. And with its planned Forum Wissen, Göttingen is the most consistent university in the German-speaking world when it comes to developing a new university museum.

The Role of Collections in the Present and Future

By the 18th century at the latest, collections were places of scientific systemisation. In previous times, researchers had to make regular journeys to the relevant institutional or private collections to examine specimens, papers or objects on site. Due to inaccessible inventories, such object searches were frequently unsatisfactory, time-consuming and costly. Networks of people were able to facilitate this kind of search by tasking travelling colleagues with searches in other cities. The possibilities of the digital age – the publication of catalogues and/or objects on the internet – come in extremely handy here.

Collections of teaching and research materials at universities provide an indication of the individual scientific practice of their time. More comprehensible than bibliographies, they are clear evidence of continuity and breaches in research and teaching, of strategic focuses for epistemic objects, and of mediation practice. In this sense, they are science history made manifest. The objects of many collections are specimens that serve as reference material for scientific work and are meant to be kept forever. In future, they need to be available as bases for changing issues. A temporary lack of regard for collection components therefore does not always mean a loss of value. Quite the contrary, in fact: the discovery and publication of "forgotten" holdings can trigger unexpected, fresh interest. The collection objects are initially silent per se. Their value therefore essentially depends on the state of the accompanying material, i.e. labels, captions, storage context and written documentation.

Collections and collection objects are thus only relevant for a subject or science history if they can be traced, determined and contextualised, which requires the upkeep and indexing of the accompanying material. In favourable cases, collection objects can provide security in determining

objects of comparison, reconstruct scientific processes and help create new scientific issues and references.

Scientific collections maintained at universities in this way have four main, closely related functions: usage in research, usage in teaching, scientific mediation to the wider public and the preservation of cultural heritage. And ETH Zurich's collections and archives are certainly no exception.

Reference Collections as a Basis for Today's Research and Teaching

Object collections can be reference databases for general object determination in both the scientific and cultural field. Consequently, they are not just important for their individual scientific disciplines, but also serve as references for knowledge that is in demand the world over. This is the case, for instance, if the authenticity of artworks is to be verified or if taxa need to be distinguished in biology. Even if the establishment of collections dates way back into the 19th century or even earlier, the term "historical" in the sense of a purely science history relevance is certainly not recommended here. After all, the significance of biological reference collections lies in the very possibility of comparing old material with new findings. The point of these collections is thus their permanent upkeep and expansion. Time gaps in this upkeep inevitably result in documentation gaps and thus, to a greater or lesser extent, losses of value.

ETH Zurich's scientific reference collections are of great national and international importance: the palaeontological section of the Earth Science Collections harbours a substantial number of original images a selection of which was recently made accessible online via E-Pics. This can then bring the often faded memories of founder figures and great university lecturers back to life. Needless to say, the collections also grow on the back of current research activities and transfers of personal papers. These assertions can also be applied to the plant and fungal herbaria.

In general, there was a tendency in the 20th century for the viewing of three-dimensional objects to be pushed into the background heavily in favour image projections. As a result, model collections became less important, and were dropped or neglected. The scientific reference collections thus faced a dilemma. On the one hand, they were still supposed to serve as the memory of their disciplines; on the other hand, however, along with the subjects of systematics and biodiversity, they lost their place in the canon of topics in their departments. It is an unsettling tendency that biologically systematic research is only conducted at a handful of mostly university museums of natural history worldwide and the majority of the research output achieved in these fields can be attributed to qualified amateur science. In accordance with the trend, the collections at ETH Zurich are also staffed less than was usual years ago. Consequently, they cannot even begin to exhaust their enormous potential in research and analysis topics.

Conservation and Presentation of Cultural Assets

The somewhat minor role that ETH Zurich's collections and archives have played in the popularisation of science and PR work has already been touched upon. The status determination following the 2011 audit detected untapped potential here.

The majority of ETH Zurich's collections and archives on the Zentrum and Höggerberg campuses are listed explicitly in the Swiss Inventory of Cultural Property of National and Regional Importance. Needless to say, there is also considerable international interest in protecting these important holdings. Neglecting their upkeep and indexing is bound to harm the university's reputation. In the strategy paper for the period 2017–2020, ETH Zurich defines the upkeep of the Swiss cultural property it holds as a national responsibility and anchors this in the university's statutory mandate. In doing so, it goes beyond the cultural property inventory and specifically assumes this responsibility for its collections and archives – an important signal that the

loss of valuable collection holdings due to neglect or destruction will no longer be tolerated in the 21st century.

There is additional protection for the ETH Zurich University Archive's archival material collected on the basis of the Federal Act on Archiving. As ETH Zurich's regulation for the archive from 2002 stipulates: "The archive records are the property of ETH Zurich and subject to the sovereignty of the Confederation. They are inalienable."

Apart from displaying it in a museum, a specific form of protecting cultural property is its analogue or preferably digital publication. The *Verordnung über das Kulturgüterverzeichnis des Bundes*, which came into force in mid-2014, was developed in this spirit. It is a mistake to believe that the existence of particularly valuable artefacts from art and science is best preserved for future generations through physical isolation and silence. Instead, publicity protects mobile cultural property against theft and neglect. After all, only well-known and well-documented objects can be tracked down if lost. Items known to have been stolen are practically unsaleable in the relevant art or natural history trade. The logical consequence is to prioritise the publication of images and data concerning endangered cultural property and loan out objects for serious exhibitions with suitable security measures.

Scientific Collections as a Current Research Object

Besides research *in* collections and archives, research *on* collections and archives has experienced a remarkable upswing of late because cultural and science history have (re)discovered collecting as a cultural practice.

The cultural-historical engagement in the phenomenon of collecting natural objects and artefacts began in the 19th

century with Jacob Burckhardt, who developed the concept of the early modern Chamber of Art and Curiosities as a place of both associative and ancient mythological order. This was in contrast with scientific collection later on, which accumulated physical objects or artefacts as research specimens in a specialised and systematic manner. The scientific collections of the 19th and 20th centuries saw their tradition in this systematic form of collecting, which can be traced back to Carl von Linné (1707–1778) for biology and Johann Joachim Winckelmann (1717–1768) for the arts. These were an integral part of the best practices in their disciplines.

When Horst Bredekamp argued the existence of a chain stretching all the way from royal representative art chambers to the current scientific collections in his publication *Antikensehnsucht und Maschinenglauben* in 1982 (as a monograph in 1993), it triggered a wave of publications on topics related to collection cosmologies.

Ultimately, however, it was solely the early academic collections that led to scientific systemisation and thus collecting at universities. Since the 1990s, a remarkable series of publications has provided key insights into the science history and phenomenology of collecting. In retrospect, it is remarkable that so little attention has been paid to the fact that the world's most important natural and medical history museums, botanical gardens and a large number of technical and art history museums have been established at and funded by universities.

In 1998, an innovative project on the research and digital indexing of the collections at the Humboldt University of Berlin was started. On this basis, the 2000/01 exhibition *Theatrum Naturae et Artis* in the Martin Gropius Bau in Berlin addressed the close link between empirical scientific practice and collection practice, and underlined the importance of museums in the foundation of universities in the 19th century. This was the initial spark for research examining scientific collecting as a key cultural technique of the present. It also led to the formation of associations and societies for collection facilities at universities on a

national level or their organisation under the umbrella of the International Council of Museums. Whereas natural history museums and botanical gardens had been particularly well-connected until then, the aspect of ownership by universities consequently became a priority. New amalgamations based on this criterion created the room to discuss the specific problems that arise in university collections. At numerous conferences, the particular problem areas of positioning within the universities, modern indexing, digitisation and the contemporary use of the collections as a means of scientific communication emerged in the newly formed specialist circles.

As a result of the German Science Council's recommendations on scientific collections as research infrastructures (2011), the Coordination Centre for Scientific University Collections in Germany was launched in 2012. It operates the internet portal <http://wissenschaftliche-sammlungen.de>, holds regular events and issues relevant publications.

After individual aspects were examined in more detail in smaller publications, the *Empfehlungen zum Umgang mit wissenschaftlichen Sammlungen an Universitäten* (Recommendations on Handling Scientific University Collections) were recently published on behalf of the German Federal Ministry of Education and Research. The *Arbeitskreis Wissenschaftliche Sammlungen Schweiz* initiated in 2013 also hosts a website and convenes every so often.

Within ETH Zurich, the heads of all the collections and archives are united in a plenary assembly. A commission appointed by the university's Executive Board ensures the coordination of the activities and serves as an advisory expert body within the university.

ETH Zurich's collections and archives are advertised on ETH Zurich's website and a collective flyer, irrespective of their organisational affiliation, and put together an annual programme of evening tours for the public.

Individual Portraits

ETH Zurich's Biological Collections

For the historical reasons mentioned at the beginning, Zurich does not have a natural history museum and is thus an exception for a city of this status. However, this does not mean to say that ETH Zurich's university collections are lagging behind the corresponding collection departments at the large museums in terms of quality or scale. The amount of type material, i.e. specimens deposited, based upon which the first descriptions of biological taxa were carried out, is impressive. In biology, the term "taxon" is taken to mean a group of organisms that can be distinguished from other groups of organisms and described through particular, generalising statements. It forms the basis for biological classification and nomenclature.

The work on and comparison with reference collections in particular remains essential for biodiversity research. The fact that natural systems are always changing also means that a variety of modification forms and local evidence needs to be added to the type forms. This guarantees specimens for a taxon's variation range and spread. Only the continual incorporation of discoveries and findings into the collections produces a reliable biodiversity archive in time and space. One consequence of this view of more recent research is that a seriously run reference collection can never be completed.

University biological collections usually work in teams, where they perform protection and indexing subtasks for their disciplines. Especially for herbaria, authors often deposit isotypes, i.e. duplicates of the plants they used for their initial species description, at reputable collection institutions. This is supposed to prevent the material from being lost completely in one fell swoop. The Zurich herbaria also keep this kind of material on a large scale, which carries a special obligation as the type specimens form the basis for the international nomenclature code for algae, fungi and plants (ICN).

