

After more than 50 years of organ restoration activity in northern Germany, we have observed increasing demands for pre-restoration planning, process control, and submission of reports. Simultaneously, the scope of organ restoration expanded substantially, ranging today from the oldest existing instruments to electro-pneumatic organs of the 20th century. It is clearly not possible to create a uniform set of rules or principles for documenting this whole range: We may document an older instrument more carefully than newer ones; different information is desirable for different actions, etc.

The increased demands for proper documentation result not only from the technical advances of recent years, but also from the interests of the research and educational institutions and scientists involved in this topic. In the beginning, research projects were carried out by the institutions themselves,¹ but today these services are also available from professional or commercial sources.² The research and documentation capabilities of these institutions and similar organizations usually go far beyond those of organ builders, so that many organ builders now perceive these research projects as a meaningful addition to their own work and support these activities.

Many consultants are aware of these advances and interests, and have begun to expect that the organ builder carry out the needed research and provide the documentation. In practice, however, severe financial problems arise from the costs involved in carrying out this research with the required scholarly detail. Thus organ builders are encountering a new and significant (as well as expensive) requirement on the part of both congregations and experts as a result of this increased interest in documentation by the professional world. At the same time, many organ builders are also conscious of their obligation as restorers of historic instruments to meet at least some of these new requirements. The organ builder therefore must tread a *via media* between these new demands and reasonably pricing or financing the project—a true dilemma.

Development of restoration documentation in organ building

If we look at early restorations, we find that no actual reports were prepared until the 1940s, and find only relatively primitive attempts at documentation in correspondence and recordings in archives. If something was documented and, above all, photographed, it was usually the expert or consultant who did the work. Archives of organ builders may provide, from their project bids and invoices, some hints of the scope and nature of the work proposed and eventually carried out on a given

instrument. If anything at all was documented, at least the specifications and perhaps rough drawings were preserved, but in general scalings and other significant details are not usually to be found. In many of these early projects we would be glad if we could find at least these data.

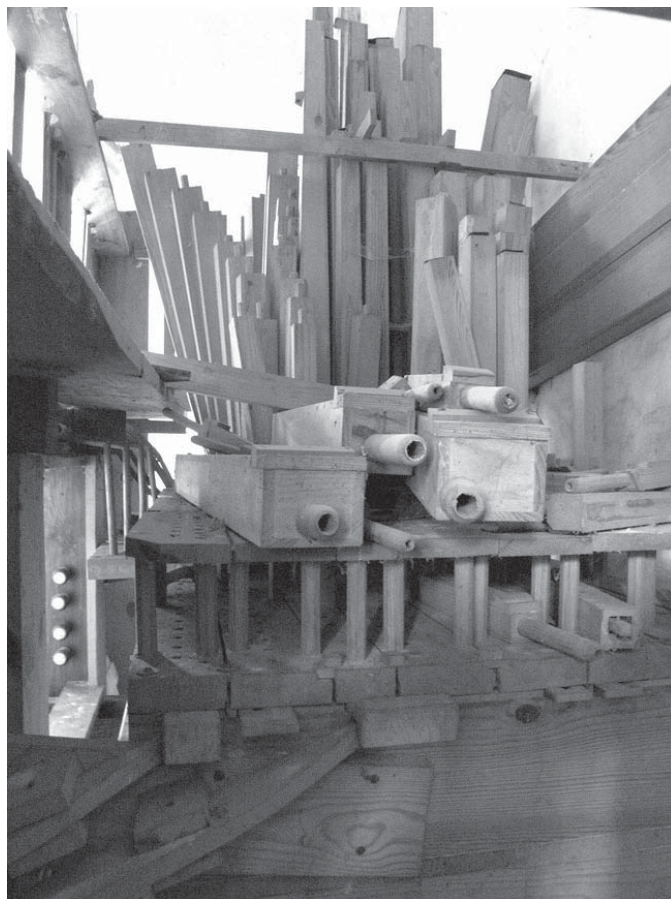
After World War II, some companies began maintaining written documentation, sometimes accompanied by a set of black-and-white photographs. Friedrich Jakob of the Theodor Kuhn organ company (Männedorf, Switzerland) writes that the AGSO (working group for the preservation of Swiss historic organs) was established in 1958.³ Subsequently, the first technical reports were developed in cooperation with Jakob; these 'internal inventory reports' were, however, substantially less detailed than the more developed restoration documents used today. The concepts compiled in these reports, which later provided the basic structure for full restoration documentation, were divided into the following sections:

