

## CREATION OF THE COMPUTER SIMULATION ARCHIVE

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### ABSTRACT

This paper discusses the founding of the Computer Simulation Archive at the North Carolina State University Libraries, obtaining the initial contributions to the archive, establishing endowments to support the archive, and forming the Archive Advisory Committee.

### 1 THE FOUNDING OF THE COMPUTER SIMULATION ARCHIVE

Robert G. Sargent started thinking about the establishment of an archive for computer simulation in 1996. This thinking continued into the late summer of 1998 when Sargent decided it was time to take action on the idea. Sargent called his professional friend James R. Wilson at North Carolina State University (NCSU) to discuss this idea of the establishment of a computer simulation archive, and Wilson liked the idea. During this discussion Sargent raised the question of where such an archive could be located. Wilson said he had become aware that the Special Collections Department of the NCSU Libraries was interested in establishing new collections regarding History of Science and Technology. Sargent and Wilson decided that each of them should think independently about exploring the establishment of a simulation archive at NCSU Libraries and then bring up the discussion again.

Sargent called Wilson a couple of weeks later and said he believed they should explore the establishment of a computer simulation archive at NCSU Libraries, and Wilson concurred. They decided that Wilson should find out whether NCSU Libraries would be interested in the establishment of a Computer Simulation Archive. Wilson met with Russell Koonts, University Archivist of NCSU Libraries. During their meeting Koonts became excited as Wilson explained to him the idea of a Computer Simulation Archive within NCSU Libraries. Koonts said he would like to establish such an archive and would proceed to obtain approval. Shortly thereafter, Koonts phoned Wilson and then Sargent to say that approval had been obtained to establish a Computer Simulation Archive at NCSU Libraries. Very early in his phone conversation with Sargent, Koonts said that he had looked up various books on simulation and learned that K. D. Tocher had written the first book on discrete-event simulation, *The Art of Simulation*, and asked Sargent if he had a copy. Sargent replied that he had a second-hand copy that he had purchased. Koonts and Sargent also discussed the collection of simulation material that Sargent had and would donate to the simulation archive, which Koonts had been made aware of during his initial conversation with Wilson. Furthermore, Koonts communicated to Sargent that he was especially interested in Sargent's collection of simulation books because he wanted to make a collection of simulation books one of the key components of the Archive. Among Sargent's collection of simulation books were almost all of the discrete-event simulation books that had been published up to that time. Koonts and Sargent discussed what the Archive could contain, and Koonts was interested in the complete spectrum of simulation materials such as personal papers, workshop materials, conference proceedings, society newsletters—essentially everything to do with simulation. Sargent was very pleased with the phone call from Koonts as

Sargent's goal of the establishment of a simulation archive that would contain the full range of simulation materials was on the path to accomplishment.

At the 1998 Winter Simulation Conference, Sargent announced at both the ACM/SIGSIM (ACM Special Interest Group on Simulation until 2009, when the name was changed to the ACM Special Interest Group on Simulation and Modeling) meeting and the I-Sim (INFORMS College on Simulation until 2005, then renamed the INFORMS Simulation Society) meeting that the Computer Simulation Archive had been established at the NCSU Libraries. This announcement was received with much enthusiasm at both meetings. (The website for the Computer Simulation Archive is <http://d.lib.ncsu.edu/computer-simulation/about>.)

## **2 WHY A COMPUTER SIMULATION ARCHIVE**

What motivated Sargent to want to establish the Computer Simulation Archive? As he approached "retirement age", Sargent began to think about what to do with his enormous collection of simulation material that he had accumulated over the years. He had almost every book written on discrete-event simulation; a large collection of simulation conference proceedings—whenever there was an extra proceedings available that he did not have, he took it; many different journals; every simulation newsletter he could get his hands on; workshop reports; etc. He was essentially a "pack rat" when it came to materials on discrete-event simulation. As Sargent looked around at what other retired individuals in simulation did with their materials, he found that, unfortunately, most had simply disposed of their collections. This troubled Sargent as he had an interest in history. The pioneers in simulation were starting to die off. History was being lost. For example, it is not even known who established The Institute of the Management Sciences (TIMS) College on Simulation and Gaming and when it was founded.

