

FIE 2010
ERM Business Meeting
Friday, October 29, 2010
2:30-4:30 PM

Crystal Gateway Marriott, Alexandria Room
Moderator(s): Matthew Ohland, Purdue University

Minutes

Call to order Matthew Ohland, ERM Chair called the meeting to order at 2:30 PM and asked for introductions of those present.

Introductions

Bailey	Reid	Univ. of Virginia	rrbailey@virgina.edu
Borrego	Maura	Virginia Tech	mborrego@vt.edu
Brown	Shane	Washington State Univ.	shanebrown@wsu.edu
Budny	Dan	Univ. of Pittsburgh	budny@pitt.edu
Carberry	Adam	Tufts University	adam.carberry@tufts.edu
Cardella	Monica	Purdue University	mcardell@purdue.edu
Coso	Alexandra	University of Virginia	
Demetry	Chrys	WPI	cdemetry@wpi.edu
Donohue	Susan	TCNJ	sdonohue@tcnj.edu
Finelli	Cindy	Univ. of Michigan	cfinelli@umich.edu
Fortenberry	Norman	Nat. Acad. Of Engr	nfortenb@nae.edu
Goff	Richard	Virginia Tech	richgoff@vt.edu
Harding	Trevor	Cal Poly	tharding@calpoly.edu
Herman	Geoffrey	Univ of Illinois Urbana-Champaign	glherman@illinois.edu
Heywood	John	Trinity College - Dublin	heywood@eircom.net
Holmes	Archie	UVA	archieholmes@virginia.edu
Imbrie	P.K.	Purdue University	imbrie@purdue.edu
Johnson	Eric	Valparaiso Univ.	eric.johnson@valpo.edu
Karlin	Jennifer	SD School of Mines	Jennifer.Karlin@sdsmt.edu
Kellogg	Stuart	SD School of Mines	stuart.kellogg@sdsmt.edu
Kotys-Schwartz	Daria	University of Colorado	daria.kotys@colorado.edu
Layton	Richard	Rose-Hulman	Layton@rose-hulman.edu
Lindsay	Euan	Curtin University	e.lindsay@curtin.edu.au

McNair	Lisa	Virginia Tech	lmcnair@vt.edu
Moore	Dan	Rose-Hulman	dan.j.moore@rose-hulman.edu
Morgan	Jim	Texas A&M	jim-morgan@tamu.edu
Mountain	Jeffrey	U of Texas - Tyler	mountain@uttyler.edu
O'Connell	Bob	Univ of Missouri	oconnellr@missouri.edu
Ohland	Matt	Purdue Univ.	ohland@purdue.edu
Pembridge	James	Virginia Tech	jpembrid@ut.edu
Reed-Rhoads	Teri	Purdue University	trhoads@purdue.edu
Richards	Larry	University of Virginia	lgr@virginia.edu
Rivero-Hudec	Mercedes	University of Rhode Island	riverom@egr.uri.edu
Schoepke	Jen		
Schutz	Victor	Temple U - Retired	v.schutz@ieep.org
St. Omer	Ingrid	Univ. of Kentucky	istomer@engr.uky.edu
Terpenny	Janis	Virginia Tech	terpenny@vt.edu
Verleger	Matthew	Utah State University	matthew.verleger@usu.edu

38 present.

Officer reports

1. *Secretary/Treasurer* – Daria Kotys-Schwartz

Minutes from ASEE 2010 Board and Business Meeting submitted by Tamara Moore for approval with changes. Matt Ohland noted in the AFG report – in the action we accepted the recommendation to continue using the criteria for future AFG awards. Matt asked for a difference in opinion. Motion to pass minutes by Matt Ohland, seconded by Holly Matusovich, motion passed with 2 abstentions.

Treasurer report as of June 30, 2010 shows \$0.00 in the operating account and \$113,103.36 in the Bass account. Historical comparisons are as follows: Treasurer report as of June 30, 2009 in the operating account was \$0.00 as of 6/30/09, \$1330.00 as of 7/28/08, and \$67.25 as of 7/31/07. In the Bass Account, there was \$132,001.76 as of 6/30/09, \$94,315.59 as of 7/28/08, and \$97,845.26 as of 7/31/07. Motion to pass by Matt Ohland, Second by Cindy Finelli.

2. *Vice-Chair for ASEE 2010 (Louisville, KY, June 20-23, 2010) Programs* – Trevor Harding

Relative acceptance rates of various ASEE divisions - did not accept as many abstracts, did not accept as many full papers. However, abstract to full paper % is in much higher than other divisions. In 2009 many abstracts that are shown as rejected go to other divisions. See addendum to the minutes for full report.

3. *Vice-Chair for FIE 2010 (Northern Virginia / Washington, D.C., October 27–30, 2010) Programs* – Maura Borrego

Review of FIE 2010 publications and conference attendance:

- Over 800 abstracts were submitted for FIE 2010
- 77 sessions
- 394 papers
- 158 WIPs

Registration > 630

Trevor Harding asked for the relative number of WIPs to full papers. Maura Borrego estimated between 1/3 to 1/2.

Archie Holmes asked Maura Borrego if there are any potential problems that he should be aware of for FIE 2012. Maura Borrego indicated that the reviews of the WIPs can be an issue. There were problems with conflicting reviews of the WIP papers. Maura Borrego also stated that several papers only had 2 reviewers this year. Trevor Harding remarked that he had assigned 4 to 5 reviewers to a paper at ASEE 2010. He still only had ¼ of the people actually complete the review. Trevor also noted that by using this system for assigning reviewers to papers, some papers had 5 reviews and some papers had 2.

Dan Budny suggested that maybe it is time to make a decision about paper review. “Why do we even review abstracts? We have some pretty good abstracts turn into poor papers. Maybe we should accept the abstract if “engineering” and “education” is in the paper.” Dan Moore suggested that the real problem is with the reviewers. There was a motion by Cindy Finelli to use Monolith to keep track of reviewer performance.

