# Overview of Selection Process for Most Influential Paper of the 1970's

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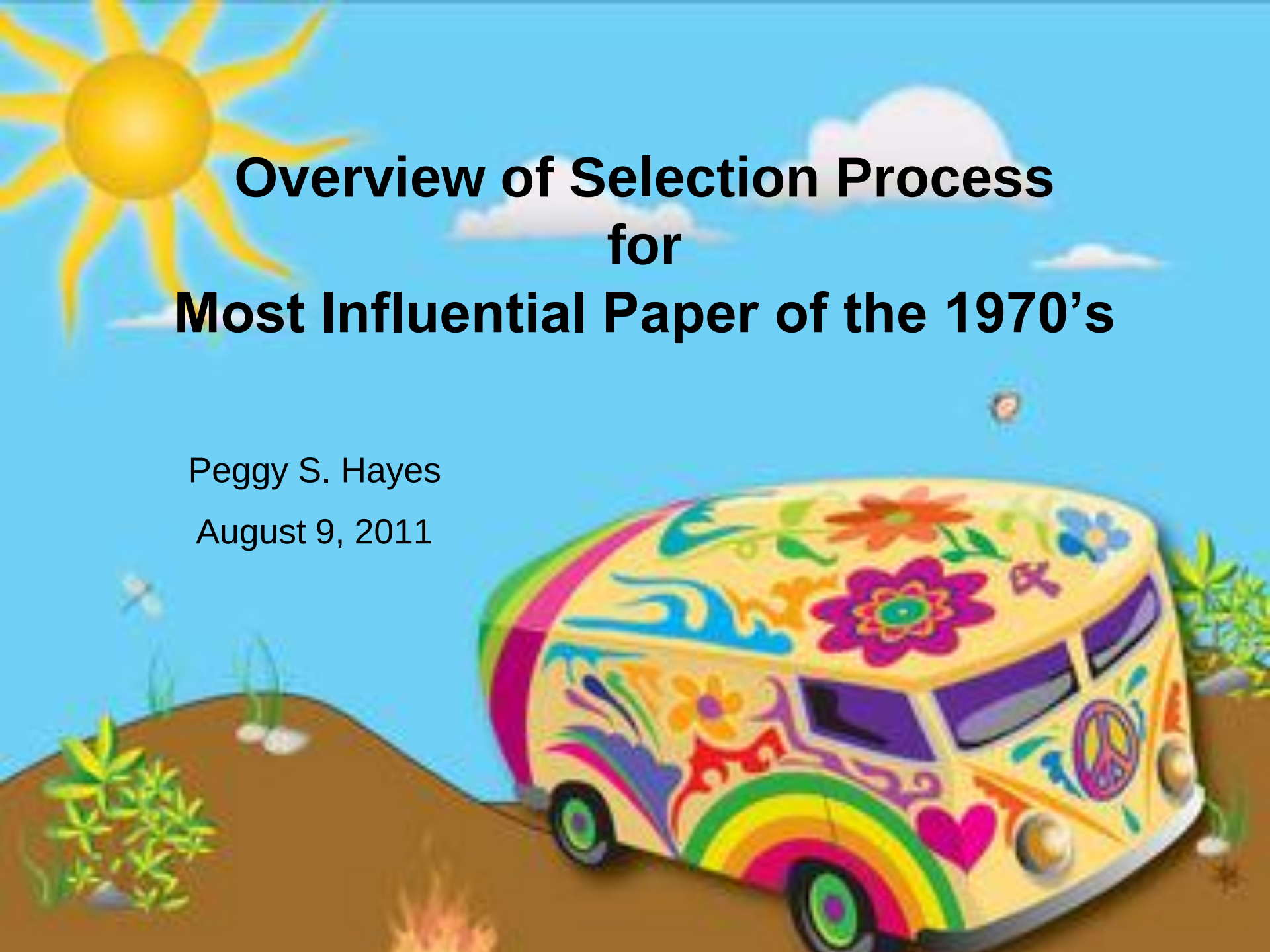