Sargent, being a faculty member at Syracuse University, had "loosely" followed the developments of some of the archives and collections of materials that Syracuse University Libraries had assembled. For example, he followed the development of the Belfer Audio Laboratory and Archive that contains sound recording collections, and the establishment of the Collection of the William Safire Papers. This knowledge stimulated Sargent to think about a Computer Simulation Archive that would contain and preserve materials related to computer simulation. Sargent recognized that computer simulation was going to be a growing and important field, and that it would be desirable to collect and preserve material starting from its earliest days. His vision was an archive that would contain the various types of simulation materials such as those found in his computer simulation collection: books, conference proceedings, journals, newsletters, correspondence, teaching materials, individual papers, information on societies, conference committee meeting minutes, etc. Furthermore, Sargent desired video interviews of the simulation pioneers for this archive. Such an archive collection could be used over time for different purposes such as for various types of research regarding computer simulation, history pertaining to the development of a new field, etc. This thinking about a Computer Simulation Archive led Sargent to contact Wilson in the first place.

## **3 INITIAL CONTRIBUTIONS TO THE COMPUTER SIMULATION ARCHIVE**

The first item donated to the Computer Simulation Archive was made by Wilson immediately after it was established. This item was the Final Program of the first conference that led to what is now called the Winter Simulation Conference (WSC). This conference was titled "Conference on Applications of Simulation Using the General Purpose Simulation System (GPSS)" and was held in 1967 in New York City. This Final Program was given to Wilson by Julian Reitman, who was the Program Chair of this first conference, at the 25<sup>th</sup> anniversary of WSC in 1992, for which Wilson was the Program Chair. Wilson also contributed to the Archive in 2012 video tapes of the sessions on the history of WSC that took place at the 1992 WSC.

The second set of items given to the Computer Simulation Archive was from Ingolf Stahl who personally delivered them to the Archive. Most of these items were materials related to Stahl's development of GPSS for micro-computers. This donation occurred in 1999.

The third set of items contributed to the Archive was a collection of materials from A. Alan B. Pritsker. This occurred starting in 1999 when Pritsker retired and continued into 2003. His donated materials contained mainly books and conference proceedings.

The fourth set of items donated to the Archive was by Julian Reitman who personally delivered them to the Archive in October of 2003. His items were primarily materials regarding the WSC and the earlier conferences that led to what became WSC. Wilson conducted an audio interview with Reitman at the time of his donation to the Archive. This interview covered Reitman's career, the development of computer simulation as a field, a discussion of his donated materials, etc.; and this audio tape is in the Archive.

The fifth set of items received by the Archive was from Sargent. This occurred in November 2003. Sargent committed his simulation materials to the Archive when it was founded in 1998. The set of materials donated in 2003 contained most but not all of Sargent's simulation collection and was significant because of its large size. Included in the 2003 donation were his papers, most of his books, conference proceedings, newsletters, teaching materials, etc. (The remaining materials from Sargent will be given to the Archive at some future time.)

Sargent delivered his materials to the Archive by packing the items into boxes, loading the boxes into a rented trailer, and driving the rented trailer to the NCSU Libraries from Syracuse, NY. The weight of the boxes in the trailer was daunting due to the large number of boxes, and Sargent was concerned that he might be stopped and ticketed for an overweight trailer! At NCSU, Wilson helped unload the trailer. Wilson was surprised at the large number of boxes being donated and to this day likes to discuss the massive donation pile that was on the loading dock after the trailer was unloaded.

An interesting aspect about Sargent's donation was that he made the commitment in 1998 to give his collection to the Computer Simulation Archive but did not actually give any of his materials until 2003. During the time interval from the founding of the Archive in 1998 until Koonts left NCSU Libraries in 2002 for a position at Duke University, Koonts often contacted Sargent to ask Sargent when he was going to make his donation to the Archive. Koonts was very anxious to receive Sargent's collection. Koonts' contacts with Sargent included frequent emails and occasional phone calls. In three of these phone calls, Koonts offered to come to Syracuse to help pack Sargent's simulation collection himself in order to have it shipped to NCSU Libraries. One of Koonts' other phone calls was especially interesting as Koonts offered to drive to Syracuse to *only* obtain Sargent's books because of his special interest in giving them a home in the Archive. Furthermore, during the time interval from the founding of the Archive to when Sargent actually donated his materials to the archive, Wilson often asked Sargent when he was going to make his donation, and Wilson especially made sure to ask this of Sargent at each I-SIM meeting held at the annual WSC.

When Sargent finally delivered his materials to NCSU Libraries, Lois Fischer Black was responsible for the Computer Simulation Archive, having replaced Koonts. Thus, Koonts missed the arrival of the major portion of Sargent's simulation materials to the Archive as he had moved to Duke University by the time of Sargent's donation. While Sargent was at NCSU Libraries to deliver his simulation materials, Wilson conducted an audio interview of Sargent (until the audio tape ran out) that covered his donation, his simulation career, the field of simulation, etc. This audio tape is in the Archive.