Archie Holmes questioned if Maura Borrego’s life would have been different if she only had 2 reviewers per a paper? Maura responded that sometimes the reviewers disagree. Took Maura a day to resolve all of these issues.

Euan Lindsay commented that abstract acceptance is important for international attendees. He recommends that ERM not stop having an abstract acceptance.

Dan Budny suggested that future policy should be: if an author submits a paper – they are required to review a paper (Dan Budny used this process successfully in a ASEE sectional meeting).

Matt Ohland asked Archie Holmes and Reid Bailey to present a proposal for FIE 2012. Matt Ohland also encouraged Archie and Reid to talk to Arnold Pierce – who has the timeline for FIE 2012.

Cindy Finelli would like to see ERM track reviewers. Several ERM attendees voiced concerns that Monolith would not be able to track reviewers (yet). PK Imbrie suggested that all program chairs keeps a list of reviewers, noting those who do not send back their reviews. Could formalize and ask program chairs to rate their reviewers (and pass along to the following year program chair). Essentially ERM would have a quality index of reviewers.

Cindy Finelli asked for recommendation for new business. Action: Trevor Harding will send KC Dee the poor reviewer list.

Matt Ohland thanked Maura and Larry Richards for their work at FIE 2010.

4. *FIE 1990 (Vienna, Austria and Budapest, Hungary, July 2-8th) Programs* - Victor Schutz

Victor Schutz gave an overview of the FIE conference held in Vienna, Austria and Budapest, Hungary in 1990. Helen Plants was the initiator for the FIE 1990. A program from the conference was passed around the meeting.

5. *Vice-Chair for ASEE 2011*(Vancouver, BC, Canada, June 26-29, 2011) *Programs* – K.C. Dee

Abstracts and Papers

229 abstracts were submitted to the ERM division. Some abstracts have been transferred to other divisions (since the topics were more suitable for the other divisions), and currently 219 abstracts are under review.

157 ERM members volunteered to review abstracts and also subsequently accepted the official Monolith email invitation to participate in the reviews. Each abstract will receive three peer reviews. No individual reviewer will have to review more than five abstracts.

If everyone who writes a paper for the 2011 meeting proceedings also volunteers to review papers, the number of reviews assigned to each individual would be nice and low.

Workshops and Special Sessions

11 proposals for workshops and special sessions were received by ERM. These were reviewed by ERM officers according to a process and a rubric, which were emailed to the ERM membership at large along with the forms for proposing workshops/special sessions. Two special session proposals were selected for further peer review (i.e., they are now undergoing the same peer review process as all the other ERM abstracts) and potential inclusion in the ASEE 2011 program. Five workshop proposals have been sent to our PIC chair (Bevlee Watford). The PIC chairs select the final slate of workshops to be included in the ASEE program.

Technical Sessions

Many ASEE divisions received an increased number of abstract submissions this year. The PIC chairs allocate technical session slots to divisions, K.C. Dee communicated our increased abstract numbers to our PIC chair (Bevlee Watford), along with a desired conference schedule. To work with ASEE in good faith on fairly allocating technical session slots while still providing opportunities for the public presentation of as much good work as possible, K.C. Dee requested a poster session for ERM. Board feedback would be welcome on how to convince people that poster presentations can showcase quality work in a useful way.

a. *Monolith testing* – K.C. Dee, Matthew Verleger, and Matt Ohland

The transition to the Monolith system has not been unduly difficult. Kat Dorman and Adam Solove of ASEE HQ have been extremely helpful in quickly responding to questions and in fixing Monolith problems.

b. *Report on 2011 ERM Distinguished Lecturer* – Trevor Harding

Prof. David Williamson Schaffer will be the ERM Distinguished Lecturer at ASEE 2011. He is in the departments of Educational Psychology and Curriculum and Instruction at University of Wisconsin Madison. Dr. Schaffers research area is Epistemic Games. Games to get students to think in creative ways. Dr. Schaffer should have games that he is able to demonstrate during the Distinguished Lecture.

c. *Report on 2011 Brouhaha* – Richard Layton

Working with an event planner in Vancouver, Matt Ohland and K.C. Dee. Richard Layton have reviewed proposals for three potential venues that would meet our Brouhaha needs. All the proposals exceed the budget we proposed last summer in Louisville. The cause of the underestimation, in Richard's opinion, is the higher cost of doing business in a major metropolis not in the United States.

Richard Layton is recommending the Steamworks Brewery, a brew pub, with a budget of \$16,550, the least expensive of the non-hotel options. This is an increase of about \$6000 over budget. Richard will move that the board approve an increase in the Brouhaha budget to this amount. If approved, Richard Layton will ask Matt Ohland to sign a contract with the event planner and submit a nonrefundable deposit to hold the venue. Correspondences from the event planner is an addendum to these minutes.

Need a non-refundable \$5,000 deposit by November 15th. At ASEE 2010 we agreed to \$10,000. Event Planner gave us three possible locations. Chose the least expensive of the three locations. Dining Requirements given to Richard Layton for ERM: Local color, good dining, logistics, not in a hotel. If we want a hotel still \$10,000. The Brouhaha will includes 2 drinks per a person. \$5600 is covered by the 140 Brouhahah tickets (at \$40/ticket).

Motion by Cindy Finelli to raise the ticket price to \$50.00. Contract as it has been accepted as is. Motion passed with 1 abstention.

d. *2011 Breakfast of Champions* – Matthew Verleger

No report.

6. *Vice-Chair for FIE 2011 Programs* – Jim Morgan

January 31st 2011 are when abstracts are due. Acknowledged Jennifer Karlin for her work on FIE 2011.

7. *Vice-Chair for ASEE 2012 Programs* – Richard Layton (San Antonio)

No report. Nothing new, nor appropriate to discuss.