- A. Literature
- B. Sources
- C. Inscriptions
- D. Inventory
 - 1. Specification
 - 2. Case including pipe order
 - 3. Console including stop order
 - 4. Wind chests, with slider and valve order
 - 5. Key action
 - 6. Stop action
 - 7. Wind system
 - 8. Pipe work, with scalings
- E. Restoration suggestions

For the first time the relationships of façade, pipes, sliders and pallets were examined and recorded. This report format was expanded and refined in the following years. With two publications in 1965 and 1968,⁴ a level of standardization was reached, which at that time was judged by German specialists as exemplary and trailblazing. However, these were still not true and complete restoration reports, as they documented only an exact inventory of the instrument's then-current state and provided only restoration suggestions.

In the 1970s, the expansion of this earlier form of report to real restoration reports that included detailed accounts of the work done, became standard in many large companies, as organ builders perceived and understood the need for comprehensive restoration information.⁵ In Germany, the Alfred Führer organ company of Wilhelmshaven⁶ was one of the first enterprises to provide more extensive reports, including:

- 1. History, with pertinent literature and sources



Unrestored organ at Galenbeck, Mecklenburg, North Germany. The organ builder is unknown, and the metal pipes have been stolen. No work has been done on this organ since 1945. (Photo credit Uwe Pape)

- 2. Case and façade pipes
- 3. Console
- 4. Wind chests
- 5. Key action
- 6. Stop action
- 7. Wind system
- 8. Pipe work, including scales
- 9. Temperament
- 10. Voicing⁷

German experts in church administration also developed large archives for organ documentation, of which the churches in Hannover and Magdeburg are well-known examples.⁸ It also became evident that extensive restoration reports, such as those provided particularly by the staff experts in museums of musical instruments, could be in the organ builders' own best interests, by providing both a record of the work undertaken and a certain level of pro-

tection for the restorer against possible later challenges.

The main problem in this 'museum approach' was quickly identified, however: In general, a state or not-for-profit enterprise such as a museum doesn't work under time pressure, and the costs of the documentation and scientific research are covered by an institutional budget. The situation in organ building is quite different: The costs of a report must be covered by the price of the restoration and, perhaps, by a special budget item or contribution of the congregation.

In some firms a combination of increased personal efforts and internal company restructuring made these more extensive reports feasible. Firms such as Theodor Kuhn (Männedorf), Johannes Klais (Bonn), Hermann Eule (Bautzen), and Alexander Schuke (Pots-

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Unrestored organ at Badresch, Mecklenburg, North Germany. The organ builder was Ernst Sauer, the father of Wilhelm Sauer. No work has been done on this organ since 1945. (Photo credit Uwe Pape)

dam)⁹ set up their own restoration departments in which the chief restorer was also responsible for the full documentation of projects. A summary report on the entire restoration, supplemented by photographs and drawings, became standard.¹⁰ Newer organ companies have attached great importance to this documentation from their inception: Kristian Wegscheider (Dresden) is well known for his careful reports, which consist of a 'condition report' before the restoration as well as a later 'restoration report' on the work done; both are indispensable components of the process.¹¹

Procedure and arrangement

Wolfgang Rehn (of Th. Kuhn AG) reports his personal ideas as a restorer and the requirements for documentation in a large restoration department.¹² He developed a special model for documen-

tation of restorations, in which he describes the report not only as an account of the work but also of the time and circumstances under which the work has been carried out. This report should take into consideration the requirements of the instrument's period, e.g., the sense of musical style, the materials available, certain demands of consultants or architects, the importance of a light action, or the aesthetic sense and approach of the owner. If one can understand from the documents the conditions under and materials with which organ builders had to work at a certain time, one may better understand the work they actually were able to accomplish. In fact, this understanding may perhaps help to comprehend and preserve a certain building situation as the record of a great achievement of the time.