# Background

- Idea came from John Valasek
  - was passed on to me at the AFM technical committee meeting in Hawaii
- Telecon with John Valasek & Dave Klyde
  - Decided best way to do this at first was in groups of years
- Received help from Karl Bender, NASA research librarian in locating AIAA AFM information
  - 2nd AIAA AFM conference paper listing (Sep 11-13, 1972 at Cabana Hyatt House in Palo Alto, CA and NASA Ames)
  - Collection of Technical Papers on AFM from AIAA Mechanics and Control of Flight Conference (Aug 5-9, 1974 at Anaheim, CA)
  - 3rd AIAA AFM conference paper listing (Jun 7-9, 1976 at Arlington, TX)
  - Collection of Technical Papers from AIAA AFM conference (Aug 8-10, 1977 at Hollywood, FL)
  - Collection of Technical Papers from AIAA AFM conference (Aug 7-9, 1978 at Palo Alto, CA)

# Background (cont.)

- Added 1979 papers
  - Gives a total of 223 papers for the decade of the 70's
- Papers put into groups that correspond to current sub-committees on AFM
  - FD, FT, FQ, MPFM, RV_OM, SysID
  - Some papers fit in no sub-committee category (miscellaneous)
  - no UAV category papers

# Voting Process

- 3 rounds of online voting
  - 1st round asked members to choose up to 3 papers from each set of ~20 papers in the seven sub-committee categories
  - 2nd round asked members to choose 1 paper from round 1 finalists
    - MPFM ended up with three papers tied for first place
    - All other categories each had one clear winner
  - Final round of voting asked members to choose one paper as the overall winner from round 2 finalists
    - Pdf copies of the nine papers were sent via email to aid with voting

# 7 finalists (top vote getter in each sub-committee category)

- FQ - *Equivalent system approaches to handling qualities analysis and design problems of augmented aircraft*; Hodgkinson, J., LaManna, W., 1977
- FT - *A flight research vehicle to bridge Shuttle and hypersonic aircraft technology*; Draper, A., Lane Jr. P., Zima, W., 1977
- FD - *Perturbation methods in atmospheric flight mechanics*; Zipfel, P., 1972
- RV_OM - *Space Shuttle Orbitor entry guidance and control system sensitivity analysis*; Stone, H., Powell, R., 1976
- SysID - *Water Tunnel Visualization of the Vortex Flows of the F-15*; Lorincz, D.J., Friend, E.L., 1979
- Miscellaneous - *Dynamic stability of a helicopter carrying a suspended payload*; Nagabhushan, B., 1978
- MPFM - *Onset of aerodynamic side forces at zero sideslip on symmetric forebodies at high angles of attack*; Keener, E., Chapman, G., 1974

# Overall Winner

- *Equivalent system approaches to handling qualities analysis and design problems of augmented aircraft*; Hodgkinson, J., LaManna, W., 1977

# Invited Session details

- I contacted all authors with the exception of Bellur Nagabhushan (1949-2005) and Paul Lane Jr. (spoke with his widow)
- These authors have agreed to participate in an invited session at Portland, OR (8-11 August 2011)
  - John Hodgkinson
  - Gary T. Chapman
  - Peter H. Zipfel
  - Richard ‘Dick’ Powell
  - Dale Lorincz
- AFM Most Influential Papers of the 1970s session (AFM-16)
  - Tuesday, August 9th from 2pm – 5pm

# 80 Most Influential Paper Project Update

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August 7, 2011

# Background

- Summer Internship at NASA Dryden
  - USRP Student from University of Washington
- Mentor  Peggy Hayes organized MIP 70's
  - Introduced the idea as an additional project to assist with during internship
  - Become familiar with conference and paper set-ups, library research
- Looked to Dryden research library for help in locating AIAA AFM information
  - Physical Table of Contents for 1980, 1984-89
  - Bound conference paper collections from the Ames Library, 1981-1983
  - Referenced online: AIAA website