8. *Vice-Chair for FIE 2012 Programs* – Archie Holmes and Reid Bailey (Location not set)

No report. Nothing new, nor appropriate to discuss.

9. *Vice Chair for Publications* – Dan Budny

The ERM website is up an running. Dan Budny asked if the ERM division wanted to update the website – have a Facebook or LinkedIn group for ERM? Dan Budny would like to update the site and find a way to ensure that new content makes it to the website. Do we want a more dynamic website?

Suggestion for a new website made by ERM members:

- Links to all of the engineering education program and Centers
- Monica Cardella went to a conference that had an “app” specifically for the conference

Motion by Cindy Finelli to pay Dan Budny for another year of maintaining the website, second by Larry Richards. Unanimously approved.

Cindy Finelli let the meeting attendees know that they are working on the listserv for EEC – trying to re-energize the list.

Committee reports

1. *Apprentice Faculty Grant (AFG) Committee* – Julie Trenor

The following target dates have been set for the 2011 Apprentice Faculty Grant program:

Call for nominations: Monday, Nov. 15, 2010.

Nomination deadline: Thursday, January 20, 2011

Applicant notification acceptance/rejection: Wednesday, Feb. 15, 2011

2. *Brochure Editor* – Glen Livesay

No report.

3. *Distinguished Service Award Committee* – Matt Ohland

Cindy Finelli has been named for the Distinguished Service Award.

4. *Benjamin Dasher Award Committee* – Susan Donohue

The winner is:

STUDENT BELIEFS ABOUT INTELLIGENCE: RELATIONSHIP TO LEARNING

by Glenda Stump, Jenefer Husman, Wen-Ting Chung and Aaron Done

We also had two finalists that would be nice to recognize somehow as well. The two papers are:

THE USE OF DIGITAL MANIPULATIVES IN K-12: ROBOTICS, GPS/GIS AND PROGRAMMING

by Gwen Nugent, Bradley Barker, Neal Grandgenett and Viacheslav Adamchuk

OUTSIDE THE CLASSROOM: GENDER DIFFERENCES IN EXTRACURRICULAR ACTIVITIES OF ENGINEERING STUDENTS

by Debbie Chachra, Helen L. Chen, Deborah Kilgore and Sheri Sheppard

Susan Donohue would like to have an ERM sub-committee to discuss the philosophy of the award, and method by which the papers are nominated. The criteria being used by the three societies could be influenced by ERM.

Matt Ohland asked if Susan Donohue has people in mind for the sub-committee. Matt also asked if it makes sense that this is an FIE committee? Having a sub-committee will allow Susan Donohue go to the FIE committee with a position. Matt Ohland will take volunteers for the subcommittee.

5. *Helen Plants Award Committee* – Shane Brown / Monica Cardella

There are 12 special sessions – looking at the feedback in the session sheets. It will be 1 or 2 months until we know who the winner is.

6. *Nominating Committee* – Richard Layton (chair)

a. ERM positions to be filled in March election: Chair, two Directors

Matt Ohland let Richard Layton know that this position is multi-year. Need nominations for a Chair next year. Richard Layton is looking for volunteers – Adam Carberry has volunteered.

b. Descriptions of ERM elected / appointed positions now available

Descriptions have been submitted. Descriptions are an addendum to these minutes.

7. *FIE Steering Committee* – Cindy Finelli, Jennifer Karlin, Dan Moore

- FIE attendance 680 → 642 → 590 → 527 → 600+onsite [estimated 625]
- Has the Steering Committee considered the consequences of the rising registration cost?

Matt Verleger questioned if there had been discussion of a student rate (current \$350)? Or, a bring a student rate? Daria Kotys-Schwartz asked if there is an option for a one day rate? These questions will go to the FIE steering committee.

Old Business

1. *Fellows Committee update* – Matt Ohland and Cindy Finelli

- a. Matt Ohland and Coordination of multiple Fellow nominations by Feb 1 deadline. – Sandy Courter?
- b. Need volunteers to lead individual nominations. Nominators need not be fellows. Three of five references must be from Fellows. We have a list of ERM Fellows, some of who have already volunteered to write recommendation letters.
- c. Nominations are active for at least two cycles.

If you have people you would like to nominate – let Matt Ohland know. Three out of five recommendation letters need to come from current Fellows.

2. *JEE library access* – Cindy Finelli

JEE is launching a new Web site in January 2011 with more subscription options, including online library/institutional access. JEE is also working to provide free access to JEE articles (on the JEE site) that are older than one year.

3. *Welcoming new members* – Lisa McNair

Monlith will give us give us better information on the ERM membership.

4. *Checking on lapsed members* – Holly Matusovich
5. *Leveraging ERM surplus to invest in long-term objectives* – Doug Schmucker
 - a. New Friends and Colleagues Proposal
 - b. ASEE PIC Special Projects Fund

Proposal is an addendum to these minutes.

6. *Proposal from John Heywood, Trevor Harding, Russell Korte, and Bill Grimson for a special FIE 2011 event, “Philosophy and its Bearing on Engineering Education.” This is a revision of the proposal originally planned for FIE 2010.* – Matt Ohland
John Heywood, Trevor Harding, Russell Korte, and Bill Grimson did not hear from IEEE until August 2010 – there are concerns over selection of people to attend the symposium. Wrote both organizations and asked them to postpone until FIE 2011. On 10/29/10 – found out there is a chance they may be able to get more funding. Proposal and proposed agenda is an addendum to these minutes.
7. *ERM / JEE collaboration to celebrate the 100th anniversary of JEE* – Cindy Finelli
Cindy Finelli is not coordinating or collaborating on the 100th anniversary. There is a new strategic plan for JEE – we have a chance for feedback on the new strategic plan.