Reference Material for Biodiversity Research: the Entomological Collection

The Entomological Museum at the Federal Polytechnical School was founded in 1858 with a donation of the Heinrich Escher-Zollikofer (1776–1853) insect collection. The donation was made on condition that it would be properly housed and a permanent curator position would be established. The first director of the museum was Oswald Heer (1809–1883), who headed the disciplines of entomology, botany and palaeontology at both Zurich universities. In 1864 the main insect collection as well as a special demonstration collection was installed in the Semper Building following its completion and, because of Heer's research activities, fossilised insects were also included. Under the separation agreement that ended the "Joint Scientific Collections of the Two Universities", the insect collection was assigned to the Polytechnical School. In 1928 the Entomological Museum became an ETH-Zurich institute. Phases of expansion and increased interest in its scientific and research value were followed by periods of neglect and relocations due to a lack of space. After the closure of the Institute of Entomology, the collection was moved to the Institute of Agricultural Science and in 2014 was re-housed in a modern climate-controlled facility in the WEV Building.

Today, the collection ranks among the most important in Switzerland with approximately two million prepared insects in 6,000 drawers, including over 5,000 type specimens. The species of dragonflies, butterflies, true bugs and hymenopterans found in Switzerland are extremely well represented in the collection. It also includes approximately 6,300 (80%) Swiss beetle species.

The collection is growing thanks to the incorporation of collections related to research projects and, importantly, the acquisition of private collections. There is a small holding of historical entomological teaching materials, as well as a number of thematic insect displays. An archive of digital photos from entomological field research can be viewed on the platform E-Pics.



Swiss butterflies (*Lysandra coridon*). Data series spanning almost 200 years provide a unique basis for research on climate change. 2014. ETH Zurich, Entomological Collection/Rupesh R. Kariyat.

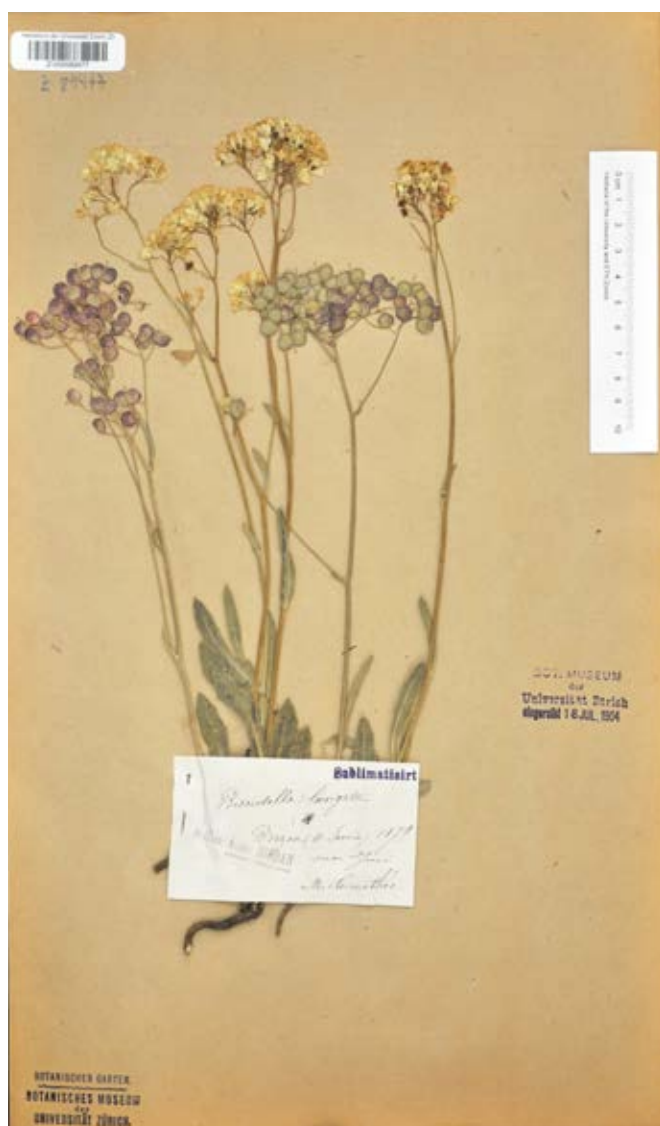
Thanks to a complete overhaul of the website, social media activities and its presence in the press, the collection demonstrates its relevance for current topics and appeal for the general public. The continuous database-aided indexing of the collection beyond type specimens also plays an instrumental role here. Priorities for the near future are to expand participation of the Entomological Collection in research, teaching and public outreach programs including raising public awareness of the link between the collection and public health, environmental health, and agriculture. The current digitisation project greatly improves access to the collection and provides agencies with important historical bio-geographical data for environmental impact assessments, bio-monitoring databases and next-generation museum based research.

Old and New Cooperation with the University: the Botanical Herbarium ZT

After the foundation of the Polytechnical School in 1855, not only did Oswald Heer hold the Chair of Special Botany at both universities; he was also Director of the Botanical Museum in the botanical garden *Zur Katz* (now the Old Botanical Garden). Heer's own collection formed the basis for the Polytechnical School's herbarium, which was granted its own curator in 1859. Until 1914, the ETH Zurich and University of Zurich herbaria were maintained jointly in the Botanical Garden. Following the split laid down in the separation agreement, the ETH-Zurich herbarium was relocated to the LFW Building in 1915, where it remained until 1990. After the closure of ETH Zurich's Botanical Institute in 1980, the herbarium was assigned to the Geobotanical Institute Stiftung Rübél and has been part of the "Combined Zurich Herbaria" located at the University of Zurich's Institute of Systematic Botany since 1990.

It is an extensive, systematic, dry material collection of domestic and foreign vascular plants, focusing on Europe and some regions overseas. The herbaria holdings Z (University) and ZT (ETH Zurich) are stored together in the systematic main collection. The herbarium of the former Geobotanical Institute Stiftung Rübél has been transferred to the herbarium ZT. The large number of types is kept separate from the main collection. As a historical holding, there is a collection of 8,200 mostly three-dimensional exhibits (models, preserved specimens) from the defunct Botanical Museum.

The protection of the collection items against pests, light and humidity is guaranteed and the systematic classification of the (united) main herbarium maintained. The herbarium is regularly consulted for thesis projects. The most common topics are Swiss flora and the fields of evolutionary biology and species conservation. The collection is also used by the Swiss Botanical Society in teaching to certify the botanical knowledge of amateur fieldworkers. This certification service is an attempt to counter the decreasing role of species knowledge in university curricula by issuing



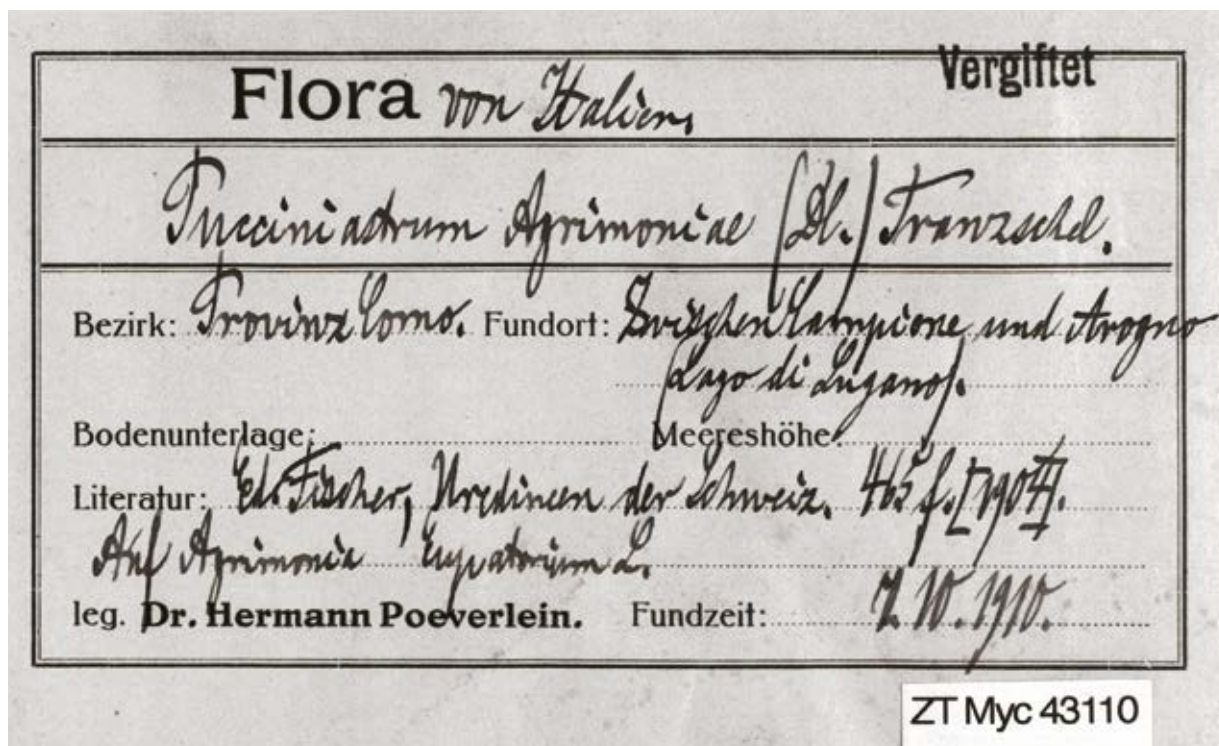
Biscutella laevigata (buckler mustard in English). Collected by M. Timothée in France, May/June 1879 (Brizon, Haute Savoie). Specimen passed on to Alexis Jordan. ETH Zurich, Botanical Herbarium.

non-university educational certificates. The herbarium ultimately serves the documentation and storage of research material and reference documents from the institutions involved and external researchers. The herbaria are working on the electronic indexing and digitisation of the documents. The database currently has almost 132,000 entries and can be accessed by anyone at www.zuerich-herbarien.ethz.ch/index_en.html. In the course of the digitisation projects, an increasing number of type specimens are being discovered. Although the old herbaria might be a top priority for the history of botany, conservation and restoration measures are needed before they can be indexed and processed scientifically.

The staff conduct PR work via collection tours, excursions and involvement in exhibition projects. Cultivating contacts with amateurs is extremely important for two reasons: firstly, expertise on many taxa can only be found outside the universities these days due to the thinning of resources; secondly, the herbaria undergo valuable expansions through the absorption of private collections.

No More Plants: the Mycological Herbarium

Traditionally, preserved fungus specimens were collected as parts of plant herbaria, including in Zurich. Fungi were only separated off in the course of the 20th century. At ETH Zurich, a second curator position was created for cryptogams at the herbarium in 1953 to process this group separately. Therefore the gradual independence of the Mycological Herbarium also mirrors the history of biology as a discipline. Following the closure of the Botanical Institute in 1980, the fungus herbarium was also assigned to the Geobotanical Institute Stiftung Rübél. In 1990 the herbaria of ETH Zurich and the University of Zurich were amalgamated to form the "Zurich Herbaria (Z+ZT)". For reasons of space, the mycological collection was outsourced from the herbarium, which is housed in the (new) Botanical Garden, in 2005 and moved to the CHN Building on the ETH Zentrum



A label from the rust fungus collection. ETH Zurich, Mycological Herbarium.

campus. It is currently affiliated to the Institute of Integrative Biology.

