

Henry C. Pusey (1927-2014)

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With the passing of Henry C. Pusey in December 2014, the shock and vibration community has lost its champion. Known to many as the “godfather” of the Shock and Vibration Symposium and serving as a major leader among several other forums during his career, Henry’s influence spans numerous generations.

Henry Pusey followed the model set by his mentors Elias Klein and Irwin Vigness. Henry’s modesty, temperament and dedication to the exchange of technical information allowed him to become the essential figure for thousands of engineers and developers over multiple decades through multiple forums. Many of the courses, conferences, and symposia that he was involved in, and that are still operated today, owe a great deal of their success to the efforts of Henry Pusey. His legacy is cemented in our field, and he will not soon be forgotten.

There have been several tributes made to Henry Pusey. I would like to focus on what I think are Henry’s greatest contributions – Henry’s efforts in the centralizing activity (CA) for shock and vibration and Henry’s contribution to the promotion of the pseudo-velocity shock spectrum.

Over the past seven years or so, the shock and vibration community has witnessed the demise of SAVIAC (Shock and Vibration Information Analysis Center) with its government sponsorship and its resurrection as SAVE (Shock and Vibration Exchange) without government sponsorship. In reading Henry’s autobiography (available through SAVE), I found that this process we have witnessed during recent years is yet just another cycle in a decades’ long series of cycles of just the same process.

Henry’s association with the CA for shock and vibration (later known as the Shock and Vibration Information Center, or SVIC)) began in 1958 when he began a long and rewarding career at the Naval Research Laboratory (NRL). Henry was most influenced by two individuals who were instrumental in the formation and early success of the CA – Elias Klein and Irwin Vigness. He admired these two men not only for their technical expertise but also their modesty and willingness to help young engineers.

In 1964, the name of the CA was officially changed to the Shock and Vibration Information Center (SVIC). As a result, SVIC became an official DOD Information Analysis Center (IAC) operated in-house by NRL and administered through the Office of



Henry Pusey (left) and Ron Eshleman of the Vibration Institute.

Naval Research. After 15 years under the tutelage of such distinguished SVIC directors as Elias Klein, W.W. Mutch, and Robert Belsheim, Henry Pusey became the fourth and final individual to hold the position in 1973. Henry’s leadership of the information analysis center and organization of the majority of shock and vibration symposia during his tenure at SVIC not only earned him the respect and admiration of the entire dynamic test community but also insured that the information, experience and ideas from these activities were recorded and preserved for future generations.

When SVIC was discontinued in 1986, Henry continued as an active and valuable contributor to shock and vibration symposia. After SVIC disbanded, he conducted an in-depth study sponsored by NAVSEA to investigate the need to re-establish the information center on shock and vibration. The results were positive and the Shock and Vibration Information Analysis Center (SAVIAC) was ultimately established in November 1990 largely as a result of his efforts. In the meantime, to ensure that the sequence of symposia was not interrupted, Henry Pusey organized and managed the 58th-61st (1987-1990) symposia under different sponsors. While Booz, Allen & Hamilton held the SAVIAC contract for the 62nd through 72nd symposia, Henry and Sallie Pusey provided help and advice in organizing the symposia.

HI-TEST Laboratories (HTL) was awarded the contract for SAVIAC beginning with the 73rd symposia in 2002. After that, Henry and Sallie both worked exclusively for HTL, assisting with the symposia and managing the two shock courses, *Practical Shock Analysis & Design* and *Mechanical Shock*

Testing & Data Analysis. Throughout these decades of the shock and vibration symposia, it was Henry Pusey’s dedication and determination that kept the symposia going – symposia that have benefited all of the shock and vibration community. Every step of Henry’s way was supported by Sallie Pusey who was as much a fixture in the shock and vibration community as Henry.