New Business

- The board approved Teri Reed-Rhoads as the Vice Chair for FIE 2013 programs.
- *Town Hall regarding inter-divisional cooperation at ASEE 2011* – Shane Brown
During the last annual meeting in Louisville, Ky., the Liberal Education Division (LED) created a Committee on Interdivisional Cooperation for exploring opportunities for interdivisional exchange and coordination, and for exploring a possible realignment of the PICs in such a way that divisions with similar “professional interests” would in fact be grouped together. Based on encouragement from several of the PIC chairs, the committee hosted an online conversation on these topics between July 28th and August 5th, 2010. Twenty-three individuals representing 16 divisions participated in the conversation. The full report can be found on the addendum of these minutes.
- *ERM table in exhibit hall* – Holly Matusovich and Lisa McNair
There was not a specific place for the ERM brochures. Holly Matusovich and Lisa McNair were told there would be a table in the exhibit hall. The table is outside of the exhibit hall - ERM brochures were left on the table.
- *Fixing the Bylaws*
 - remove the “Vice-Chair for Teacher Development”
 - revising the Bylaw description of our governance to match how we operate (which is better than what the Bylaws says)

Matt is looking for someone to work on fixing the Bylaws.

- *Appointments*
 - Vice Chair for FIE 2013 Programs
 - Ben Dasher Committee Representative for FIE 2011 (Susan Donohue in third of three years)
 - Helen Plants Committee Representative for FIE 2011
 - Monica Cardella serving for 2010
 - A three-year rotation has been proposed, and will be discussed by the society representatives

- *Apprentice Faculty Grant (AFG) Reimbursements*

Daria Kotys-Schwartz proposed a motion to change the AFG from a reimbursement to an award. Current tax laws prohibit the reimbursement of travel to an Annual Meeting. Unfortunately, by paying the AFG as an award—the winners will be taxed by the federal government.

Questions from ERM members:

- Are there other options where the winners would not be taxed?
- Could we waive the registration fee for AFG winners?
- Could we reimburse the institution? Winners would file the travel claim at their institution. We could pay over \$2000 – if the institution needed.

Amended motion: Waiver of registration fee and \$2000 as an award.

Action: additional research will be done by Daria Kotys-Schwartz to determine options for paying the AFG winners. Future discussion may be necessary.

Adjourned at 5:25 after a requested extension of the close of the meeting. There was a two-minute recess at 5:00 pm to give attendees the opportunity to leave at 5:00 as scheduled, but all stayed for this important discussion. The extra time was to discuss the AFG award changes.

Respectfully submitted,

Daria Kotys-Schwartz

Division Document Breakdown

Division	2008 Abstracts Submitted	Tecchnical Sessions per Div	% of Abstracts Submitted vs Technical Session Requested	Withdrawn Abstracts	2008 Abstracts Accepted	% of Abstracts accepted vs Abstracted Submitted	2008 Papers Submitted	2008 Papers Accepted	% of Papers Accepted vs Papers Submitted	2008 Papers Published	% of Papers Published vs Papers Accepted	% of Papers Accepted vs Abstracts Submitted
Computers in Education Division	111	14	7.93	8	91	81.98%	64	57	89.06%	55	96.49%	49.55%
Division of Experimentation & Laboratory Oriented Studies	59	9	6.56	3	59	100.00%	41	38	92.68%	37	97.37%	62.71%
Educational Research & Methods Division	221	19	11.63	33	169	76.47%	121	93	76.86%	93	100.00%	42.08%
Engineering Ethics Division	28	4	7.00	2	27	96.43%	21	19	90.48%	19	100.00%	67.86%
Engineering Libraries Division	31	8	3.88	2	30	96.77%	5	5	100.00%	5	100.00%	16.13%
Entrepreneurship Division	47	11	4.27	1	44	93.62%	25	22	88.00%	19	86.36%	40.43%
Graduate Studies Division	44	9	4.89	7	44	100.00%	34	30	88.24%	29	96.67%	65.91%
International Division	116	12	9.67	6	115	99.14%	85	82	96.47%	76	92.68%	65.52%
K-12 & Pre-College Engineering Division	139	14	9.93	16	109	78.42%	83	78	93.98%	73	93.59%	52.52%
Minorities in Engineering Division	67	13	5.15	2	67	100.00%	39	38	97.44%	35	92.11%	52.24%
New Engineering Educators Division	30	8	3.75	2	30	100.00%	23	23	100.00%	22	95.65%	73.33%
Student Constituent Committee	0	1	0.00		0		0	0		0		
Women in Engineering Division	78	12	6.50	0	73	93.59%	55	44	80.00%	41	93.18%	52.56%
total (all divisions)	2720	382	7.12		2442	92.54%	1685	1507	89.11%	1424	94.49%	52.35%

2008
 61.95% of Papers Submitted vs Abstracts Submitted
 55.40% of Papers Accepted vs Abstracts Submitted
 52.35% of Papers Published vs Abstracts Submitted

