

The role of the Jotello F. Soga Library in the digital preservation of South African veterinary history

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The history of veterinary science in South Africa can only be appreciated, studied, researched and passed on to coming generations if historical sources are readily available. In most countries, material and sources with historical value are often difficult to locate, dispersed over a large area and not part of the conventional book and journal literature. The Faculty of Veterinary Science of the University of Pretoria and its library has access to a large collection of historical sources. The collection consists of photographs, photographic slides, documents, proceedings, posters, audio-visual material, postcards and other memorabilia. Other institutions in the country are also approached if relevant sources are identified in their collections. The University of Pretoria's institutional repository, UPSPACE, was launched in 2006. This provided the Jotello F. Soga Library with the opportunity to fill the repository with relevant digitised collections of diverse heritage and learning resources that can contribute to the long-term preservation and accessibility of historical veterinary sources. These collections are available for use not only by historians and researchers in South Africa but also elsewhere in Africa and the rest of the world. Important historical collections such as the Arnold Theiler collection, the Jotello F. Soga collection and collections of the *Onderstepoort Journal of Veterinary Research* and the *Journal of the South African Veterinary Association* are highlighted. The benefits of an open access digital repository, the importance of collaboration across the veterinary community and other prerequisites for the sustainability of a digitisation project and the importance of metadata to enhance accessibility are covered.

Introduction

In any society, knowledge exchange is critical for development (Van Deventer & Pienaar 2008). Librarians worldwide have always been known as the keepers of knowledge. In general, most of these information or knowledge sources are readily available through commercial vendors, but there are many valuable information sources that are not available commercially, not easily discovered or accessible and may therefore be lost to researchers. Librarians are increasingly aware of the value of these information sources for research and scholarship purposes and encourage their clients or patrons to make such material available wherever possible.

According to a survey and literature review done by the Association of College and Research Libraries (ARCL) of the USA in 2010, academic library collections will in future include new resource types in digital form.

Increasingly, libraries are acquiring local collections and unique materials and, when possible, digitising them to provide immediate, full-text online access to increase visibility and use. Access to full-text sources, not the discovery of the sources, is a major issue for scholars. These materials may include special collections, university archives, and/or the scholarly output of faculty and students (ACRL Research Planning and Review Committee 2010).

Libraries are being challenged to expose these special collections in the web environment (Carter 2009).

As Jaros *et al.* (2008) mention in their article, veterinary librarians need to be aware of grey literature and add it to their current digital collections. Grey literature can be defined as literature that:

- is not controlled by commercial publishers
- lacks adequate bibliographic description
- has limited distribution
- is often difficult to obtain
- is unique, and
- may never appear in conventional book and journal literature.

Grey literature can be important in preserving the history of veterinary science in any country and next generation veterinary librarians should be mentored about the importance of historical veterinary literature (Jaros *et al.* 2008).

Institutional repositories

Institutional repositories developed as an answer to safeguarding and making grey literature freely available to researchers worldwide. This development supports the open access initiative, which promotes the removal of permission barriers such as copyright and licensing restrictions (Ball 2009).

Institutional repositories can include a wide range of material and can make an important contribution to scholarship, particularly in solving specific information visibility, management, or access problems experienced by academics, researchers and other interested parties. They are a better alternative to posting information to institutional websites, because information is stored permanently and accessibility is ensured (Palmer, Tefteau & Newton 2008). Institutional repositories usually host the scholarly output of an institution but can include far more than surrogates of journal articles. They may also include unpublished conference papers, teaching and learning resources, unpublished research material, biographical information and corporate material such as publicity material (Ball 2009).

The establishment of a digital institutional research repository for the University of Pretoria was initiated in 2004 when a project team evaluated different commercial and open source software platforms. Once a decision was taken regarding the software platform, a management team was formed to make the repository functional. One of the focus areas for the initial repository was veterinary science (Van Deventer & Pienaar 2008).

The University of Pretoria's Faculty of Veterinary Science has a rich variety of scarce and valuable historical resources. As this is the only Faculty of Veterinary Science in South Africa, the responsibility is even greater to preserve these resources, which may become lost or inaccessible. The retirement of knowledgeable and experienced staff members could result in the permanent loss of tacit knowledge and years of unpublished research could become inaccessible to future users (Breytenbach *et al.* 2006). By digitising these resources, the library could become a partner in delivering essential information to Africa and the rest of the world. The vision therefore grew to include the creation of a South African National Veterinary Repository (SANVR), which was to cover historic and other material of interest to veterinary scientists worldwide. Veterinary material generated by individuals and organisations involved in past and ongoing veterinary research in South Africa would be the foundation of the repository. All material in the repository is copyright protected and belongs to the contributing institutions or persons.