The number of items currently amounts to around one million, including a very large number of type specimens. There is no alcohol or freeze-dried material; all desiccated specimens are air- or heat-dried. Besides the familiar fungus groups, samples of taxa that are no longer classed as fungi are also collected. These include the Myxomycetes (slime moulds) or the Oomycetes (water moulds and downy mildews).

One of the most important groups in the collection are the rust fungi represented by almost 60,000 specimens, with a huge number of type specimens. Rust fungi have been a historical focus of the collection and are also researched by the current curator. Important collections that have entered the herbarium stem from Eduard Fischer (especially rust fungi), Ernst Gäumann (rust fungi), Emil Müller (ascomycetous fungi) and Egon Horak (agarics: globally, specialising in temperate South America and New Zealand). These are joined by Ernst Stitzenberger's lichen collection. Thanks to donations and the curator's field

research and collecting activities, the collection is expanding. An extensive collection of specialist prints that are indexed in a file catalogue also belongs to the Mycological Herbarium.

The core tasks include the secure storage and archiving of mycological items and the expansion and upkeep of the collection. The physical integrity of the items is guaranteed (protection against insects and humidity). Incoming and outgoing material is deep-frozen as a precaution to protect it against pests. The mounting, labelling and storage are exemplary. Often, samples are kept in their respective substrates and hosts, i.e. rocks, wood, plant parts, insects or the like.

The Mycological Collection can be used for scientific studies upon agreement with the curator. Material is – as with the plant herbaria – only loaned to scientific institutions, albeit free of charge. The processors of the material may also remove samples for microscopic or chemical analyses, or extract nucleic acids in agreement with the curator. In return, the results (e.g. revisions of names, publications) are expected to be supplied to the loaning collection.

One research focus is the diversity of rust fungi in Switzerland. Within the scope of a cooperative project with ETH Library, the labels for all rust fungi (approx. 57,000 specimens) were digitised, and the metadata recorded and made accessible on E-Pics, ETH Zurich's central image database.

The fungus herbarium is a rare example of a collection that is supervised, researched and expanded by a fulltime curator today. Moreover, the curator's research interest in parasitic fungal organisms ties in with key biological topics, which are being processed at several chairs. Despite its minimal staffing, the herbarium can thus be described as research-intensive and expanding.

A Successful Partnership: the Combined Zurich Herbaria Association

In 1990 the botanical collections of ETH Zurich (Herbarium ZT and Mycological Collection), the University (Herbarium Z) and the City of Zurich (Herbarium ZSS) were amalgamated into one organisational unit for their collection, upkeep, indexing and mediation, while preserving the original ownership conditions. As a result, a top-class international herbarium with a vast number of type specimens was created. The Zurich herbaria have a combined total of around 3.8 million specimens, including approximately one million fungi. Zurich thus boasts the second largest collection of its kind in Switzerland and is one of the fifteen biggest in the world. The online database at www.zuerich-herbarien.ethz.ch/index_en.html enables corrections and comments to be submitted and specimens to be identified. The data is also indexed in GBIF Swiss Node (Global Biodiversity Information Facility – Swiss Biodiversity Data Network; www.gbif.ch/en).

The principle location is the University of Zurich's Institute of Systematic Botany in the Botanical Garden, where the day-to-day scientific and technical business takes place. The association guarantees a high standard of the usual scientific services (queries, visitor support and loans), teaching (supervision of final theses, courses, internships

and excursions) and PR work (events for nature protection organisations and public educational events). Moreover, the Combined Zurich Herbaria is a service-provider for international botanical research. The curators' focus areas determine the research profile: currently, this includes the plant classification and distribution of certain succulent groups, botanical university didactics, and the classification and distribution of rust fungi.

The Combined Zurich Herbaria is a shining example of the fruitful collaboration between the two Zurich universities and could serve as a model for the cooperation between other collection facilities in the future.

The Earth Science Collections and *focusTerra*

The Earth Science Collections and *focusTerra*, the Earth Science Research and Information Centre of ETH Zurich, own scientific material from all periods of the university's history and earlier. This can be subdivided into minerals, rocks and fossils on the one hand, and teaching and visual materials, such as reliefs, pictures or maps, on the other. In addition, they also contain a historical instrument collection. The vast Geological-Palaeontological Collection and the smaller Mineralogical-Petrographic Collection are organised separately. The storage locations are the NO and CAB buildings (ETH Zentrum) and HEZ and HDB (Hönggerberg). A small number of selected exhibits are on public display in the permanent *focusTerra* exhibitions and in didactic display cases in the ambulatories of the NO Building.

While exhibition and research pieces were located right next to each other in drawer cabinets topped with display cases in the main building and later in the NO Building in the early days of the collection, the holdings vanished from



The exhibition and research collection in the NO Building. ETH Zurich, Natural Science Building, East Wing, atrium, 1930. Photographer: unknown. ETH Library Zurich, Image Archive, Ans_02362, DOI: 10.3932/ethz-a-000015615.

the public eye with the introduction of cellar storage in mobile shelving systems. A small mineralogical exhibition only reopened on the ground floor of the NO Building in 1980. Within the scope of the redevelopment and reorganisation of the building between 2005 and 2009, a modern architecture for a permanent exhibition was realised by building on a concept designed by the two collection curators. Together with the exhibition facility *focusTerra*, nowadays the Earth Science Collections are run by ETH Library. The strategic orientation takes place in consultation with the Department of Earth Sciences.

Treasures from Underground: the Mineralogical-Petrographic Collection

As with other collection facilities, the Earth Science Collections stem from the holdings of the Society of Natural Sciences Zurich, founded in 1746, which the Canton of Zurich acquired in 1837 and incorporated into its university. After the foundation of the Polytechnical School in 1855, the Earth Science Collections were used by both universities and moved to ETH Zurich at the beginning of the 20th century as a result of the separation agreement. As the bulk of the Earth Sciences Collections, the Mineralogical Collection was curated by the Institute of Mineralogy and Petrography. Up until the NO Building renovations from the middle of the 20th century, the Mineralogical Collection had always had a large share of the exhibitions in the atrium and other parts of the building, which had been erected by Gustav Gull (1858–1942) between 1912 and 1916. Since the demolition of the courtyard installations and opening of *focusTerra*, the Mineralogical Collection has been utilising the middle platform of the exhibition tower. Private collectors made key donations between 1915 and 1925, most notably the collections of Dr David Friedrich Wiser (1802–1878) and shoe manufacturer Eduard Bally-Prior (1847–1926).

The total number of mineralogical and petrographic pieces amounts to roughly 70,000. Apart from the extremely precious exhibition material (e.g. alpine gangue minerals, “gemstones” and ore minerals), which can be admired in

focusTerra, from a scientific perspective the available mineral type material is irreplaceable and of prime importance. The two historical collections of Wisser and Bally-Prior symbolise private collecting in Switzerland and emphasise that ETH Zurich was, and still is, highly regarded as a safe repository. The so-called Tunnel Collections – meticulously documented rock samples that stem from the construction of the railway and road tunnel through the Gotthard and the Simplon Tunnel – are of national importance. Moreover, special collections contain “Rocks of Switzerland”, “Rocks and Ores of the Gonzen”, raw mineral and construction materials of Switzerland, Swiss rocks in general, and decorative rocks from Ancient Rome. Needless to say,

collections of specimens for research projects, final theses and dissertations, and special themes such as volcanic rocks also exist. There is meticulous accompanying written and pictorial material on many expedition and special collections. The collection also boasts extensive didactic material from university teaching. The Teaching Material Collection, the historical Instrument Collection and the Relief Collection described below are also maintained by the curator of the Mineralogical Collection. These holdings may well be globally unique in terms of their kind and quality. Numerous series of crystal models from different periods and a wide range of materials are also of interest.

Today, the collection primarily grows thanks to donations from private individuals. The criteria for their acceptance include their relevance for research and their suitability as didactic demonstration and exercise material. Special objects for special exhibitions are also donated. The main focus is aesthetic and top-quality objects that are relevant to Switzerland and the Alps.

Scientific sample material still needs to be deposited in a collection as a reference and easily traceable. Moreover, visual teaching aids remain vital. Thematic tours and object identifications are offered. It is also possible to visit a scientific collection and borrow objects. The collection holdings are arranged and labelled systematically.

The hunt for crystals in the mountains as a specific Swiss characteristic of popular scientific appropriation needs to be taken into account when evaluating the Mineralogical Collection. From the public's point of view, the mineral collection at a state university was granted the status of national reference institution. Important bequeathed objects were, and still are, more likely to be entrusted to a state collection facility than one where their long-term curation is uncertain. In this light, the electronic indexing and online presentation of the collection are also pressing tasks for the near future. The fact that extensive expedition and tunnel construction documentation is on hand suggests that it is worth georeferencing objects and documentation, and using new presentation forms from the digital age.



Rutile quartz from Piz Ault (Vals). 2013. ETH Zurich/C. Hager.



In the Geological-Palaeontological Collection's magazine. 2014. ETH Library Zurich/Frank Blaser.