Division Document Breakdown

	2009 Abstracts Submitted	Technical Sessions per Div	Ratio of Abstracts Submitted vs Technical Session Requested	Withdrawn Abstracts	2009 Abstracts Accepted	% of Abstracts accepted vs Abstracted Submitted	2009 Papers Submitted	2009 Papers Accepted	% of Papers Accepted vs Papers Submitted	2009 Papers Published	% of Papers Published vs Papers Accepted	% of Papers Published vs Abstracts Submitted	2010 Abstracts Submitted
Computers in Educa	88	14	6.29		77	87.50%	57	50	87.72%	51	102.00%	57.95%	86
Division of Experim	41	10	4.10		41	100.00%	28	28	100.00%	23	82.14%	56.10%	45
Educational Resear	180	14	12.86		124	68.89%	99	91	91.92%	84	92.31%	46.67%	162
Engineering Ethics I	26	6	4.33		25	96.15%	22	22	100.00%	20	90.91%	76.92%	22
Engineering Librarie	29	9	3.22		29	100.00%	27	26	96.30%	25	96.15%	86.21%	23
Entrepreneurship Di	49	7	7.00		46	93.88%	31	29	93.55%	27	93.10%	55.10%	29
Graduate Studies D	46	9	5.11		46	100.00%	42	39	92.86%	35	89.74%	76.09%	40
International Divisi	84	11	7.64		84	100.00%	62	60	96.77%	56	93.33%	66.67%	89
K-12 & Pre-College	166	19	8.74		91	54.82%	74	60	81.08%	59	98.33%	35.54%	154
Minorities in Engine	57	11	5.18		55	96.49%	42	38	90.48%	38	100.00%	66.67%	52
New Engineering Ec	39	10	3.90		35	89.74%	26	25	96.15%	24	96.00%	61.54%	47
Student Constituent	1	2	0.50		0		0	0				0.00%	6
Women in Engineer	46	8	5.75		42	91.30%	33	29	87.88%	29	100.00%	63.04%	56
total (all divisions)	2341	361	6.48	0	2055	91.40%	1567	1453	93.45%	1378	92.21%	58.86%	2223

2009

66.94% % of Papers Submitted vs Abstracts Submitted
 62.07% % of Papers Accepted vs Abstracts Submitted
 58.86% % of Papers Published vs Abstracts Submitted

2010

Division Document Breakdown

	Technical Sessions per Div	Ratio of Abstracts Submitted vs Technical Session Requested	Rejected Abstracts	2010 Abstracts Accepted	% of Abstracts accepted vs Abstracted Submitted	2010 Papers Submitted	2010 Papers Accepted	% of Papers Accepted vs Papers Submitted	2010 Papers Published	% of Papers Published vs Papers Accepted
Computers in Educ	14	6.14	1	94	109.30%	72	62	86.11%	62	100.00%
Division of Experi	9	5.00	5	40	88.89%	28	18	64.29%	18	100.00%
Educational Resear	18	9.00	11	113	69.75%	83	78	93.98%	77	98.72%
Engineering Ethics	6	3.67	1	21	95.45%	16	15	93.75%	15	100.00%
Engineering Librarie	8	2.88	2	20	86.96%	15	14	93.33%	14	100.00%
Entrepreneurship D	8	3.63	2	35	120.69%	24	22	91.67%	22	100.00%
Graduate Studies D	8	5.00	0	11	27.50%	28	27	96.43%	26	96.30%
International Divisio	14	6.36	1	94	105.62%	74	71	95.95%	71	100.00%
K-12 & Pre-College	18	8.56	12	146	94.81%	117	94	80.34%	94	100.00%
Minorities in Engine	8	6.50	0	53	101.92%	41	32	78.05%	31	96.88%
New Engineering E	9	5.22	2	42	89.36%	31	29	93.55%	28	96.55%
Student Constituen	2	3.00	1	6		4	4	100.00%	5	125.00%
Women in Engineer	9	6.22	3	41	73.21%	30	24	80.00%	24	100.00%
total (all divisions)	366	6.07	79	2094	93.35%	1641	1422	88.04%	1397	96.71%

73.82% % of Papers Submitted vs Abstracts Submitted
 63.97% % of Papers Accepted vs Abstracts Submitted
 62.84% % of Papers Published vs Abstracts Submitter



Suite #200, 68 East 2nd Avenue
Vancouver, B.C.
Canada V5T 1B1

DATE: October 8, 2010

Attn: Richard Layton
Rose Hulman Institute of Technology

Tel: 812-877-8905
e-mail: layton@rose-hulman.edu

Re: Rose Hulman 'Bruhaha'
June 28, 2011 (140 pax)
Vancouver, (Our reference #11-06-11348)

Dear Richard:

Below you will find descriptions and pictures for our three recommend venues for your Bruhaha event. In a separate excel document titled budget summary, you'll find all the associated costs and operational notes pertaining to each venue. In order to keep costs low for you, we broke out the cost of dinner + 2 drinks per person. Then we show the additional amount that your guests would have to buy on their own to cover the required minimum spend of the venue. This way your guests help pay the minimum requirement rather than you having to over-budget to cover the cost. **However, please keep in mind that you would be responsible for paying the additional cost if you guests don't buy enough during the event.** This approach is a bit more difficult to budget for in advance, but would end up being a much better value for you.

The minimum spend required at Steamworks is the lowest. Aqua Riva is quite a bit higher. As noted in the Budget Summary, your guests would have to drink your 2 free drinks using their drink tickets, plus drink another 3-4 drinks, for a total of 5-7 drinks per person to cover the minimum spend. I highly doubt that any group could accomplish that☺. **That being said, I would probably suggest Steamworks as a better option for you, however it is good to keep in mind that the space is one large room and two smaller rooms all on one level, so the event is a bit more broken up than it would be at Steamworks. The venue is also quite a bit more casual since it is a brewpub, however the food is still excellent quality.**

The boat is not subject to a minimum spend, but it does have a substantial rental fee. This plus the cost of dinner, two drinks, and necessary transportation to get to the dock, make the event more expensive than both Steamworks and Aqua Riva. However, the experience of being on a boat in our beautiful harbour is definitely a truly memorable and unique event that showcases the destination wonderfully. Please note, that the boat in this proposal is not the same as the one I sent pictures of previously. The boat in this proposal is a much better value for your budget.

Please remember that this proposal is costed in 2010 Canadian dollars. The line itemed prices do not include, but are subject to the Federal Government's Harmonized Sales Tax (HST), currently at 12%, however this cost is calculated to show the total amount for each option. This tax rate is subject to change by regulatory authorities.

Since your program is scheduled to operate in 2011, we recommend adding 5% per year to all costs in anticipation of supplier increases.