Collections that were considered for digitisation in the initial stage included veterinary anatomical illustrations by a South African biomedical artist, Christine Seegers, the Arnold Theiler collection, veterinary photographic slides of departments, old veterinary books, old veterinary theses, photographs and other memorabilia.

Collections

Collections uploaded (see Appendix 1) to the repository and continually expanded are the following (University of Pretoria 2006):

History Committee of the South African Veterinary Association

The members of this committee contribute information in the form of biographies of South African veterinarians and veterinary researchers. Sixteen biographies have been made available to date. Early veterinarians such as Jotello F. Soga and Duncan Hutcheon are also included. The biographies contain information about their education and careers, scientific contributions, writings, homages and distinctions.

Sir Arnold Theiler

Sir Arnold Theiler (1867–1936) is widely recognised as the father of veterinary science in South Africa. Born and educated in Switzerland, he embarked on a veterinary career in South Africa in 1891. He made an enormous contribution to various veterinary disciplines in South Africa as well as abroad. The physical collection, donated to the Jotello F. Soga Library by Professor A. Verster, consists of a travel trunk containing personal photographs as well as photo albums, documents, postcards and other personal memorabilia. Many of these items have been digitised and added to the digital collection. A copy of his dissertation, *Malaria des Pferdes*, submitted to the University of Bern, Switzerland in 1901, is part of this digital collection. Photographs taken during Theiler's career in South Africa at various research stations and of students' rugby teams during the early years of the Onderstepoort Faculty are also included.

The UNISA Honorary Doctorates Graduation Book was signed by Sir Arnold Theiler on three occasions. On 17 February 1912, he received the honorary degree of Doctor of Science. He delivered the annual address to graduates at the graduation ceremony on 09 April 1920. Finally, an honorary degree of Doctor of Veterinary Science was conferred on Theiler at the university's graduation ceremony on 11 April 1925. These three pages from the above-mentioned Graduation Book also form part of the collection.

Another unique item is the first Sir Arnold Theiler memorial lecture, delivered on the occasion of the First Faculty Day of the Faculty of Veterinary Science, University of Pretoria on 05 September 1984. It was delivered by Thelma Gutsche and entitled, 'Theiler – His personal significance today'. It was subsequently published in the *Journal of the South African Veterinary Association* 56(1), pp. 3–6. Permission was obtained from the South African Veterinary Association to publish the electronic version of the article.

Dr Jotello F. Soga

Jotello Festiri Soga was the first South African to qualify as a veterinary surgeon. He completed his studies at The Royal

(Dick) Veterinary College, Edinburgh in 1886 and returned to South Africa to work mainly in the Eastern part of the Cape Colony with Duncan Hutcheon. Publications by Soga, photographs and a biography form part of this collection. Additional documents were recently found in the Cape Town office of the National Archives and will soon be processed to form part of the collection.

At the naming ceremony of the Jotello F. Soga Library on 05 May 2009, Professor Gerald Swan, Dean of the Faculty of Veterinary Science, University of Pretoria said:

‘Dr Soga played an important role in combating rinderpest and lung-sickness in the country as the first qualified South African veterinarian. He also laid a foundation for veterinary education in South Africa. But he is better known in veterinary circles as a pioneer researcher in the study of toxic plants and their effect on animals – both for their poisonous and curative effects’. (Personal communication, 05 May 2009)

Arnold Theiler Memorial Lectures

Faculty Day is an annual event at the Faculty of Veterinary Science when research activities at the Faculty are highlighted and displayed to the outside world. At this same occasion an invited speaker delivers the prestigious Arnold Theiler Memorial Lecture. There have been 26 Faculty Days from 1984 when the first one was held till 2012. No memorial lectures were delivered in 1987, when the new Sir Arnold Theiler building was inaugurated, in 1992, when the Onderstepoort Veterinary Academic Hospital was inaugurated, and in 2011 due to the World Veterinary Congress held in Cape Town. The library has traced 16 of these memorial lectures for the repository, loading the full texts where possible.