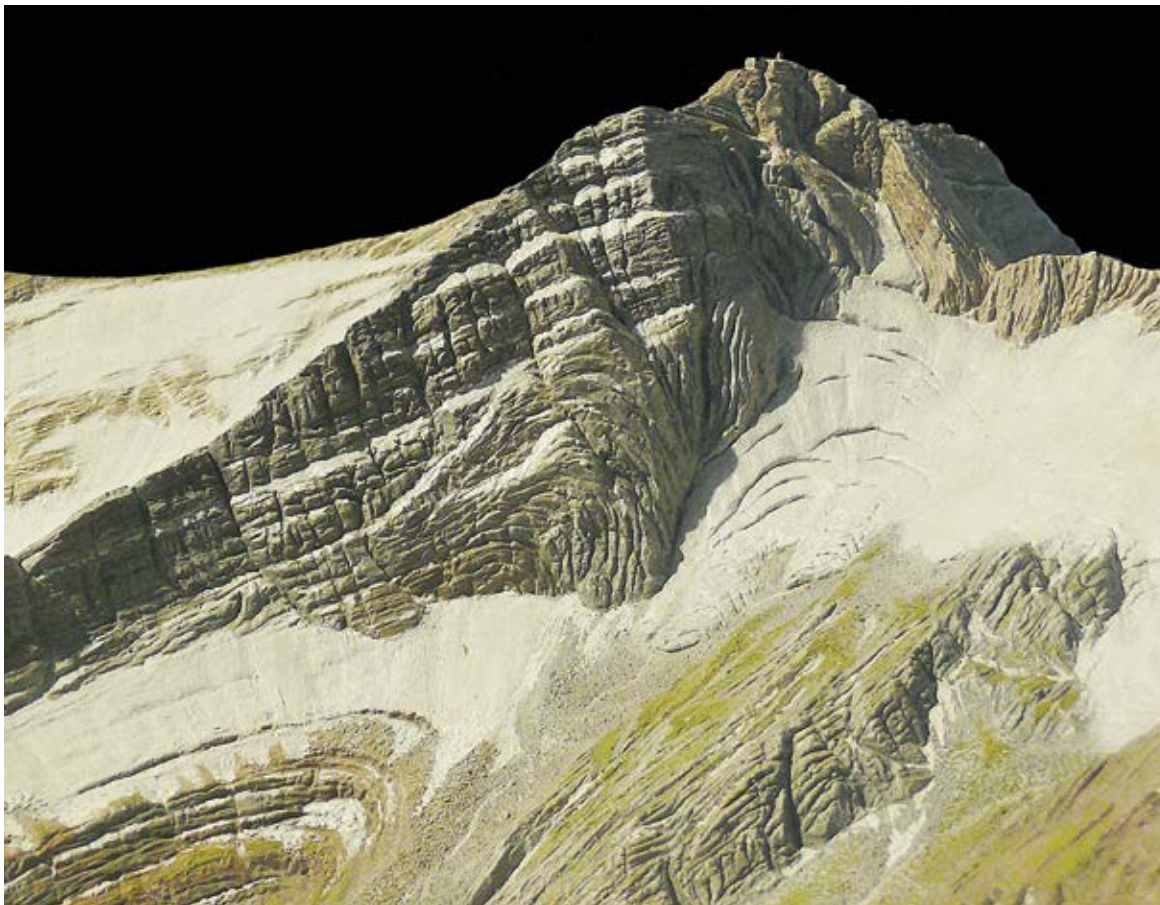
Several Classification Systems: the Geological-Palaeontological Collection

The Geological Collections have roots in the natural history room at the Society of Natural Sciences Zurich. In the period of joint usage by the two universities, the collecting activities were characterised by the specific interests of the professors. In particular, the collection owes unique palaeobotanical holdings to Oswald Heer to this day. Apart from the majority of the palaeozoological pieces, the collection moved to ETH Zurich as a result of the separation agreement at the beginning of the 20th century. In *focusTerra*, the Geological-Palaeontological Collection occupies the upper platform of the new exhibition tower.

The holdings are kept in several main collections and numerous portfolios according to various classification principles, which renders an overview of the high number of at least half a million objects considerably more difficult. The historical collection contains geological-palaeontological holdings from the research activities of earlier,

sometimes very famous scholars from ETH Zurich's Geological Institute. The extensive palaeobotanical collection is organised stratigraphically and by provenance. The palaeontological collection, on the other hand, is partly indexed stratigraphically, partly based on a zoological classification scheme. The reference collections that contain sample material for final theses and research projects are to be divided into many portfolios. The teaching collections contain material for identification exercises and Geology courses, and for the didactic showcases on the ground floor. The Structural Geology Collection, a micro-palaeontological teaching collection, a teaching collection on Geology of Switzerland and a teaching collection of sedimentology particularly stand out as special collections. One unique feature of the collection is the large number of type specimens and illustration originals.

Scientific researchers and other interested individuals enjoy access to the collection holdings accompanied by the curator, who looks after them and provides information on



Relief of the Säntis Peak by Carl Meili and Albert Heim, 1899. 2009. ETH Zurich/Peter Brack, Earth Science Collections.

the collection. Loans for research and exhibition purposes are carried out. The collection is indexed via a web-based database and data is exchanged with the GeoCAsE portal via the GBIF Swiss Node network. Considerable efforts are made to display the collection on the internet, which, for expert scientists, is primarily carried out by feeding data into the aforementioned specialist portal. For an interested wider public, attractive presentation forms have been developed, such as the teaching collection belonging to Albert Heim (1849–1937) that can be accessed in 360° views via the image catalogue E-Pics Earth Science Collections.

As the collections have very different classification principles and pinpointing objects depends on knowing these very classifications, a database index in the field of the Geological-Palaeontological Collection is particularly urgent. The scientific reference collections of specimens and illustration originals are of great national and international importance. This verdict is not only justifiable from a classification point of view, but also from the perspective of the discipline's history and the key role that ETH Zurich played – and still plays – in it.

A Swiss Visual Medium: the Relief Collection

The oldest surviving relief of the Basler Jura Mountains in the ETH-Zurich collection was created by Amanz Gressly

(1814–1865) in 1860. The existence of the collection, which is still substantial today, can be put down to Albert Heim's proximity to the cartography cultivated at the Polytechnical School. Under Heim, who held the dual chair of geology at both Zurich universities, many reliefs were sculpted, cast and geologically painted from around 1890. As a result, Switzerland's largest collection of geological reliefs was born in Zurich. A second production peak came in the interwar period and focused more on physiognomic cartography.

Most of the reliefs were designed and produced at the Polytechnical School or ETH Zurich. Casts also exist in other collections in Switzerland and Europe. Moreover, the ETH Zurich collection contains models from the commercial production of teaching materials. Of the 132 current reliefs, the majority are kept in the HDB Building. The same also goes for the raw casts and moulds. Some are on public display on the C floor of the NO Building. Two reliefs are on loan for permanent exhibitions and can be viewed in the HIL Building.

Swiss mountain range model-making in the 19th and 20th centuries was closely linked to research on topography and alpine tectonics. It was also closely related to the geological and cartographical research achievements of Albert Heim, Xaver Imfeld (1853–1909) and Eduard Imhof (1895–1986). Even more than the mountain panorama, this

form of visualisation is a specific hallmark of earth science research in Switzerland and at ETH Zurich in particular. Consequently, there is an urgent need for an appropriate internet presence. The value of the objects themselves lies in their full plasticity and their symbolic or illusionistic painting. Given their three-dimensional precision and the illusionistic correctness of their painting, some models are more suitable to demonstrate older conditions of alpine glaciation than two-dimensional forms of representation, which also makes them highly relevant exhibits for loans. Furthermore, with unfinished cast parts, the collection holdings probably contain unique material on production techniques for landscape reliefs.

The High-Level Mediation of Earth Sciences: *focusTerra*

The facility in the inner courtyard of the NO Building was designed by the architect Gull as a large hall for a geological-mineralogical museum – and was also used as such for decades. The extensive public collection was originally presented in showcases on top of the closed collection cabinets and served as an instructive specialist museum for students and visitors. Thanks to the form of furnishings, the exhibits were thus already displayed as snippets of an unseen overall collection. In terms of the scale of the atrium and its formality, the old exhibition in the Gull Building is comparable to those of the major natural history museums of the age. The form and magnitude of the holdings are also thought to have echoed the dimensions of the geological exhibitions of the museums in Vienna and Berlin.

Radical renovations and installations in the inner courtyard were followed by modest activities with regard to a small, modern permanent exhibition from the 1970s. Subsequent, ambitious temporary exhibitions led to the initial plans for a permanent museum facility initiated by the curators of the two Earth Science Collections. The atrium, which had been extravagantly restored based on colour analyses and partly stripped back, was given an exhibition architecture and design by the company Holzer Kobler

Architekturen in 2009 following a complex planning process. As a result, the exhibition facility *focusTerra* was set up as an information centre for the Department of Earth Sciences. Today, organisationally *focusTerra* belongs to ETH Library, which co-runs it with the Department of Earth Sciences.

focusTerra is permanently housed in a tower installation on one side of the large atrium. The tower has three levels lined with display cases and winding cabinets, which form the framework for a narrative presentation of findings on processes inside the earth on the bottom floor. The middle floor is concerned with the earth's crust with its minerals, precious stones and raw materials. Right at the top, the erosion and deposition of rock material, and the history of Earth and the climate are examined using plant fossils. The three subject areas develop a clear geographical reference to Switzerland, the Alps and Zurich: the geophysics and plate tectonics section is closely linked to the presentation wall of the Swiss Seismological Service; the mineralogical level focuses on alpine fissure minerals; and finally the geology and history of Earth floor paradigmatically addresses the landscape development around Zurich and its research at the universities. Experts rate the selection of objects and use of media (hands-on exhibits, films, audio stations, graphics, texts, models as mediators of the actual collection objects) as outstanding. When it comes to accessibility, *focusTerra* set benchmarks with the exhibition "Fossil Art – Experience prehistoric traces of life".

The upper corridors contain didactic geology themed displays geared towards the course syllabus for the student target group. The earthquake simulator enables visitors to experience an earthquake safely at first hand.

ETH Zurich sent out a signal with the aesthetic choice of dominant exhibition architecture, which still blends in with the well-maintained yet modernised historical institute building. Despite the relatively modest scope of the exhibition, Holzer Kobler's outstanding design, the concept for the contents of the permanent exhibition and the use of media make the building a noteworthy feature on Zurich's



The young and old listening to the fairy tales and legends from magnificent underworlds at the narration and experimentation afternoon. January 2014. ETH Zurich, *focusTerra*.

museum landscape. Moreover, thanks to the involvement of the Swiss Seismological Service and the associated media presence, the installation is well-known nationwide when it comes to natural events relevant to geoscience. All in all, the atrium of the NO Building can claim the status of a representation room for ETH Zurich.

The collaboration between the Earth Science Collections and *focusTerra* could enhance ETH Zurich's science communication. In the future strategic development of *focusTerra* the main focus will be on the development of special exhibitions. In only seven years, *focusTerra* has already become an established brand; an even stronger focus on research at ETH Zurich and the cooperation with its departments could sharpen its profile even further.

ETH Zurich's Smaller Collections

ETH Zurich possesses a series of what were once large scientific teaching and research collections, only fragments of which have survived. Some of these remnants are still used modestly for display purposes and teaching. Others are "inactive collections" in that no collecting activities are currently underway and the objects are not being researched. And others again have only recently been indexed and rendered accessible online.