Best regards,

Heather DeLancey
Manager, Sales Development
Cantrav Services Inc.
Direct: (604) 708-2512
E-mail: hdelancey@cantrav.com

With the support of fellow team members:
May Fung– Manager, Service Delivery

Steamworks Brewery Evening



Here in the original city hub of “Gastown”, guests will be able to enjoy the fruits of the burgeoning Micro Brewery industry on the Pacific Coast.

“The Steamworks” is a popular downtown watering hole, situated in the city’s original Customs House overlooking the Inner Harbour. Guests will be able to sample the local brew and west coast food in casual surroundings.

STEAMWORKS BUFFET MENU

Passed Canapés on Crostini’s
B.C. Smoked Salmon, horseradish cream
Seared Sesame Seed Crust Albacore Tuna ginger lime aioli & tobiko
Prosciutto & Roasted Roma Tomato aged asiago cheese

Mesclun Green Salad, blueberries, cranberries, roasted almonds, balsamic vinaigrette
Classic Crisp Romaine Caesar Salad, garlic croutons, fresh parmesan

Creamy Roasted Garlic & Pesto Rigatoni, portobello mushroom, spinach, sun dried tomato
Paprika Dusted Fraser Valley Chicken Beast, creamy mushroom demi
Wild B.C Salmon Wellington, creamy fresh tarragon sauce
Roasted Striploin, rock salt & cracked pepper crust, brandy black peppercorn sauce

Roasted Herb Baby White Potatoes
Medley of Seasonal Vegetables
Freshly Baked Artisan Breads

Belgian Dark Chocolate Espresso Mousse, callebault chocolate shavings, roasted almonds

Coffee or Tea

BUDGET SUMMARY

Program Name: Rose Hulman Institute of Technology "Bruhaha"
 Program Date: Tuesday, June 28, 2011
 Group Size: 140 pax approx.
 Destination: Vancouver, BC
 Last Updated: 5-Oct-10

DESCRIPTION OF SERVICES	Per Person Cost CAD \$	Per Unit Cost CAD \$	Number of Units	Subtotal CAD \$
Steamworks				
A. Exclusive use of the lower level of Steamworks				
Minimum Food and Beverage - \$9,250.00				
Gratuity on the above at 17% - \$1,572.50				
Total Minimum Spend \$10,822.50				
Food and Beverage				
* buffet dinner - \$35.00 + 17% gratuity	\$	40.95	140	\$ 5,733.00
* 2 beverage per person - \$6.50 per beverage + 17% gratuity	\$	15.21	140	\$ 2,129.40
(includes house wine, domestic beer, standard highball and all non alcoholic beverages)				
Total spend based on 140 pax				\$ 7,862.40
Balance of \$2,960.10 to be spent by guests directly (approx. 2 to 3 drinks per person)				
Should this balance not be reached, the difference will be charged to RHIT directly. Prices are subject to 12% HST				
Note: balance is estimated based on 140 guests. Final cost will depend on menu selected and guaranteed numbers for dinner.				
B. Cantrav Management and Logistics				
Cantrav Management and Administration Fee	\$	3,000.00	1	\$ 3,000.00
On site Program Manager for day of event	\$	425.00	1	\$ 425.00
On site staff for day of event (required for Steamworks)	\$	195.00	1	\$ 195.00
Directional/Dispatch Staff (if required) - cost per staff for 4.0 hours	\$	195.00		
C. Additional Items:				
Three Piece Band - 3.5 hours with breaks	\$	2,500.00	1	\$ 2,500.00
Program Estimated Subtotal (CAD):				\$ 13,982.40
12% HST:				\$ 1,677.89
Total Estimated Billing (CAD):				\$ 15,660.29

Please Note:

- The restaurant's kitchen and washroom facilities are located on lower level. Therefore with a Lower Level buyout the kitchen and washrooms must remain accessible for all guests of the restaurant to use.
- Steamworks is a wheelchair accessible facility. Elevators to the lower level are accessible through an alternate entrance.
- Camtrav currently has a tentative hold for the lower level of Steamworks for the evening on Tuesday June 28th for your group.

Elected and Appointed Offices of the Educational Research and Methods Division of the American Society for Engineering Education (* = Elected):

- Chair*
 - 2-year term elected in odd numbered years
 - Functions as a point of contact/leader/task delegator for ERM
 - Solicits volunteers and makes appointments for all non-elected positions.
 - Represents ERM at PIC meetings
- Secretary-Treasurer*
 - 2 year term elected in even numbered years
 - Handles all the finances for the division
 - Takes the minutes at the ASEE and FIE Business meetings.
 - Typically peak workloads around ASEE and FIE with low/minimal work the rest of the year.
- Directors*
 - 4 Directors are elected
 - 2 year terms, with 2 directors being elected each year
 - Serve on at least 1 of the standing committees
 - Other duties as assigned by the chair
- Vice-Chair for ASEE Programs (a.k.a.: ASEE Program Chair)
 - Appointed by the executive board at ASEE 2 years prior to the corresponding ASEE
 - Handles all of ERM's presence at ASEE
 - In the year preceding active duty, assists the Vice-Chair for ASEE Programs (including specifically by coordinating the events of Brouhaha).
 - In the year following active duty, arranges the ERM Distinguished Lecturer.
 - Heavier time commitments around the time sessions, abstracts, papers, and decisions on abstracts/papers are due.
- Vice-Chair for Frontiers in Education (FIE) Programs (a.k.a.: FIE Program Chair)
 - Appointed by the executive board at FIE 2 years prior to the corresponding FIE.
 - Handles all of ERM's presence at FIE
 - Handles all interactions with the FIE co-sponsors.
 - Assists the Vice-Chair for FIE Programs for the year between appointment and active duty.
 - Heavier time commitments around the time sessions, abstracts, papers, and decisions on abstracts/papers are due.
- Vice-Chair for Publications
 - Manages the ERM Website
 - Dan Budny has held this position since 1996.
- Directors-at-Large
 - Up to 2 may be appointed by the chair as needed for special tasks/projects
 - Other duties as assigned by the chair