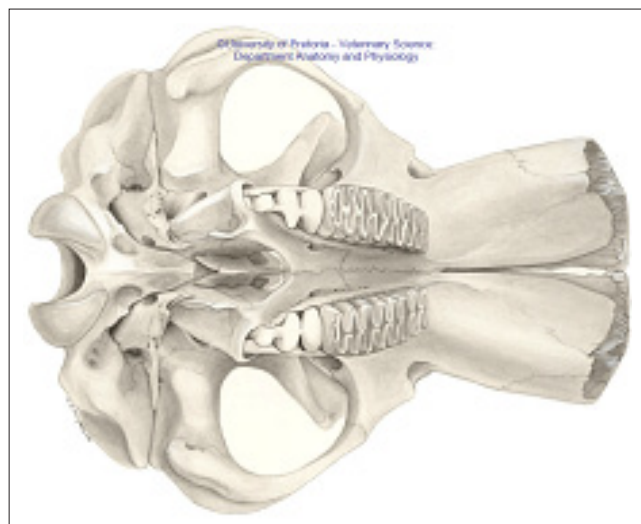
Christine Seegers Biomedical Illustrations

Christine Seegers, a biomedical artist and former employee in the Department of Anatomy, Faculty of Veterinary Science, University of Pretoria, produced a large collection of biomedical illustrations of wild and domestic animals.

Her collection of illustrations of the African elephant, for example, includes various views of the skull, vertebrae, the female pelvis, ribs and scapulae (Figure 1).

Onderstepoort Journal of Veterinary Research

The *Onderstepoort Journal of Veterinary Research* was first published by the Transvaal Department of Agriculture as the Report of the Government Veterinary Bacteriologist of the Transvaal in 1903. This is an important publication as it contains a wealth of original research information on African animal diseases and their control and treatment. The worldwide interest in this early documented research was the reason for the Jotello F. Soga Library’s decision to digitise this publication, ensuring full text availability. Initial financial support for this project was provided by the Equine Research Centre of the Faculty of Veterinary Science. When



Source: Black/white wash painting technique by Christine D. Seegers (1994) of adult elephant skull. Permission to reproduce was obtained from copyright holder, Department of Anatomy and Physiology, University of Pretoria, South Africa.

FIGURE 1: Anatomical representation of a ventral view of the adult elephant skull.

completed, this project will include publications spanning more than 100 years.

Proceedings of the 1929 Pan African Veterinary Conference

The 43 papers delivered at this Pan African Veterinary Conference, from 01 August 1929 – 17 August 1929, were scanned and made available in full text.

Veterinary Books

Rare, old books in the Jotello F Soga Library’s collection were also made available in full text by scanning and uploading them into the repository. These books were no longer subject to copyright, according to the copyright laws of the countries concerned. Examples include the following:

- 1909: Diseases of the horse and their treatment by Duncan Hutcheon & Walter Jowett
- 1890: Home life on an ostrich farm by Annie Martin (Figure 2)
- 1881: Ostrich farming in South Africa by Arthur Douglass.

Faculty of Veterinary Science Web News

A website is not the ideal place to archive material, and this collection was developed to preserve all the news articles previously published on the Faculty of Veterinary Science’s web page.

Photographic Slides

Researchers and lecturers attached to the Faculty of Veterinary Science made their personal photographs and photographic slides available to be uploaded to the repository. The advantages are that students can access them for study purposes and they are now archived for future use by researchers as well (Figure 3).



Source: Book cover colour scan of *Home life on an ostrich farm*, publisher George Phillip & Son, London. Permission to reproduce was obtained from digital copyright holder, University of Pretoria, South Africa.

FIGURE 2: Book cover of Annie Martin's 1890 book *Home life on an ostrich farm*.

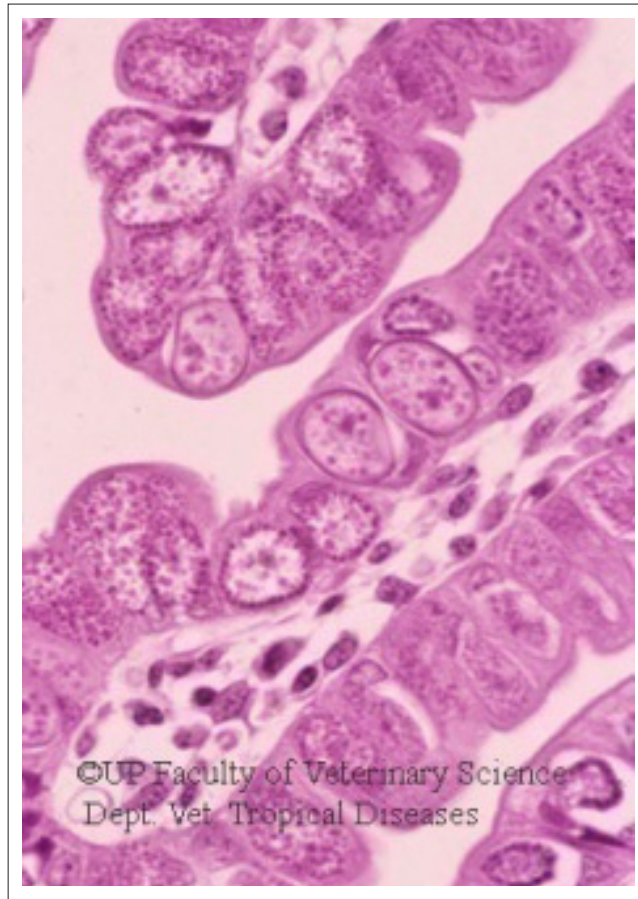
Journal of the South African Veterinary Association