The Animal Kingdom at a Glance: the Zoological Collection

Prior to 1930, the Institute of Comparative Zoology and Anatomy had extensive preserved-specimen and model holdings at its disposal for teaching purposes – despite the fact that the actual Zoological Collection had already been passed into the sole ownership of the University at the beginning of the 20th century as a result of the separation



ETH Zurich, Institute of Agriculture and Forestry, West Building (LFW), Atrium, June 1953. Photographer: unknown.
ETH Library Zurich, Image Archive, Ans_00575, DOI: 10.3932/ethz-a-000013360.

agreement. Following further transfers to the University's Zoological Museum, a small public collection has survived. It features preserved specimens from the most important groups within the animal kingdom in the exhibition area of the atrium of the LFW Building, which was restored around twenty years ago. The collection is closely linked – both spatially and thematically – to the preserved specimens and models of the Anatomical Domestic Animals Collection.

The entire holdings still available at ETH Zurich are on display – over 500 preserved zoological specimens and teaching models. Most of the specimens are preserved in alcohol or formaldehyde in sealed, square jars. Furthermore, besides whole-body preparations, there is also a large number of extremely high quality and occasionally very elaborate organ preparations. A smaller number of exhibits consist of dried specimens, bone specimens, complete skeletons or mollusc shells. The Entomological Collection contributed dry arthropod specimens. The most important animal organism groups are displayed in an exemplary manner. In particular, little known taxa of marine

invertebrates, chordate basal groups and the most important fossils and recent arthropods are represented.

The Zoological Collection constitutes the remnants of a more extensive teaching collection for general and specialised zoology. The permanent exhibition in the display cabinets that close the courtyard arcade arches is a contribution towards the use of this part of the building as a heritage museum. Its contents supplement the veterinary medicine exhibition in the large display cases by providing an overview of the forms and classes of the animal kingdom. Moreover, it displays important parasites and intermediate hosts that are relevant for animal husbandry. Finally, topics related to developmental history and anatomy are displayed. The exhibits are maintained and labelled within the means available. Occasionally, exhibits are removed for classes. The collection also welcomes visitors from outside the institute.

It involves the carefully selected remnants of holdings from a study collection. The small collection has the potential to plug the gaps in the invertebrate display in the University's Zoological Museum nearby.

Anatomy without Bloodshed: the Anatomical Domestic Animals Collection

The collections of the Department of Agriculture were originally designed as teaching and public collections with a national relevance to Switzerland. A prehistoric collection on the beginnings of agriculture and livestock farming with archaeological finds and replicas existed. Moreover, there was an agricultural machinery and equipment section, a collection of agricultural architecture, a wool collection, a zoological collection, a physiological collection and a collection on animal husbandry. The alpine farming collection belonging to the Swiss Society for Alpine Economy was displayed on loan, and managed and expanded by ETH Zurich. The collections were located in the atrium of today's LFW Building, the corridors and arcade galleries, and possibly also offices and classrooms. In the middle of the atrium, there was an anatomical domestic animals collection with large, assembled skeletons, skulls and cultural history references, much of which has been lost. Following a series of renovations, a similar collection display was reconstructed in the atrium in the 1990s.

The permanent exhibition in the atrium contains teaching and visual material on livestock anatomy and pathology. At the same time, it is the main location for these preserved collection remnants. Clastic anatomical models appear next to other plastic ones. The remnants of the once extensive skull and skeleton collections still exist. The domestication characteristics of various pets can be demonstrated well using skull series. There is also a small animal pathology collection of dry and wet specimens.

Animal anatomy models and specimens are used to teach agricultural animal husbandry. The permanent exhibition is based on a historical room concept and occasionally welcomes tourists.

The hanging of the large horn specimens is remarkable as part of the decoration of a modern functional building: three-dimensional, ornamental, decorated ox or ram skulls found their way into the architecture of the European Renaissance, the Baroque and neoclassicism as classical



Top display case: the comparative anatomy of skulls from different canine breeds documents the enormous variety within domestic breeds of dog. Left display case: historical wax models created from drawings of freshly caught zooplankton. 2014. ETH Library Zurich/Frank Blaser.

decorative elements. The hanging of real bone specimens above the pillars of the LFW Building's courtyard storey deliberately invokes this decoration. Present in early photographs, it is part of the building stock. It is the only exhibition situation of a collection in its original location that can still be found in ETH Zurich's historical buildings, which makes it vital from a heritage conservation perspective.

The animal anatomy models displayed remain of great didactic value and can still be used in teaching. Moreover, many pieces are significant from a media and image history perspective: clastic anatomical models, some of which are made of papier-mâché layers coated in plaster, join the products from the famous factory belonging to Louis Auzoux

(1797–1880). The collection does not – at least not anymore – contain any valuable originals from this background, however. There are also large demonstration models from the first half of the 20th century made of other materials, which illustrate the individual aspects of teaching anatomy in veterinary medicine. The well-preserved model series on the embryology of different animal groups, including rare models of echinoderm larvae, are outstanding. These wax teaching aids probably stem from the Atelier für wissenschaftliche Plastik Dr h c. Friedrich Ziegler (Freiburg im Breisgau) and, besides their great illustrative value even to this day, are thus prime witnesses to the history of science.

Science History and PR: the Chemical and Pharmacognostic Collection

From the very beginning, a display and dye collection was established at the Polytechnical School's Chemical Laboratory. Models, other teaching material and chemicals in glass exhibition cylinders were on display in the corridors and lecture rooms. In the course of the 20th century, these collections were largely dissolved.

The pharmaceutical display collections were also extensive. Of these, only the pharmacognostic collection established by Professor Carl Hartwich (1851–1917) has remained complete. This collection, which includes stimulants, drugs, equipment for psychoactive drug usage and pharmaceutical-history and botanical source literature, is almost completely intact.

The pharmaceutical holdings and exemplary pieces from the chemists' collections are displayed together in twelve double display cases as the Chemical and Pharmacognostic Collection in the HCI Building today.

The chemical collection is an assortment of department holdings that were spotted during the move into the new building on the Hönggerberg. It includes preserved materials from lab work, equipment, remnants of chemical material collections, a large quantity of literature and images. Following the discovery, the departement decided



Objects from the pharmacognostic collection of the Institute of Pharmaceutical Sciences, from Professor Carl Hartwich. Knife, tub for lip balm, tobacco tin, chalk box, case for betel leaves. Silver; Vien-Tjane, Mekong. 2014. ETH Zurich, Barbara Brauckmann/D-CHAB.

to use the objects for a museum at the new location. Most of the objects had to be redefined because information on their function and significance had been lost, which is where volunteers and emeriti especially came in.

Individual sections of the Hartwich Collection can be viewed on the Hönggerberg. The majority of this major collection was transferred to the Pharmaceutical History Museum in Basel on permanent loan.

The collection takes up an austere foyer in the lecture theatre area. Exhibits and documents from research and teaching, and interesting objects from a cultural-historical perspective are kept and displayed. Publications on the historical books and scholar biographies were compiled for PR purposes. The website includes information on the history of chemistry and pharmacy, the focal points of the collection, temporary exhibitions and an events calendar.

At the same time, the exhibition is also the storage solution. The collection goes hand in hand with a revived

respect for the tradition and history of the Chemical Institute and pharmaceuticals in a modern teaching and learning environment. Chemistry and pharmaceuticals rank among the few subjects at ETH Zurich that specifically use their own history for the purposes of PR and scientific communication.

Rare Woods: the Forestry Collection

The collections of the Polytechnical School's Forestry School were part of the old holdings. Originally, they covered the following themes: silviculture, forest usage, technology, forest facilities, forest policy, forest protection, soil science and forest pests. There were collections of wood, cones, forest photographs, antlers, stuffed animals and wood samples, and a forest soil collection. The collections were partly located in the corridors of the institute building, but also partly in special collection rooms. The original Forestry School became the department VI Forestry in 1908 and eventually the Department of Forest Science. Today, the remaining collections in the CHN Building belong to the Institute of Terrestrial Ecosystems at the Department of Environmental Systems Science, and the xylotheque to the Institute for Building Materials at the Department of Civil, Environmental and Geomatic Engineering.

In the CHN Building, forest-zoological exhibits (stuffed standing birds, dermoplastics), which were collected by the adjunct professor of game and hunting Kurt Eiberle (1930–1993), are on display. They are well-representative of the local small mammals and bird species. These are joined by exhibits on game (including game pathology), a collection of cap mushroom models made of ceramic material, and specimens of forest fungi.

The large xylotheque of the former Chair of Wood Sciences and the associated microscope sample collection, has survived intact. The rare non-European tree species it contains make the collection an important source of information, including in the field of wood restoration, conservation of biological diversity and customs-approved

species classification (in the context of tropical rainforest protection). Given its significance, the xylotheque has been indexed using a database since 2016 with a view to publishing the digital copies online. A smaller, separate xylotheque with bark sides designed like book spines may well date back to pre-1850. It might be one of the few collection sections that stem from the period when ETH Zurich was founded, which would make it a cultural artefact of eminent importance for the history of science. This aspect, however, has not been researched on a sufficient scale.

The visual material on dendrology and phytopathology is used in lectures. The material in visible display cases (hallway in E floor of the CHN Building) provides an insight into the tradition of forestry tuition at ETH Zurich.



The xylotheque at the Chair of Wood-Based Materials comprises handpieces and preserved micro-specimens of wood species from all over the world, including extremely rare objects such as this ebony sample. 2014. ETH Library Zurich/Frank Blaser.



Wilhelm Ludwig Lehmann: Road bridge over the River Aar near Birrenlauf, completed March 1927. On F-Floor, north vestibule, main ETH-Zurich building. Ki-00108. 2014. ETH Library Zurich/Frank Blaser. DOI: 10.21263/ethz-a-000000273.

Valuable Pieces: the Art Inventory

ETH Zurich's Art Inventory manages, indexes and mediates the artworks owned by the university (particularly works by Swiss artists from the 19th to the 21st centuries). The roughly 300 objects include busts and portraits of well-known figures at ETH Zurich, plaster casts, statues and sculptures, paintings, murals, and assemblages classed as "art in architecture".

In a project headed by ETH Library, the objects were re-inventoried and documented in photographs between 2014 and 2016. The mobile objects were cleaned properly, repacked or restored if necessary, and finally housed in cultural asset protection rooms that had been converted in accordance with best practices. The objects and their descriptions are published online in the E-Pics Art Inventory catalogue. The "art in architecture" objects are publicly accessible, scattered across the entire ETH-Zurich campus (Zentrum and Höggerberg).