- FIE Steering Committee Representatives
 - Two-year term with one member appointed every year
 - Represent the interests of ERM in guiding FIE conference planning
- Distinguished Service Committee
 - Comprised of the three past ERM Division Chairs, if available.
 - Selects the recipient of the Distinguished Service Award.
 - Arranges for a plaque to be made and presented at the FIE Conference
- Ben Dasher Committee Representative
 - Partners with representatives from IEEE EdSoc and IEEE Computer Society to select the best paper of the FIE conference based on both the written paper and the accompanying presentation
 - With the help of the ERM Chair, recruits other ERM volunteers as needed to support the work of the Ben Dasher Committee (particularly at the conference, when the Committee members can't attend all the presentations)
 - Written comments on papers and presentations are made using an established rubric.
 - This Committee is being organized around a three-year term with staggered membership and with the Committee chair always being the person serving the second year of their term. A tradition is also starting that the Committee concludes its business over dinner, the Chair pays for the dinner, and the sponsoring society reimburses that dinner.
 - The Committee Chair presents the award at the following FIE Conference or arranges an alternate.
- Helen Plants Committee Chair
 - Partners with representatives from IEEE EdSoc and IEEE Computer Society to select the best special session of the FIE conference
 - With the help of the ERM Chair, recruits other ERM volunteers as needed to support the work of the Helen Plants Committee (when the Committee members can't attend all the special sessions)
 - Written comments on papers and presentations are made using an established rubric.
 - It has been suggested that the Helen Plants Committee move toward the arrangement targeted for the Ben Dasher Committee, being organized around a three-year term with staggered membership and with the Committee chair always being the person serving the second year of their term. Further, the Helen Plants Committee might want to adopt a tradition that the Committee concludes its business over dinner, the Chair pays for the dinner, and the sponsoring society reimburses that dinner.
 - The Committee Chair presents the award at the following FIE Conference or arranges an alternate.
- Newsletter / Brochure Editor
 - Prepare and edits newsletters
 - Makes the various fliers for advertising ERM's events at conferences.
 - Edits, prints, updates the ERM brochure

- Nominating Committee Chair
 - With help and approval of the ERM Chair, assemble Nominating Committee
 - Invite / recruit nominations of candidates in March of each year, confirm their interest, and gather biographical information for each
 - Election ballot with bios to be distributed by the end of March.
 - Collect results and report to ERM Chair.
- AFG Committee Chair
 - With help and approval of the ERM Chair, assemble the AFG Committee
 - Reviews award criteria, prepares announcement of competition, and publicizes the competition
 - Reviews applications and guides the other Committee members in the review process
 - With the Committee, selects the Apprentice Faculty Grant recipients, which are awarded at the ASEE conference
 - The Committee Chair presents the award at the Brouhaha at the following FIE Conference or arranges an alternate
- National Effective Teaching Institute Director
 - Plans and assists in the implementation of the annual National Effective Teaching Institute, which takes place prior to the ASEE meeting

Where we are coming from.

Introduction

We are all philosophers to the extent that we have values and beliefs that drive our actions and motivations. Some of them are well thought out but others are not. Some of them change with time others do not. They can be a source of cognitive dissonance when they clash with other belief systems. We are often not aware of the extent that some of our beliefs and actions are culturally formed in response to the social networks we inhabit. One of those networks is the workplace, another is the profession. Usually to succeed in either requires a degree of conformity with the philosophy of the workgroup or profession. It can arise that there are conflicts between the practices of the work group and those of the profession that create stress especially in the area of ethics. This is particularly the case in engineering when engineers have to challenge practices in design, manufacturing, implementation and evaluation that do not conform to the ethical standards they believe they should. It is for this reason that in some programmes in engineering courses in ethics are compulsory. Such courses pre-suppose that there is some kind of relationship between acquiring knowledge and subsequent ethical behaviour. Even if the evidence is dubious a goal of such courses should be to help students develop their own defensible ethic and to escape from the simplistic notions that may drive their own operational philosophies.

In this context operational philosophy is a disposition that arises from our belief systems, and those we acquire. We have many operational philosophies and most of them are not well thought out. We may, for example, believe that the function of an educational programme in engineering is to produce students with a profound knowledge of engineering science. Another person might argue that the function of such programmes is to produce persons who are immediately employable in industry. These beliefs dictate the type of course (e.g. cooperative versus traditional organization), the content, and perhaps the teaching. And even if they don't inform the teaching we have other operational philosophies that do. For example our view of how people learn is likely to influence the instructional methods used. Put together these philosophies inform the aims and objectives we set out to achieve. The problem is that seldom do we think these philosophies through or seek the help of philosophy *per se* to justify them. Yet given the importance of teaching and the impact that it has on other persons, notably students it is surely incumbent on us that we should go beyond naïve operational philosophies and acquire a well thought out and defensible philosophy of engineering education even though it may very well be eclectic.

Given this perspective the intention here is to examine more generally the contribution that philosophy can make to engineering education. It is not proposed however to consider ethics and moral development since there is widespread acceptance that they should be in the engineering curriculum, at least that is the case with ethics if not, as yet, with moral development. Distinctions will also have to be made between the use of philosophy in the design of the curriculum and philosophy as a subject within the curriculum, philosophy as a

method and (philosophy) philosophising, and philosophy and a philosophical disposition. How these may contribute to the education of an engineer is well illustrated by Grimson's chart of the factors that contribute to the engineering curriculum. To begin at the beginning is to begin with the contribution that philosophy can make to the design of the curriculum.

The design of the engineering curriculum and philosophy.