The material for this collection, consisting of all the published articles, has been digitised but the process of cleaning the scanned material and transforming the items into PDF format to prepare them for uploading has not been completed.

Early Veterinary Theses: University of South Africa, 1920–1950

In its early years, the Faculty of Veterinary Science's doctoral degrees were conferred by the University of South Africa. The Jotello F. Soga Library obtained the hard copies of these theses and has digitised them. They are also in the final process of being uploaded.

The SANVR is the best way to preserve and make important and rare sources available to the international community. Unfortunately, people are not familiar with searching or browsing the repository. A web interface was developed to facilitate this, where the various collections are listed and briefly described. The website (<http://www.library.up.ac.za/sanvr>) will be maintained by the Jotello F. Soga Library, with the History Committee of the SA Veterinary Association acting in an advisory capacity.



Source: Colour photographic slide. Permission to reproduce was obtained from copyright holder, University of Pretoria, Department of Veterinary Tropical Diseases, South Africa.

FIGURE 3: Various stages of the life cycle of an *Eimeria* sp. in intestinal epithelial cells.

Metadata

One of the important cornerstones of the SANVR is the assignment of metadata to tag the variety of objects uploaded to the repository. 'Metadata' refers to descriptive information that is searchable and therefore aids in the identification and retrieval of the electronic or digital information (Taylor 2003). As a large portion of the SANVR consists of historical material, a clear decision was of utmost importance regarding which metadata fields were crucial for describing the objects and populating the predetermined templates of the SANVR collections in UPSpace. Although the creation of metadata is costly, the SANVR is committed to implementing the most current international standards and technologies for presentation of the electronic resources. All of the resources in the SANVR contain Dublin Core metadata, a metadata scheme that has achieved international standardisation (ISO15836). Attaching metadata to historic veterinary resources in UPSpace has the following advantages:

- resource discovery of unique veterinary information is improved
- utilisation, publication and display of the veterinary resources on the web are developed
- accomplishments of veterinarians and the veterinary profession in South Africa are recognised and published

- metadata-indexed images and full-text documents of the past with accessible links are preserved.

The metadata creators of the SANVR adhere to relevant standards and encoding schemes in populating the metadata fields. The required metadata fields that must be assigned to an item on submission are title, author, type, language, subjects or keywords and rights. The decision to select only six Dublin Core metadata fields was taken to keep it as simple and accessible as possible and to allow a non-metadata specialist to create descriptive records in the SANVR easily, but with effective retrieval. The information used to fill these fields is usually found in the source document and can be identified easily. To ensure the integrity of the metadata, input from accredited veterinarians and experts in the field of veterinary science and animal health is also part of the workflow process. One of the SANVR project aims is to invest in retired veterinary or biomedical academic staff to write and capture the metadata for use by future generations. If tacit knowledge is not captured, these sources will become obsolete. When metadata is assigned by an expert, the information is included in the metadata description of the item to reflect the authenticity of the repository.

Quality control is done on each record uploaded to the SANVR repository. Appointed metadata editors are responsible for the consistent use of author names, assigning additional keywords and controlled subject vocabulary for the collections in the SANVR. To further enhance the metadata descriptions, the assigning of added value by information specialists, experts and metadata editors is encouraged.

These digital information resources with metadata descriptions must be made visible and searchable on the World Wide Web in a way that users can decide whether the resources are of value to them. The SANVR used the DSpace software as open access platform for uploading and presenting the digital material. As the University of Pretoria established their repository USpace in 2006, the decision was taken to incorporate the SANVR as a community on this platform. The digital resources and metadata are stored and preserved on the UP servers and are managed and maintained by the University of Pretoria's Department of Library Services and the SANVR project committee.