Documentation should also be seen as a 'process report'. Typically we see

only the finished picture, not how it came to be, whereas we want to comprehend more thoroughly the work itself and the various influences on it. Until a few years ago a project was usually documented and presented only in summary fashion, perhaps even somewhat favorably colored or highlighted. No one would mention errors, misjudgments, and false estimates. Many matters and decisions later criticized or even condemned may be much better understood if we knew why or how they were done or reached. We may even discover a level of respect for what may be an inadequate execution when working conditions are better known. For these reasons we should try to find a way to utilize the technical achievements of our times, thus responding to modern demands while at the same time holding the expenditure of time (and money) to reasonable orders of magnitude.

The Kuhn company sought to merge the documentation process as far as possible with the regular work routine, seeing it to a certain extent as a by-product of its work planning. The adjustment of the documentation process to the work schedule also led to another and more objective overall report. As opposed to earlier methods, this new kind of documentation became a collection of data subsets encompassing the entire restoration period.

The Kuhn model

From the beginning of the 1990s the Kuhn company ceased preparing final restoration reports, instead arranging the production plan and the information data simultaneously as total project documentation. In order to obtain a consistent overview, this sequentially written report always has a similar arrangement of the individual parts. Thus if one looks for statements about, e.g., wind chests, one can easily find the inquiry results, recommendations, resolutions, and all related remarks in a certain place in the contents of each report. Each report part is regularly provided with an appendix of photographs. The arrange-

ment used by Kuhn is as follows and may be taken as a model for documentation reports in general:

- A. Initial situation
 1. Basis
 2. Problem
 3. Historical outline
 4. Specification (existing)
- B. Report
 1. General condition
 2. Pipe work
 3. Key action
 4. Stop action
 5. Wind chests
 6. Console
 7. Wind system
 8. Case and framework
- C. List of requirements

Sections A1 and A2 describe the initial state of the instrument and terms of reference. Sections A3 and A4 discuss the historical development of the instrument and list the specification(s) with all major changes. It is in general an excerpt of documents from church archives and may be supplemented by facsimiles of bids, contracts, and/or certificates.¹³

Each part of section B consists of four elements.

1. Project bid

The first part of the restoration report begins with the project bid, because the investigation report for the bid is the first part of the overall report. Unfortunately it is not possible to include the competing project bids of the other firms here also, even though this would result in a more complete picture for later readers.

2. Disassembly Report

The second part of the restoration report, the disassembly report, is definitely the most complex and most important part of the total documentation. The following approach to inventory and description of pipes serves as an example of the importance of this documentation:



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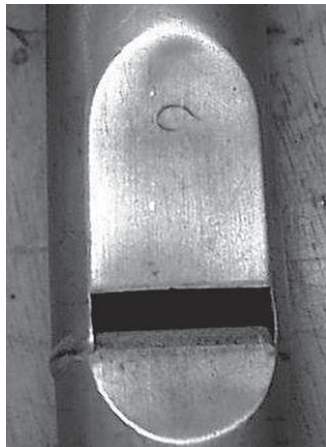
All pipes are noted in the account sheets prepared for the corresponding organ with measurable and computable values—scalings of circumferences, lengths of bodies and feet, widths of toe-holes, mouth widths, cut-ups and number of nicks. If pipes are of different design, these are described exactly and illustrated by photographs. The analysis of alloys may be provided by companies for material testing.¹⁴ Very important is the investigation of inscriptions [any markings on the pipes, e.g., pitch indications, maker's marks, etc., known as *Signatures*]. These are copied by hand and transferred to special documentation sheets with information describing their placement on each pipe. A specific or unusual *Signatur* characteristic may also be photographed in all octaves. (See illustrations.)