# Sorting

- Started with groups that correspond to current sub-committees on AFM
  - Flight Dynamics, Flight Test, Handling Qualities, Missile and Projectile Flight Mechanics, Reentry Vehicles and Orbital Mechanics, System Identification
- Added categories  to narrow focus
  - More specific definitions
  - Common themes
  - Groups now covered by other committees (GNC, Sim & Modeling)
  - Aeronautics-focused papers
- New classifications
  - Aerodynamics, Aerodynamics Flow, Combat Applications, Computational Aerodynamics, Guidance, Navigation and Control, Helicopter, Historical, Space Shuttle, Simulation and Modeling, Space
- Total Sub-Categories – **16**
- Split the biggest 4 into two: 1980-84 and 1985-89

# Categories by the Numbers

| | | | |
|---|---|---|---|
| Aero | **44** | Historical | **4** |
| AeroFlow | **29** | HQ* | **53** |
| CombatApp | **17** | MPFM* | **88** |
| CompAero | **28** | RV_OM | **16** |
| FD* | **60** | Shuttle | **22** |
| FT | **32** | SimModeling | **8** |
| GNC | **15** | Space | **25** |
| Helicopter | **23** | SysID* | **55** |

*Split into 2 groups for voting

**Total Papers:** 519

(vs. 223 in the 70's)

# Quick Papers Breakdown

## Years by the Numbers

| | |
|---|---|
| 1980 | **68** |
| 1981 | **40** |
| 1982 | **57** |
| 1983 | **48** |
| 1984 | **51** |
| 1985 | **51** |
| 1986 | **54** |
| 1987 | **49** |
| 1988 | **43** |
| 1989 | **58** |

## Repeat Authors

(at least 4 papers)

| | |
|---|---|
| Lars E. Ericsson | Charles H. Murphy |
| Joe P. Gamble | Jubaraj Sahu |
| Joseph Katz | M. Leroy Spearman |
| Walter B. Sturek | Kenneth D. Mease |

## Split Categories

(Makes 20 total)

FD → FD1 **(28)** and FD2 **(32)**

HQ → HQ1 **(29)** and HQ2 **(24)**

MPFM → MPFM1 **(50)** and MPFM2 **(38)**

SysID → SysID1 **(34)** and SysID2 **(21)**

# The Best and the Worst

- **Biggest year**: 1980 (68 papers)
- **Longest Title**: Limited Evaluation of the Longitudinal Flying Qualities of a Centerstick Controlled NT-33A Aircraft with Variations in Stick Force per G and Stick Force per Inch, W.M. Quinn, Jr., 1984
- **Most papers**: Lars E. Ericsson (12, from ‘81-’87)
- **“Oldest” paper**: Experimental Measurement of the Power Required to Fly the Daedalus Human Powered Aircraft, T. Clancy, 1989
- **Most inconvenient**: ‘81- ’83, no table of contents
- **Largest sub-category**: Missile and Projectile Flight Mechanics (88 papers)
- **Favorite Title**: More Than You May Want to Know About Maximum Likelihood Estimation, Ken Iliff, 1984

# Tentative Schedule

- Voting is going on now
- There will be at least 3 rounds
  - 16 sub-categories vs. 7, 20 sections
  - Additional rounds added as needed
- Top in each category move to the next round
- One month per round
  - Round 1 (Ongoing) ends **September 30th**
  - Round 2 will end **October 28th**
  - Round 3 will end **December 2nd**

# Voting (1st Round)

- Open now!
- This round: Looking for most influential papers in each sub-category
- Choose top 3 in your area of expertise
  - If you see something that doesn't belong, let us know.
- Welcome to vote in other categories as well
- Visit…….. to vote
- Ends September 30th