Harvesting

Assigning metadata to SANVR items in accordance with international standards not only provides the essential link between the veterinary information creator and the veterinary information user but also creates the opportunity for harvesting the metadata. As the repository platform is Open Archives Initiatives-Protocol for Metadata Harvesting (OAI-PMH) compliant the SANVR is open for metadata harvesting, making the research even more visible. Harvesting also increases the opportunity for end-users to locate data from institutional repositories via common search engines such as Google and Yahoo. Currently the SANVR metadata is

harvested by OAISTER, DRIVER and Ivy Academic Search. Exposing South African veterinary historic material on these platforms delivers on key areas such as:

- access to valuable grey material unique to Africa
- availability of resources for use in learning and teaching worldwide
- delivery of information to Africa and the rest of the world
- preservation for future research
- increased exposure for veterinary history and research information.

The SANVR was successfully harvested in 2010 by Ivy Academic Search, an open access initiative of Utrecht University. The primary long-term goal of Ivy Academic Search – Veterinary Science & Medicine is to provide the local, national and international veterinary community with a high quality academic information search and retrieval system for veterinary research. The benefits for researchers and users include:

- a central portal for performing subject-related searches
- increased visibility of high quality (grey) veterinary and medical literature
- immediate access to the full text of documents.

Other participating repositories on the Ivy Academic Search platform are Cornell University, Igitur Archive Diergeneeskunde, Institutional Archive University Ghent, PubMed and Wageningen Yield.

The SANVR plays an important role in the veterinary science fraternity by making historic as well as research material available for research and education within and beyond South Africa. The SANVR is also searchable through IRSpace, a search engine used to conduct a federated search across all African and South African repositories.

Conclusion

Digitisation projects require staffing, equipment, storage and maintenance costs and libraries will have to reallocate funds or obtain external funding to accommodate such projects. Like other library collections and services, digitisation projects may also be affected by reduced budgets (ACRL Research Planning and Review Committee 2010).

A collaborative effort across the veterinary community in any country is necessary to preserve veterinary literature, memorabilia and other material of historical value. Cooperation and collaboration with the community served are very important. Their support is vital in creating a relevant, usable collection, from the initial stage of identifying the topics to be covered and the items to be digitised, to their full descriptions and their marketing to the wider world. Collaboration with parties outside the home institution is a special challenge but offers unique benefits for all concerned (Swanepoel & van der Westhuizen 2009).

Within their institutions, librarians usually try to identify early adopters in order to promote the institutional repository's

mission. Faculty recruits are, for example, important for sustaining deposit activity (Swanepoel & van der Westhuizen 2009). The understanding, buy-in and cooperation of colleagues and an institutional culture of trust and collaboration are critical to the success of a repository (Breytenbach *et al.* 2006, Jaros *et al.* 2008).

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Competing interests

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this article.

Authors' contributions

A.L. (University of Pretoria) contributed the Collections part of the manuscript. A.B. (University of Pretoria) and S.M. (University of Pretoria) co-authored the rest of the manuscript. All are staff of the Jotella F. Soga Library, Onderstepoort Veterinary Institute, University of Pretoria, South Africa.

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Appendix 1 starts on the next page →

Appendix 1

Collections uploaded to the repository:

- History Committee of the South African Veterinary Association (<http://repository.up.ac.za/handle/2263/6850>).
- Arnold Theiler Memorial Lectures (<http://repository.up.ac.za/handle/2263/900>).
- Dr Jotello F. Soga (<http://repository.up.ac.za/handle/2263/6041>).
- Arnold Theiler Memorial Lectures (<http://repository.up.ac.za/handle/2263/900>).
- Christine Seegers Biomedical Illustrations (<http://repository.up.ac.za/handle/2263/1971>).
- Onderstepoort Journal of Veterinary Research (<http://repository.up.ac.za/handle/2263/8641>).
- Proceedings of the 1929 Pan African Veterinary Conference (<http://repository.up.ac.za/handle/2263/7323>).
- Veterinary Books (<http://repository.up.ac.za/handle/2263/14177>).
- Faculty of Veterinary Science Web News (<http://repository.up.ac.za/handle/2263/11165>).
- Photographic Slides, the following topics are part of this collection:
 - Poisonous plants (<http://repository.up.ac.za/handle/2263/8082>)
 - Cattle breeds (<http://repository.up.ac.za/handle/2263/11078>)
 - Pastures (<http://repository.up.ac.za/handle/2263/478>)
 - Pathology (<http://repository.up.ac.za/handle/2263/7998>)
 - Critical care medicine (<http://repository.up.ac.za/handle/2263/11080>)
 - Heart-water and trypanosomosis (<http://repository.up.ac.za/handle/2263/3812>)
 - Veterinary tropical diseases (<http://repository.up.ac.za/handle/2263/11373>).
- Early Veterinary Theses: University of South Africa, 1920–1950 (<http://repository.up.ac.za/handle/2263/7463>).