A Testimony to Early Historical Consciousness: the Collection of Astronomical Instruments

The Collection of Astronomical Instruments, comprising approximately 300 objects from the 16th to the 20th centuries, includes scientific objects and instruments from Zurich's former Eidgenössische Sternwarte. A large collection of instruments was compiled for use in research and teaching at the observatory, which was opened by founding director Rudolf Wolf (1816–1893) as an observation point and headquarters for the Polytechnical School's Institute of Astronomy in 1864. Many of these objects were already historical in Wolf's time. They include geodesic measuring instruments; astronomical, optical and timekeeping devices; and mathematical models. The heart of this scientifically, culturally and historically significant collection is formed by around 120 objects acquired by Wolf before 1873 and another roughly 130 objects that, according to handwritten addenda to the index of the Zurich observatory collections,

were added subsequently in 1873. The third part of the collection comprises 47 objects from the instrument holdings of the Eidgenössische Sternwarte Zurich, which closed down in 1984.

The written material, photographs and illustrations in the historic Sternwarte Collection were already incorporated into ETH Library's rare book holdings, the ETH Zurich University Archives or the Image Archive years ago. Today, the objects are also kept in ETH Library's Collection of Astronomical Instruments. Like the Art Inventory, the Collection of Astronomical Instruments was re-inventoried between 2014 and 2016 and transferred to suitable conser-

vation rooms with a stable climate. Thanks to the complete digitisation of the collection, a key piece of Switzerland's scientific history is now accessible online. The objects are presented in a 360° view. The digital copies from the E-Pics Collection of Astronomical Instruments catalogue can be downloaded in high resolution freely and re-used without restriction. This opens up new prospects for research and offers the general public fresh access to Zurich's cultural heritage. The public interest in tours and loan requests for exhibitions highlight the potential that the analogue objects also harbour for the dialogue between academia and the public.



Objects from the Collection of Astronomical Instruments are digitised in ETH Zurich's digitisation centre. 2014. ETH Library Zurich/Frank Blaser.

Written Material, Image Media, Literature

Organisationally speaking, the majority of the units presented in the following section come under the umbrella of ETH Library, which is responsible for the upkeep and development of written material, media, art and natural history collections – partly due to its collection tradition and partly in accordance with administration conferrals. The two literature archives, the ETH Zurich University Archives, the Image Archive and the Collection of Prints and Drawings – together with the Earth Sciences Collections and *focusTerra* described above – form ETH Library's Collections and Archives section. Rare Books and the Map Collection (like the Material Collection presented below) also belong to ETH Library, but to another section. Finally, the Archives of Contemporary History are part of ETH Zurich's Institute of History and thus the Department of Humanities, Social and Political Sciences.

For a series of the facilities featured in this chapter, the conservation and security of the holdings has recently improved significantly with the acquisition of new storage rooms (including a strong room) in the new LEE Building.

ETH Library's Rare Books and Maps

Preserving Holdings through Digitisation: Rare Books

Nowadays, rare books come under the umbrella of customer services within ETH Library and are thus positioned on the classic library services spectrum. The formation of a rare books department guarantees the effective indexing of old book holdings and their mediation, whilst preserving as many originals as possible.

The holdings of the Rare Books department currently comprise around 75,000 volumes. Besides individual items, the historical acquisitions especially include the Mathema-



Studying an old print in the Collections and Archives reading room. 2015. ETH Library Zurich/Frank Blaser.

tisch-Militärische Gesellschaft library, the Eidgenössische Sternwarte library and private donations from its founder, Rudolf Wolf, who has already been mentioned. In a bigger, largely completed project, book holdings published before 1900 and rare prints have been successively removed from the departmental libraries, examined from a conservation perspective and housed centrally over the last few years. As a rule, the provenance of the books is difficult to research as the old holdings were often inherited from reference libraries. Occasionally, there are bookplates. The specialisations, which also determine the acquisition policy, are scientific and technical literature that is extremely relevant from a science history perspective.

Old prints published pre-1900 are presently being digitised in full. In parallel with the systematic approach, the priorities are being set in accordance with the users' orders to reduce the amount of access to original documents. The



The Toggenburg region / drawn by Joh. Jacob Scheuchzer; Joh. Hen. Huber sculp.; 1710; 1 map: black and white, hand-coloured; 41 x 33 cm. ETH Library Zurich, Rare Books and Maps, K804034, DOI: 10.3931/e-rara-20753.

comparison with the user numbers in the reading room and online accesses to the platform www.e-rara.ch confirms this strategy. The protection of the holdings is also being increased through the optimisation of the storage conditions. Digitised journals from the rare book holdings on the platform www.e-periodica.ch are publicly accessible online.

Bringing Knowledge to the Table: the Map Collection

ETH Library's Map Collection also draws on holdings from several collecting facilities at the university. However, a complete physical centralisation of ETH Zurich's map holdings has not yet come about. The Map Collection has been cooperating with Zurich's other large university library, Zentralbibliothek. ETH Library specialises in topical maps and Swiss geodata products, Zentralbibliothek in topographical and historical maps. Both institutions play an instrumental role in the specialist portal Kartenportal.CH (www.kartenportal.ch).

The map department collects scientific, technical and topographical maps and atlases from the 19th to the 21st centuries: individual maps, map series, official surveying plans, town maps, panoramas and satellite images. All geodata products from Swisstopo and the Federal Statistical Office and general digital overview maps for official surveying are available. Bound atlases are also curated. Comprehensive reference holdings are located in the Collections and Archives reading room. The collection focuses on Switzerland and special maps, which are collected generally and worldwide.

Two large globes from the former Eidgenössische Sternwarte are on display in the Collections and Archives reading room.

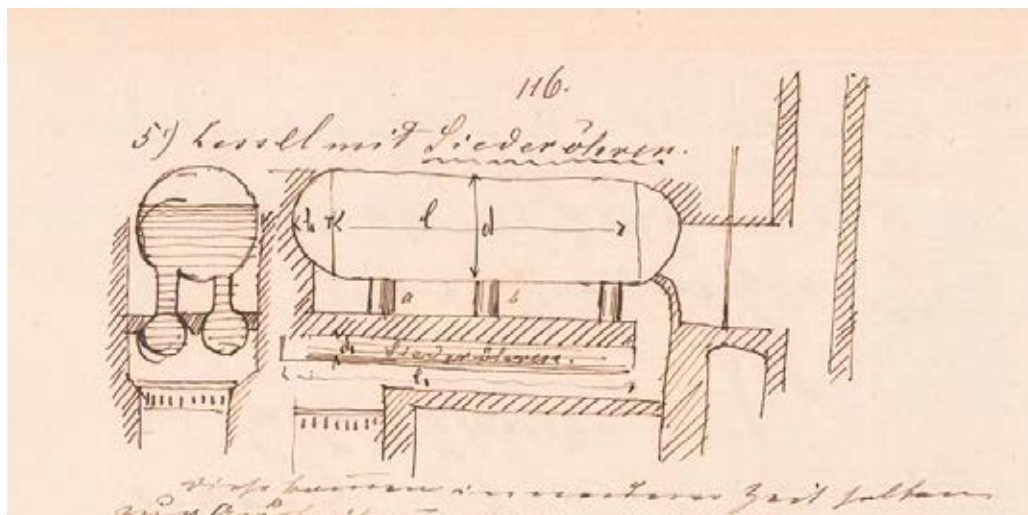
The historical map collection (published pre-1900) is being digitised in full. The online presentation of the digital copies is aimed at new forms of contextualisation, such as combining georeferenced textual and image contents with map material. ETHorama, an interactive platform for map-based access to digitised contents, provides a more in-depth understanding of geographic contexts and lends itself to the presentation of other collection objects that can be georeferenced, such as for photographs, finds, manuscripts and artworks.

The Historical Archives

The University's Memory: the ETH Zurich University Archives

Based on the Federal Act on Archiving (BGA) from 1998, ETH Library runs the ETH Zurich University Archives and the ETH Board Archives. However, the holdings available date back to before the foundation of the university. This is because files that concerned the university's own history were already collected decades before the University Archives were established, provided that they reached the library prior to any legal obligation to pass them on.

Since the foundation of the University Archives in 1999, records from all organisational units of ETH Zurich and the



Theory of steam engines, lecture by Gustav Anton Zeuner. Lecture transcript, prepared by Hermann Hasler, probably 1870–1871. ETH Library Zurich, University Archives, Hs 287:5 (Page 121, excerpt), DOI: 10.7891/e-manuscripta-659.

ETH Board have been collected systematically. Besides the official written material, privately owned documents that are relevant to the history of the university are also actively incorporated. The library's archival tradition also harks back to the 1950s in the field of scientific personal papers, with those of former lecturers and students of ETH Zurich, including several Nobel-Prize winners, leading the way. The famous Swiss geologists of the 19th century are represented virtually uninterrupted. The C.G. Jung Papers Collection, which was bequeathed to ETH Zurich, is particularly popular. There is also written material from facilities and special collections, such as the Archive on the History of Nuclear Energy in Switzerland or an extensive collection of medals. The personal papers also contain a reasonable number of three-dimensional objects (scientific instruments, everyday objects) and artworks (paintings, portraits). A rapidly growing proportion of the new arrivals is exclusively digital material.

The University Archives also perform other tasks besides the traditional core archival responsibilities of acquisition, description, preservation and user services. For instance, they compile special dossiers and offer digital services that combine conservational measures (protection of originals), efficient search possibilities and information communication. The different sections of archival material are described on a public database; the metadata can also be searched on ETH Library's Knowledge Portal.

The minutes of the School Board meetings, a central source on the history of ETH Zurich, are available online in full text from the founding year 1854/1855 to the expiration of the fifty-year retention period. Moreover, digitised archival material with a core set of metadata is being incorporated into the collaborative platform www.e-manuscripta.ch. Thanks to a harvesting interface, the metadata is also recorded in the Archives Portal Europe (www.archives-portal-europe.net). Besides talks and tours, the extensive PR work also includes articles on the weblog *ETH Heritage* (<http://blogs.ethz.ch/digital-collections>). The University Archives are positioning themselves on Switzerland's archival landscape with special strengths in the accession of born-digital records, digital description, the development of new methods for presentation and retrieval and – in close cooperation with the Digital Curation unit – long-term digital preservation.