Since SAVIAC was dissolved, Henry and Sallie Pusey continued to lend support to the Shock and Vibration Symposia, which continued thanks to HTL sponsorship under the leadership of Bill Yancey. In this capacity, Henry and Sallie Pusey worked with Drew Perkins, who is site director for HTL, and is also the director for the Shock

and Vibration Exchange (SAVE), which was founded in 2012 to serve as a clearing house for persons interested in shock and vibration and related specialties.

When Henry attended any meeting, he always paid attention to the topics and discussions. Over the years, he became convinced that the pseudo-velocity shock spectrum (PVSS) was the best indicator of potential structural damage. To promote PVSS, Henry organized *Mechanical Shock Testing & Data Analysis*, a course that began in 2008. In this course, Howard (Howie) A. Gaberson presented extensive derivations and examples of PVSS and greatly expanded the understanding and use of PVSS for a wider frequency range than previously used.

More recently (2013), as a result of many shock meetings at the Aerospace Corporation over the last three years, Sheldon Rubin has recommended that new classifications for pyroshock be adopted based on PVSS and also supports acceptance of PVSS as a damage indicator. He further recommends that the reporting of test failure description and associated PVSS to an open data base and that the setting of test tolerances be determined as function of PVSS. The aerospace industry has long used 50 ips as a threshold for pyroshock severity, and with his recommendations, will greatly expand and use other velocity values as indicators of pyroshock severity. These advancements for pyroshock analyses are a direct result of both Henry and Howie’s dedication to advocate wideband shock data analysis with PVSS. Numerous NASA and JPL students have taken the *Mechanical Shock* course and have adopted PVSS analysis and thus support Sheldon Rubin’s recommendations.

Also, as a direct result of Henry's dedication, an ANSI standard is now in place that specifies *Shock Test Requirements for Equipment in a Rugged Shock Environment* (ANSI/ASA S2.62-2009) on the basis of PVSS. The successful completion of this standard demonstrates Henry's great and valuable ability to bring together people from various organizations and professions and to work on a common goal. Numerous people from the shock and vibration community participated in the development of this standard that will become (with time) an ISO standard. Additionally, I have introduced PVSS in MIL-STD-810, Method 517 for Pyroshock and will continue to add PVSS into the numerous recommended practices and standards that I author. In my view, Henry and Howie have truly changed the analysis of shock data that will live for a very long time.

Although remaining an active contribu-


tor, advisor, and consultant to the various organizations managing the shock and vibration symposium until his death, Henry experienced various roles and recognitions within many organizations. These include:

- Post-government roles* (partial list):
- *Practical Shock Analysis & Design Course*, co-developer with Dr. Rudy Scavuzzo, NKF Engineering, 1983-present.
 - Conference Chairman, Machine Failure Prevention Group (MFPG) in association with the Vibration Institute, 1990-1994.
 - Executive Director, Machinery Failure Prevention Technology (MFPT), division of the Vibration Institute, 1995-2006.
- Recognitions* (partial list):
- *Irwin Vigness Award*, Institute of Environmental Sciences, 1974.
 - *Fellow of IEST*, Institute of Environmental Sciences, elected in 1983.
 - *Henry Pusey Award*, named to honor Henry for his dedication and given to

the best technical paper in S&V from the past calendar year, Shock and Vibration Information Analysis Center (SAVIAC), established 1992.

- *Lifetime Achievement Award in Shock and Vibration*, Shock and Vibration Information Analysis Center (SAVIAC), awarded in 2008.
- *Fellow of MFPT*, Machinery Failure Prevention Technology, elected in 2009.

Much of the information contained in this remembrance is taken from two published works:

1. Freeman, Michael T., *Pioneers of Shock and Vibration (SVM-14)*, Shock and Vibration Information Analysis Center and Booz, Allen and Hamilton, Inc., 1996.
2. Pusey, Henry C., *What a Fun Business: A Look Back on the Professional Life of Henry C. Pusey*, HI-TEST Laboratories, Inc., 2014. 

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