Of course this investigation and recording of information must have reasonable limits. While it is clear that there are still more possibilities concerning pipe documentation, it is important not to strive for accuracies that are beyond reasonable measurement. We apply the principle: better no data than incomprehensible or incorrect data. Rehn gives several examples such as wall thickness of small pipes and pipes with coned-in feet. How many measurements are reasonable? Another example is the measurement of the windway and the languid bevel. Here one could demand a multiplicity of values at each languid. Further examples are also the depth and placement of nicks, or which file profile has been used in the nicking process. These characteristics are much more relevant to a pipe's sound than the second decimal place of a scale's diameter. Another example may be the analysis of the partials produced by each pipe of an organ. Thus the actual tonal condition can be exactly documented. But what is the use of a documentation of the sound of dirty pipe work? We would have to measure the sound characteristics again after cleaning. And we have to do this yet again after the restoration in order to document the result and any changes. Does this make sense? If we recognize that the third partial tone is weaker than it was in the second measurement, what do we do then?

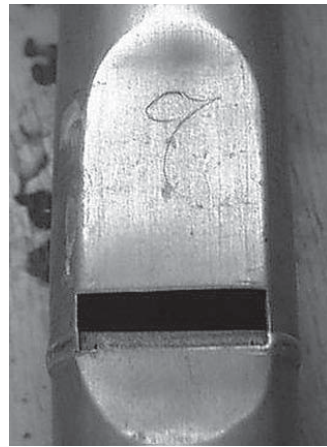
Demands and expenditure can become limitless in light of the possible scientific measurements. The costs of the documentation of the pipe work alone in a large organ can thus easily reach five- to six-digit Euro or dollar amounts. Therefore, in practice we must limit ourselves to the values specified above. These permit us to make an exact copy if necessary. From these data later substantial changes, e.g., changes of cut-ups and toe-hole openings, are readily understandable.

3. Project Elaboration

In this section of the report the results of the investigation process are converted into a work program and its documentation. Continuing the example of the pipe work, we can see how the documentation at the same time



Signatur on front of C pipe (Photo credit Uwe Pape)



Signatur on front of C-sharp pipe (Photo credit Uwe Pape)



Signatur on back of C pipe (Photo credit Uwe Pape)



Signatur on back of C-sharp pipe (Photo credit Uwe Pape)

becomes a tool in the workshop: Decisions concerning allocation of and actual work on the pipes follow the description in accordance with their manufacturing method and *Signatures*. Along with this process a classification table may be provided to ensure an overview during work on the project while also allowing a later comprehensive representation of the project.

This example shows how the documentation becomes to a certain extent a by-product of the work. The other parts of the organ are documented in the same way during the restoration process. Apart from these remarks all minutes of meetings and the resolutions of issues raised are also attached in this section of the report.

4. Implementation

The last part of the restoration report summarizes briefly which portions of the plan were definitely implemented. This part is deliberately brief because more detailed reporting would result in additional expenditure that has no real relation to the craftsmanship. It consists mainly of references to necessary parts of sections 2 and 3, and, if necessary, supplements any deviations from plan.

Summary

Restoration reports should compile and obtain as much meaningful information as possible. Rehn emphasizes that details should be written to explain that "We implemented the following—and these are our reasons." Although including such details may be viewed as 'make-work' in connection with organ restorations, one must admit that there may be a real need for such remarks in individual cases, and that how and why actions were undertaken should be made clear in a report. Glossing over facts, rationales, and ideologies should not be allowed.

As the financial support available for the documentation of a restoration is usually very limited, the organ builder must work as efficiently as possible. The approach described above provides a useful method and reasonable result. ■

*This article was edited by Dr. G. Nicholas Bullat.

Notes

1. International Association for Organ Documentation e.V., Peer-Schlechts, Postfach 103511, D-34035 Kassel, Germany; Technische Universität Berlin, Fakultät IV, Forschungsstelle für Orgeldokumentation, Franklinstr. 28-29, D-10587 Berlin, Germany (aedv.es.tu-berlin.de/

projects/orda/); GOArt, Göteborg University, Box 210, SE-405 30 Göteborg, Sweden (www.goart.gu.se).