Several other individuals have also donated simulation materials to the Computer Simulation Archive. A list of the donations (what and by whom) can be found at the website <http://d.lib.ncsu.edu/computer-simulation/collections>.

#### **4 ENDOWMENTS FOR THE COMPUTER SIMULATION ARCHIVE**

Financial donations to support the Computer Simulation Archive began in 1998 and were received aperiodically. These donations were mainly made by ACM/SIGSIM and I-Sim. The funds were spent

quickly as they were received primarily to help support the cost of cataloging the contributed materials. These generous donations did not provide any long-term support for the Archive, but were critical to its growth and well-being.

Sargent decided in the Fall of 2007 to take action to provide long-term support for the Computer Simulation Archive. He established two endowments at the NCSU Libraries. The first endowment he established was the Robert G. Sargent Endowment, which has not been made publicly known until now. The income from this endowment is primarily to support the Robert G. Sargent collection at the Archive, and any endowment income unused for that purpose is to be used for general support of the Archive.

The second endowment Sargent established in the Fall of 2007 was the Simulation Archive Endowment with a \$5,000 donation. The income from this endowment is to support the Computer Simulation Archive. This endowment that Sargent established was an “incubator endowment” because a minimum of \$15,000 was required to have a fully funded endowment before income can be used to support the endowment’s purpose. At WSC 2007, Sargent announced at both the ACM/SIGSIM meeting and at the I-Sim meeting that he had established the Simulation Archive Endowment at the NCSU Libraries with a \$5,000 donation and that it was an “incubator endowment.” He proceeded to ask that donations be made to this endowment to enable it to become a fully funded endowment to allow its income to be used.

At the 2008 WSC, Sargent announced at the ACM/SIGSIM and I-Sim meetings that the Simulation Archive Endowment was now a fully funded endowment, as the endowment had reached \$15,000. This occurred with donations from the Friends of NCSU Libraries, Julian Reitman, Stephen D. Roberts, James R. Wilson, Brunel University (London), ACM/SIGSIM, and I-Sim (which gave an especially large donation).

Sargent announced at the 2010 WSC that the Simulation Archive Endowment had reached \$26,500 with the following three new donations: \$5,000 from I-SIM, \$5,000 from the American Statistical Association, and \$1,000 from Thomas J. Schriber. Since 2011, ACM/SIGSIM has annually given \$5,000 to the endowment, and I-SIM gave \$5,000 to the endowment in 2013 and again in 2016. Individuals aperiodically give donations. The value of the Simulation Archive Endowment on July 15, 2017 was \$90,165.

## **5 ADVISORY COMMITTEE FOR THE COMPUTER SIMULATION ARCHIVE**

When Sargent established the Simulation Archive Endowment, he asked Gregory Raschke that an Advisory Committee for the Computer Simulation Archive be established. Raschke was Associate Director of the NCSU Libraries for Collections and Scholarly Communications, which included the Computer Simulation Archive, and was the third person responsible for the Archive. Raschke had assumed responsibility for the Archive from Lois Fischer Black who, in turn, had assumed the responsibility from Russell Koonts. Sargent had no idea what Raschke’s response would be regarding his request to establish an Advisory Committee for the Archive.

Fortuitously, Raschke was in favor of establishing an Advisory Committee for the Computer Simulation Archive. Sargent also discussed with Raschke the possibility of having a written agreement regarding the Advisory Committee. Raschke was agreeable to developing such a written agreement but said this would be an informal agreement as it was not possible for the library to have a formal agreement regarding an Archive Advisory Committee. Sargent asked Wilson to participate in the development of this written agreement. Sargent, Wilson, and Raschke converged on June 24, 2008 on very simple and straightforward written agreement regarding an Advisory Committee for the Archive. Simply put, the primary duties of this committee are to provide advice regarding the Archive and the endowment.

This agreement specified an Advisory Committee consisting of three members. It was suggested that Richard E. Nance along with Sargent and Wilson become the members of the initial Advisory Committee, and this is what occurred. It was believed this set of three individuals provided a broad coverage of the simulation field. Sargent was elected the initial chair of the Advisory Committee.

There are three major observations that can be made regarding the Archive Advisory Committee to date. The first observation is that the Advisory Committee and the NCSU Libraries staff have worked together well. The second is that the Advisory Committee has been a very active committee. The third is that the Advisory Committee has been a “participatory committee” instead of being a committee that provides only advice to the NCSU Libraries as the duties of the Advisory Committee state in the Advisory Committee agreement.