The University Archives are to play a key role in future concepts because their extensive depth of description, especially in the field of personal papers, and compliance with the international standard for archival description ISAD(G) enable ETH Zurich's Collections and Archives to position themselves as an important information resource. At some future date indexes by name and keyword may allow ETH Library's Knowledge Portal to connect content-related manuscripts, printed matter, illustrations and collection objects in scientific collections. For example,

many personal paper holdings contain documents that are vital for the correct classification of sample material in earth science or biological collections. Moreover, the expertise available can generally come in useful for structuring metadata that is not library metadata in a narrow sense and for the preservation of archival material at ETH Zurich.

From Student Project to a Permanent Feature on the Archival Landscape: the Archives of Contemporary History

The path the second historical archive at ETH Zurich, the Archives of Contemporary History located in the Department of Humanities, Social and Political Sciences, took to its present professional mode of practice could not have been more different. Its origins can be traced back to student initiatives from 1966 onwards aimed at plugging historical document gaps in (contemporary) Swiss history. The archives were incorporated into a history institute founded in 1974 and subsequently gained their own profile. It supplemented the tradition of history in the archives established at the time and developed into an indispensable tool for Swiss contemporary history. Although, as part of ETH Zurich, the Archives of Contemporary History are funded by the state, they also receive substantial third-party funding composed of donations from four foundations for the human resources and physical infrastructure and from project-based sponsorship. In the newly renovated *Haus der Zeitgeschichte* (Contemporary History House), the Archives of Contemporary History are able to offer attractive research stations in a central location.

The holdings predominantly contain the personal papers of individuals and archives of private organisations, focusing on politics, economics and history of the Jews in Switzerland. Exclusively written and audio visual materials are collected. Moreover, the archives are a competence centre for oral history projects and consequently collect recordings and documentations of interviews.

The Archives of Contemporary History communicate their work and holdings intensively. Besides impressive

publication lists, this also includes university lectures, book presentations and theme-oriented public events, sometimes in quick succession, but also participation in exhibitions. In teaching, the archives also collaborate with the University of Zurich's History Department, the Institute of Jewish Studies and the History Department at the University of Basel, and the University of Fribourg's Institute of Contemporary History. Apart from these historical and source-related topics, they convey skills in archival training and are involved in the dialogue on digital data curation.

Holdings are incorporated on a regular basis. It is impressive as to how quickly new arrivals appear on the public database. The transfer of files from the Swiss Federation of Commerce and Industry (so-called "Vorort") or the Association of Swiss Engineering Employers just goes to show how efficient and serious the Archives of Contemporary History are deemed to be.

The archives are expanding and probably the most research-intensive collecting facility at ETH Zurich, not to mention a principal centre of information related to contemporary history for academic Switzerland and abroad. This can be attributed to the combination of a popular collection profile, a high level of expertise, dedication and solid basic funding, to which several foundations contribute. The history of the archives could have looked very different. Many other "bottom-up archives" failed to find any patronage or support at a university because they were regarded as sub-cultural. Even today, their holdings are housed inappropriately, hardly usable (if at all) and, due to a lack of resources, insufficiently described. The Zurich Archives of Contemporary History, in contrast, just go to show that it was possible to develop a popular profile as an information service-provider by mastering the unspectacular core archival business in combination with the active communication of specific contents. This is already evident in the sound structure of the website: it looks to dispel fears of the unknown, provides information on the archives and leads to the use of the databases. Large amounts of archival material are also being digitised in a joint project conducted with ETH Library.



Well-ordered abundance in the Archives of Contemporary History storage rooms. Photo from a portfolio by Candida Höfer: *Räume einer Hochschule ETH Zürich*, 2005.

The Archives of Contemporary History enjoy a prominent position in ETH Library's self-image as an expression of a small but excellent humanities facility.

Photography and Graphics

A New Foundation on the Pulse of Research: the Image Archive

As an independent unit within ETH Library, the Image Archive is still relatively young, even though the earlier science-historical collections possessed relevant image holdings. The deciding factor in its foundation was the opportunity to take over the press photo archives of the photography agency Comet Photo AG, which was liquidated in 1999, a holding large enough to contribute actively to the "iconic turn". The discovery of the visual aspect in scientific research and the individual scientific disciplines, as well as the insight into the "power of the image" in a medialis-

ed society, has led to a large number of innovative issues and numerous studies since the late 1990s. The Image Archive recognised the immense possibilities that the digitisation and provision of images via the internet presents and quickly established itself as a competence centre for handling photographic material. As a result, photo holdings from the personal papers of the University Archives and other facilities are still conferred to the Image Archive for archiving, indexing and, if need be, digital publication.

Its holdings currently comprise over 3.2 million image documents. The analogue photographic material and prints are archived properly. The development of the holdings focuses on image material from organisational units of ETH Zurich and image material from private individuals or institutions with a direct relation to it. This also includes a large amount of historical image materials on the history of the university. The Portrait and View Collection, the images from private personal papers and several image



Image Archive exhibition "Science in Sight" in Photobastei, 3–20 July 2014. ETH Library Zurich, Image Archive.

archives that were adopted as an ensemble, namely the archive of Comet Photo AG (with aerial images and contemporary historical documents since the 1950s), the Luftbild Schweiz Archive, and the Swissair and Documenta Natura foundation photo archives are integral elements of the holdings. Selective additions to the holdings through the acquisition of larger, related collections are made when they are in line with ETH Zurich's profile as a technical university and supplement existing series.

Its unique characteristics from a content-related perspective include image documents on the university's history and Swiss cultural, technical and science history, and, in an organisational respect, the high degree of digitisation and indexing by tagging documents. Innovative paths are also being pursued with regard to the latter. Ever since the

successful completion of a pilot project, which involved indexing around 40,000 images from the Swissair holdings with the help of retirees from the defunct Swiss airline, the Image Archive has been using crowdsourcing systematically to improve its indexing quality. The intensive interaction with users is supported by the Image Archive's consistent open data strategy.

The Image Archive presents the digitised image holdings via the platform Bildarchiv Online. This is part of the portal E-Pics (www.e-pics.ethz.ch), which ETH Library provides as a central service for other units at ETH Zurich for the curation and presentation of image holdings. Since 2014 the service, which includes varied search and zoom functions and an order option, has also been open to third parties. The first external facility to make use of it was the Swiss Foundation for Photography, which has published more than 10,000 images. Currently, almost 400,000 digitised documents from a range of different sources can be browsed on the platform Bildarchiv Online.

In addition, the image holdings are publicised via exhibitions and the series of books recently launched called *Pictorial Worlds: Photographs from the Image Archive*, *ETH-Bibliothek*, the sixth volume of which came out in 2017.

"Art on Paper": the Collection of Prints and Drawings

At first glance, the Collection of Prints and Drawings seems out of place in an environment of technology and science. Although it was founded by archaeologist and art historian Gottfried Kinkel (1815–1882) as a "collection of art on paper" in 1867, the collection is one of the four old collections from the former Polytechnical School to have survived and be curated continuously. The collections of the painter Rudolf Bühlmann (1812–1891) and the banker Heinrich Schulthess-von Meiss (1813–1891) form the backbone of the Collection of Prints and Drawings. Initially, the collection was used for teaching purposes in architecture and art, and was opened to the public as early as 1891. Active collecting and donations from the 19th century to the



A glimpse into the Collection of Prints and Drawings. Photo from Candida Höfer's portfolio: *Räume einer Hochschule ETH Zürich*, 2005.

present have led to its considerable growth and the formation of an independent collection profile.

Today, the collection comprises around 160,000 prints and drawings from the 15th century to the present, arguably making it the most comprehensive collection of prints in Switzerland. Swiss prints and drawings were especially favoured while the collection was being established. Their development can be studied here more than anywhere else in the country.

In 1924 the Collection of Prints and Drawings moved into the mezzanine floor in the southwest wing of the main ETH-Zurich building, where, following a series of extensions and renovations, it is still located to this day. The premises now include a collection and study room, an exhibition room, a hallway with display cases used for exhibitions, another collection and study area, and a strongroom with a mobile shelving system for the drawings. The prints are stored flat in solander boxes and

sometimes displayed behind glass. Processed prints are reversible and mounted properly.

The Collection of Prints and Drawings presents its holdings to the public with four to five temporary exhibitions per year. The publication of exhibition catalogues would be inconceivable without in-house research. Moreover, there are substantial collection-related publications. Regular tours and talks form an integral part of the exhibition activities. Students are given the rare opportunity to work with originals in classes. Ever since the opening times were extended to include the weekend, the Collection of Prints and Drawings has gained an additional audience. Admission to the high-quality exhibitions is free. After the change of leadership in 2016, new conceptual and thematic emphases can be expected in the near future.

The Collection of Prints and Drawings is well on the way to the complete digital indexing of its holdings. Within the scope of the creation of electronic inventories, the prints –

the legal parameters permitting – are also being digitised and published via an online portal (www.e-gs.ethz.ch). Meanwhile, with approximately 10,500 prints, the complete historical Schulthess-von Meiss collection is available online. The long-term goal is the digital indexing and provision of the entire collection, whereby the digitisation activities currently focus on prints that are out of copyright and frequently requested.

The Collection of Prints and Drawings sees its core task as mediating art via originals. As is typical of such collections all over the world, it is a hybrid institution between an archive and a museum. This is because its role is to collect and store artworks on paper that, for conservation reasons, are not supposed to be hung permanently on brightly lit walls. The use of such a collection is subject to a qualified request, upon which an appointment is issued to view the desired prints in the reading room – much like with special library collections. A well-equipped reference library is also available to users for consultations on site. Displays take place in the form of temporary exhibitions. Works from the Collection of Prints and Drawings are regularly displayed on loan in external exhibitions held in Switzerland and abroad. This is because the collection enjoys an excellent reputation around the globe and is a flagship of ETH Zurich when it comes to the curation and mediation of culture. It is an inherent part of the chain of university museums in the inner-city area and boasts a varied programme.

The Literature Archives

From the very beginning, the literature of the national languages was part of the Polytechnical School's teaching programme. However, this was not reflected in distinct collections of fiction at ETH Library as this area was already covered by the Zentralbibliothek and the University of Zurich's departmental libraries. After the Second World War, the personal papers of two major authors came to ETH Zurich – not because a distinctive literary research centre might have existed there, but because ETH Zurich

was regarded as a state facility that could guarantee the safe curation and serious handling of the material for the long term.