2. Judit Angster, Fraunhofer-Institut für Bauphysik, Nobelstr. 12, D-70569 Stuttgart, Germany (www.ibp.fraunhofer.de); Martin Kuhn, Waldstr. 65, D-74731 Walldürn, Germany (www.orgel-dienstleistungen.de).

3. F. Jakob: "Sinn und Zweck der Dokumentation von Orgelrestaurierungen." In W. Rehn (Ed.): *Dokumentation von Orgelrestaurierungen*. Berlin 2006, ISBN 3-921140-71-4, pp. 9–20.

4. Reports about the Wallis organs of Ermen and Münster.

5. Museums of musical instruments like the Musikinstrumentenmuseum in Leipzig or the Germanische Nationalmuseum in Nuremberg also influenced restorers. Both institutions offered workshops and worked as training centers. Here a completely different style of education in restoration was put into practice. It was mainly this systematic work and type of documentation that impressed the visiting organ builders.

6. Fritz Schild: *Denkmal-Organen: Dokumentation der Restaurierung durch Orgelbau Führer, 1974–1991, Teile I und II*, Wilhelmshaven, 2005.

7. This arrangement, used in the report of Hohenkirchen (1974), became the model for further reports and was modified several times. 'Key and Stop action' became one grouping, and 'Temperament and Voicing' were included in the grouping 'Pipe work'.

8. Evangelisch-lutherische Landeskirche Hannovers, Rote Reihe 6, 30169 Hannover, Germany; Evangelische Kirche der Kirchenprovinz Sachsen, Am Dom 2, 39104 Magdeburg, Germany.

9. Th. Kuhn AG, Seestr. 141, CH-8708 Männedorf, Switzerland; Johannes Klais Orgelbau, Kölnstr. 148, D-53111 Bonn; Hermann Eule Orgelbau, Wilthener Str. 6, D-02625 Bautzen; Alexander Schuke Potsdam Orgelbau, Otto-Lilienthal-Str. 33, D-14542 Werder/Havel.

10. Wolfgang Rehn gives an extensive insight into his documentary work in the company of Theodor Kuhn Orgelbau: W. Rehn: "Dokumentation von Orgelrestaurierungen." In W. Rehn (Ed.): *Dokumentation von Orgelrestaurierungen*. Berlin 2006, ISBN 3-921140-71-4, pp. 89–102.

11. Kristian Wegscheider, Bauernweg 61, D-01109 Dresden.

12. See footnote 10.

13. Examples for database systems to receive a biography of instruments in Northern Germany are ORDA (aedv.es.tu-berlin.de/projects/orda/) and ORDA 2015 (www.orda2015.de).

14. Examples are BAM = Bundesamt für Materialprüfung (Berlin) or EMPA = Eidgenössisches Materialprüfungsamt (Zürich). These are state owned agencies, but there are also private firms.

Prof. Dr. Uwe Pape studied mathematics and physics in Göttingen. He was a professor of information systems at the Technical University of Berlin from 1971–2001, also serving as visiting professor at MIT in 1974 and 1984–85. His interest in organbuilding began in the 1950s, during his student days in Göttingen, when he encountered Paul Ott and his workshop. In 1959 he began an inventory of the organs of Braunschweig. In 1962 he established an organbuilding history publishing house. He is the author of many monographs in the field of north German organ construction. Since 1985 he has directed a research group for the documentation of organs and organ restoration projects. He is a consultant for institutions in Berlin, Bremen, Niedersachsen and Sachsen.

G. Nicholas Bullat, D.Mus.A., J.D., F.A.G.O., F.R.C.C.O., L.T.C.L., a former Dean of the Chicago AGO Chapter, served as chairman of the graduate studies division and organ and theory departments of the American Conservatory of Music, Chicago, and for many years was minister of music at First United Church of Oak Park, Illinois. After retiring from performing and teaching in the early 1990s, he practiced securities law at a large Chicago firm and was Vice President and Counsel at Harris Trust and Savings Bank, Chicago, until his retirement in mid-2005.

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