Let’s discuss what is meant by the third observation. The Advisory Committee and its members take various actions to develop the Computer Simulation Archive beyond merely giving advice to the NCSU Libraries, and this is what is meant by being a “participatory committee.” In addition to the Advisory Committee identifying individuals to collect materials for the Archive and providing these names to NCSU Libraries, the Committee members themselves also directly communicate with and encourage these individuals to donate their materials to the Archive. The Advisory Committee members have worked to obtain financial contributions to the Simulation Archive Endowment from the societies of ACM/SIGSIM and I-SIM and individuals; and as a result most of the current Archive Endowment has come from these contributions. The Advisory Committee members have given much time and effort to obtain audio and video interview recordings, also called oral history interviews, of numerous members of the simulation community. Audio interview recordings were made of a few individuals by Wilson when they donated simulation materials in person to the simulation archive. Both Sargent and Wilson have conducted audio interview recordings of members of the simulation community in the United States and in Europe.

The video interview recordings deserve a special discussion. The Advisory Committee in 2011 prepared and submitted a proposal to the National Science Foundation with Wilson as the principal investigator to make interview (oral history) videos of the pioneers of simulation. The proposal was funded. Some twenty-five videos were made with most of them being of single individuals who were pioneers of simulation. Included are two videos made of separate panel discussions of each of the simulation languages GPSS and SIMULA, and one video discussing the creation of the Computer Simulation Archive. Each video is about sixty minutes in length and all were conducted by Nance, Sargent, or Wilson. A separate script was developed for each video by the individual conducting the interview. The interviews took place at several different locations. After the interviews were conducted, the NCSU Libraries prepared the videos for placement on the web. These videos can be viewed on-line at the website <http://d.lib.ncsu.edu/computer-simulation/videos>. The videos have received much attention by the simulation community and have added great value to the Computer Simulation Archive.

## **6 CONCLUDING REMARKS**

The creation of the Computer Simulation Archive has been a success. The founding of the Archive at the NCSU Libraries was fortunate. The NCSU Libraries have provided *outstanding support* for the Archive since its founding, and interactions between the Libraries and the Archive Advisory Committee have been fantastic. The contributions of simulation materials to the Archive started off slowly but picked up after a few years. This slow start should probably have been anticipated.

The establishment of the Simulation Archive Endowment to provide long-term support for the Computer Simulation Archive has also been a success. The initial donations to fully fund the endowment were critical in order for the endowment to have become successful. The endowment continues to grow primarily due to the continuous contributions of ACM/SIGSIM and I-Sim. The creation of the Archive Advisory Committee for the Archive has been a huge success because of the contributions this committee and its members have made to the Archive. The Archive would be very different today if this committee had not been established, and also if its members Nance, Sargent, and Wilson had not contributed enormous amounts of time and energy to the Archive. Furthermore, critical to the success of the Computer Simulation Archive has been the continuous support of the simulation community. Without this latter support, the Archive would probably not have been successful.

There are two companion papers to this paper on the Computer Simulation Archive contained in the *Conference Proceedings*. One is on the importance of the Archive by Raschke and Nutter (2017), and the other is on the contents of the Archive by Nance and Thayer (2017).

## REFERENCES

- Nance, R. E., and G. A. Thayer. 2017. "The Computer Simulation Archive: Development and Current Contents". In *Proceedings of the 2017 Winter Simulation Conference*, edited by W. K. V. Chan, A. D'Ambrogio, G. Zacharewicz, N. Mustafee, G. Wainer, and E. Page. Piscataway, New Jersey: Institute of Electrical and Electronics Engineers, Inc.
- Raschke, G. K., and S. K. Nutter. 2017. "The Importance of the Computer Simulation Archive". In *Proceedings of the 2017 Winter Simulation Conference*, edited by W. K. V. Chan, A. D'Ambrogio, G. Zacharewicz, N. Mustafee, G. Wainer, and E. Page. Piscataway, New Jersey: Institute of Electrical and Electronics Engineers, Inc.

## AUTHOR BIOGRAPHIES

**ROBERT G. SARGENT** is a Professor Emeritus of Syracuse University. He received his education at The University of Michigan. Dr. Sargent has made numerous contributions to the simulation community in the forms of both service work and scholarly publications. His many honors and awards include being a recipient of the 1988 Distinguished Service Award and the 2002 Lifetime Professional Achievement Award from I-SIM, the 2010 Board of Directors James R Wilson Award and the 40<sup>th</sup> Anniversary Landmark Paper Award from WSC, and the 2012 Distinguished Contributions Award from ACM/SIGSIM; and being elected a Fellow of INFORMS in 2005. His email address is [rsargent@syr.edu](mailto:rsargent@syr.edu).

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