The Mann Family's Faith in the Swiss Confederation: the Thomas Mann Archives

In accordance with a donation agreement with the Mann family in 1956, the personal papers of the author Thomas Mann, who had died the previous year, was bequeathed to ETH Zurich and initially kept at ETH Library. From 1961 to 2016, the Thomas Mann Archives were housed in Bodmer House at the University of Zurich – an important place for Zurich from a literary and intellectual history perspective.

The Thomas Mann Archives are an archive, research centre and museum on the author's life and work, all rolled into one. After many years as part of the Department of Humanities, Social and Political Science, they have been back under the umbrella of ETH Library since 2012.

The archive holdings comprise around 34,000 documents (manuscripts, diaries, notebooks and letters). The Thomas Mann Archives also contain the author's personal library, an important collection of editions and secondary literature and extensive press documentation. These are joined by artefacts, including objects and pictures recreating Thomas Mann's actual study: small sculptures, used materials, stationery, paintings, photographs, prints, furniture, ceramics, medals, jewellery, clocks and even his death mask. Several portraits created by Franz von Lenbach and the painting entitled *Die Quelle* by Ludwig von Hofmann, of which Thomas Mann was particularly fond, are also significant. It has been possible to visit a condensed form of the exhibition at its present temporary location in the HCP Building on the Hönggerberg campus since 2016.

The archives' collecting activities did not end with the step-by-step arrival of the archival material from the Mann family. Literature is constantly acquired for the reference library. Besides donations, occasionally purchased manuscripts, letters or objects – such as paintings that once belonged to Thomas Mann – enrich the holdings.



Thomas Mann's study. Presentation in Bodmer House. 2014. Thomas Mann Archives at ETH Library Zurich.

The Thomas Mann Archives render the classic services of an archive for users on location (presentation of documents, supervision and advice) and respond to requests from outside. External exhibitions are supported via loans and expertise.

The Thomas Mann Archives conduct their own research and release academic editions. The staff publish regularly and are remarkably dedicated to academic associations. Following a meticulous indexing and digitisation project completed in 2015, the Thomas Mann Archives are among only a handful of archives to index and fully digitise their entire holdings in a modern archive information system at single-document level. One key objective of this project was also to safeguard and conserve the precious originals. Today, the Thomas Mann Archives' indexing data is freely available online. However, legal obstacles still stand in the way of activating the digital copies.

An ETH-Zurich Graduate Settles His Legacy: the Max Frisch Archive

The Max Frisch Archive considers itself a place of study and research related to the author and architect Max Frisch (1911–1991). It was important for the world-famous author, who completed a degree in architecture at ETH Zurich in 1940, to settle his literary legacy during his lifetime. The Max Frisch Foundation was established in 1979 with the aim

of setting up a Max Frisch Archive. Only a year later, Frisch made an extensive lifetime bequest to the Chair of German Language and Literature at ETH Zurich. The archive was opened to the public in 1983 and has been located on the ETH Library premises since 2004. The holdings of the Max Frisch Archive are the property of the foundation. Their current home at ETH Library whilst ensuring their own identity and the current ownership conditions is regulated by a contractual agreement from 2007.

The archive curates manuscripts, notebooks, letters, reviews and essays by and on Max Frisch, but also audio and image documents, documentation on performances of his plays and his work as an architect. The reference library contains all published books and texts by Frisch, including translations and an almost complete collection of secondary literature. It comprises around 3,000 titles.

Despite its minimal staffing, the Max Frisch Archive is well on the way to completing the description of its holdings in an online archive database in accordance with the relevant archival standards. Meanwhile, more than four fifths of the holdings have been indexed. Around 4,000 photographs can be viewed on the platform E-Pics Max Frisch Archive. The description and digitisation project MFA_online, modelled on the Thomas Mann Archives' completed project, TMA_online, has been underway since 2014. However, there are differences with regard to the provision of



In the Max Frisch Archive. 2014. ETH Library Zurich/Frank Blaser

the digital copies: there are greater restrictions on personality rights and copyright for Max Frisch and his correspondence partners than for Thomas Mann, who died almost four decades earlier.

The archive users receive competent supervision on site and numerous external requests are processed. The temporary exhibitions on the archive's premises regularly attract visitors. Besides tours for the general public, specialist tours and services tailored to specific groups, such

as teachers, are also offered. While the amount of archive usage and exhibition visits has fluctuated fairly heavily over the years in response to anniversaries and reception waves, there is evidence of an upward trend.

Using the app "In the footsteps of Max Frisch – three city walks", which the Max Frisch Archive developed, anyone who is interested can explore Max Frisch's legacy around the City of Zurich for themselves.



Gottfried Semper, theatre installation in The Crystal Palace in Sydenham near London, project 1854–1863.
gta Archive ETH Zurich.

Architecture and Building

Another archival facility at ETH Zurich located in the Institute for the History and Theory of Architecture (gta) has also gained a high degree of publicity and an international reputation: the gta Archive. Moreover, as of recently the Department of Architecture has been establishing the Material Collection in collaboration with ETH Library.

The History of Architecture at Your Fingertips: the gta Archive

After the death of Gottfried Semper (1803–1879), some of his Zurich students founded a “Semper museum” with some of his personal papers. Its existence as a facility open to visitors, however, was short-lived (1880–1884). When the museum closed, the holdings were transferred to the Bau-schule library, which went on to become the Architecture Library. With the foundation of the Institute for the History and Theory of Architecture (gta) in 1967, the library handed over the Semper Archive as a scientific basis, which meanwhile included the personal papers of other architects. The institute’s research activities led to considerable increases in the holdings. Today’s gta Archive is a documentation

centre for Swiss architecture and simultaneously a central component in an institutional infrastructure that, besides research and teaching, also includes scientific communication as an integral part of its service portfolio through attractive publications and exhibitions.

The gta Archive collects lifetime and posthumous bequests from architects and architectural theoreticians. It also includes paper and object collections on special themes. The most famous holdings are the Semper Archive and the personal papers of his successors, Karl Moser (1860–1936) and the aforementioned Gustav Gull. The personal papers and materials of the protagonists of modern Swiss architecture are extensive. This temporal complex is supplemented by the CIAM Archive located in the gta Archive. The Congrès Internationaux d’Architecture Moderne held from 1928 to 1959 gave significant impetus to the architecture and urban design of the time. The personal papers of CIAM General Secretary Sigfried Giedion (1888–1968) are also located in the gta Archive. Besides the complete personal papers, the blueprint collection contains more than 3,000 individual plans. The image collection comprises around 35,000 pieces. Furthermore, the archive has a reference library, extensive personal paper libraries, a film collection, an audio library, a model collection and a glass

slide collection. The collection's most recent focus is Swiss landscape architecture and spatial planning, which forms the new collection unit NSL Archive (gta). The indexing and traceability of the holdings, not to mention their future digitisation, stands to benefit from an intensification of the internal cooperation within ETH Zurich.

The archive rooms are located in the HIL and HEZ buildings. The holdings of the Ernst Gisel Archive is found in Ernst Gisel' studio house in Streulistrasse. The NSL Archive is furnished with cabinets for storing blueprints and has its own storage rooms complete with study facilities. Nonetheless, the storage capacities have largely been exhausted.

The archive is integrated in gta's research and used intensively by the department's lecturers. Every year, numerous users – a third of whom are from abroad – come to conduct research on art and history of architecture, but also monument preservation and journalism. The archive also researches its holdings itself and publishes books on the results.

Architecture and the design of urban and rural areas are naturally topics that are of considerable public interest. The Institute of the History and Theory of Architecture assumes the task of scrutinising such themes at ETH Zurich in both the past and present. The combination of a university research institute with an archive that collects personal papers, blueprints and models, exhibition department and publishing house provides ideal conditions for professional research documentation and its communication with expert circles and the general public.

A Modern Kind of Collection: the Material Collection

In the second half of the 20th century, when the art of construction believed it had to restrict itself to steel, concrete and glass, the extensive collection of different building and decorative materials of the time was deemed obsolete. Meanwhile, the trend has made a complete U-turn: nowadays, different natural and industrial materials are used more in construction than ever before in the history



The Material Collection in the Baubibliothek. 2014.
ETH Library Zurich/Frank Blaser

of humankind. As a result, architecture students have to appropriate extensive corresponding skills for their project work and require haptic material for examination. Due to the teaching needs, smaller approaches for new collections had developed in various cities and facilities, without a large, new collection facility emerging. Instead of establishing a new Material Collection at ETH Zurich, a conscious decision was made to opt for the form of a network collection with a common database platform, agreements on the distribution of responsibilities and decentralised data entry.

ETH Zurich's share in the cross-sector, interdisciplinary network www.materialarchiv.ch primarily comprises materials relevant to architecture in sufficiently large reference pieces. These especially include manmade and natural stone, concrete materials, construction metals, insulation materials and notably alternative and traditional construction materials such as rammed clay in various preparation forms. Particular attention is paid to physical building, chemical and biological properties and the quality of effects created by different surface treatments and ageing.

ETH Zurich's physical Material Collection is incorporated into the premises and technical infrastructure of the Baubibliothek on the Höggerberg, where the materials are



freely accessible in especially constructed presentation cabinets.

The collection, which is run as a cooperation between ETH Library and the Department of Architecture, presents its concept and services in accordance with ETH Zurich's state-of-the-art form of collection. On the one hand, the current new foundation reveals that, if organised systematically, physically present, tangible visual material can be extremely up-to-date and, on the other hand, that its usability as an information source can be increased considerably through a clever database presentation and cooperation with sister facilities. Through a network and a joint search platform, physical collections at different locations (Gewerbemuseum Winterthur, Lucerne University of Applied Sciences and Arts, Sitterwerk St. Gallen, Zurich University of the Arts, ETH Zurich, Zurich University of Applied Sciences, and Bern University of the Arts) become a sought-after instrument of architecture and craftsmanship, but also restoration and monument conservation. Until now, the decentralised establishment of a new collection with this degree of complexity and professionalism has not been realised. Novel usage forms and services are also being researched and tested at the other institutions involved. The resulting factsheets on reference material are

subject to constant critical review. The material samples bear RFID labels and 2D codes, through which the information texts on specific properties, processing possibilities, ageing behaviour and potential applications can be viewed onsite on the database monitors or on the user's own mobile device.

The model where several collecting institutions with their individual specialisations join forces via a common portal is promising in every respect. While the approach where complete informational datasets are supplied for every sample might not be anything new, given the wealth of material it is only affordable as a cooperative project.

The Material Collection has great potential to also be able to benefit from synergies within the university in future and – as in the case of the xylotèque – put them into practice.



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