The simplest and most common approach to the design of a curriculum is to bring a group of teachers together to make a grouping of subjects thought to be compulsory for the study of engineering and to suggest electives that might enhance the students understanding of the scope of engineering and the range of possibilities. The next step is to obtain a list of content from specialists in the fields of the individual courses. This approach makes important assumptions about the nature of knowledge and what knowledge informs the development of the engineer. That to a large extent determines the perceptions that teachers have of the objectives (outcomes) to be achieved. Few attempts have been made to examine the epistemological assumptions that underpin this approach yet several papers in recent years at ASEE, FIE and the 'Engineering meets Philosophy' workshops illustrate the possibility of profound change. At the same time other papers on change show the value of the participants in any community involved in change engaging with epistemology beyond that of the operational.

Nevertheless it is important to understand what is happening at the operational level for this is also the level of the political. There has in the US and UK been continuing concern about the numbers of students coming forward to study engineering and in the US there has been a sharper focus on minorities than would be the case in Europe. In the UK the concern with numbers is also associated with the problem of status. Coupled to that has been worry about the identity of engineering. There has been a drive to define what engineering is and from that to suggest criteria for the curriculum that take into account perceived issues of status.

The 'Engineering meets Philosophy' workshops have shown how philosophy could contribute to this discussion (van de Poel and Goldberg *Philosophy and Engineering* 2010). Bucciarelli in particular shows the relevance of a philosophy of engineering that has a direct bearing on education for design (*Engineering Philosophy*, 2003). Two books are of particular interest because they begin from a position that engineering is knowledge and knowledge as design (Vincenti, *What Engineers Know and How they Know It*, 1990; Perkins, *Knowledge as Design*, 1986).

From an educational perspective together they raise questions such as, "is there a philosophy of engineering that is distinct from a philosophy of science?" and its corollary "is there a need for separate philosophy of education? Given that engineering is applied science won't the philosophy of science education suffice?" Philosophy should also cause us to ask if the 'right' questions are being asked. Moreover, there are a whole range of additional questions that can be asked as Heywood, McGrann and Smith argued in a special session – (Can philosophy of engineering..FIE, 2007) that was partly inspired by the question are there other ways of knowing, and if there are should engineers know about them (Heywood, Think..FIE, 2007)

In this respect it is useful to consider how other professions faced with similar problems have approached this debate. In the British Isles the development of an all graduate nursing profession led to a vigorous debate about the role of theory in the training of nurses. Apparently this was coincident with a continuing “struggle to define nursing. The same phraseology could be applied to engineering. Recent discussions have sought to answer the question “What is engineering? And, therefore “what is an engineer? It has been proposed that one way to resolve this problem is to find out what engineers do- to actually task analyze them at work which is to go beyond questionnaires that ask them what they believe they do and what they believe should be in the curriculum, or how satisfied they were with the curriculum received. There is a presumption made about the particular kind of knowledge sought when approaches of this kind are made moreover, such approaches are reductionist and as has been pointed out in respect of nursing the sum of the parts do not necessarily reflect the totality (wholeness) of an engineer or a nurse in action. For this reason Clark suggested that the struggle to define nursing should be given up and instead they should seek answers to the question “Why do nurses do what they do?” and “what do nurses know?” (J. Clark, 1997 *International Nursing Review*). It is appropriate to substitute “engineer” for “nurse.”

Questions of this kind lead to attempts to answer the question “what are the fundamental patterns of knowing” employed by engineers a question that is somewhat different to what is yielded from trying to establish what it is that engineers do. It is of course complementary but together they give a different picture of the ‘academic knowledge’ that engineers need. It is from complementary analyses of this kind that meaningful statements of the aims of engineering can be drawn.

To pursue the comparison Carper identified four fundamental patterns of knowing from an analysis of the conceptual and syntactical structure of nursing knowledge: empirical, aesthetic, personal and ethical

“Nursing thus depends on scientific knowledge of human behaviour in health and illness, the [a]esthetic perception of significant human experiences, a personal understanding of the unique individuality of the self and the capacity to make choices within concrete situations involving particular moral judgements.” (B. A. Carper, 1978. *Advances in Nursing Science*)

Clearly it would be possible to adapt that statement to engineering. What it does show is an integrated statement of aims which would lead to the question- “If engineering students discuss such a statement at the beginning of their studies will it help them to value all the dimensions of a programme equally, and to recognize that are other (than scientific) equally important patterns of knowing relevant to their work?”

Such statements lead to issues that relate directly to teaching and learning. For example, if project or problem based learning methods are used for the purpose of encouraging students to integrate these patterns of knowledge how in the first place do they acquire the logic of each pattern and the circumstances in which it is valid. But those are second order issues. The first order issue is “what are the patterns of knowing required by engineers?”

It follows from this that the first issues that have to be examined are epistemological. It also follows that an ontological dimension will necessarily be present. A fundamental question is “what kinds of knowledge are held to be of most value by academics, industrialists and students?” Answers to this question may reveal important differences between the three groups. There is therefore a philosophical dynamic to any discussion about the aims of engineering education which is admirably portrayed in Grimson’s paper on *The Philosophical Nature of Engineering...* (ASEE, 2007, paper 1611) irrespective of its attempt to show how philosophy can be used within the engineering curriculum.

It is clear that the aims of education we seek to promote are underpinned by certain epistemological assumptions. As these vary so will the aims produced. As the aims of education differ so also will be the objectives of instruction. For that reason some kind of screening process is required that ensures coherence in what it is that has to be done.

Screening aims and objectives and educational decision making

Screening is the application of philosophy, psychology of learning, sociology and history to the analysis of aims and objectives to ensure coherence (Heywood, Screening curriculum aims...FIE 2008). Another way of perceiving this activity is to consider it to be the application of these domains of knowledge to the design of the curriculum which is somewhat broader than Furst’s conception of the activity

E. J. Furst who seems to have coined the term screening argued that it is very easy to generate long lists of aims (and objectives) that come to be just as self-defeating as long lists of content. Unless objectives or outcomes are strictly limited their number is likely to overload courses as their teachers struggle to obtain them. Applied to the goals of an institution first pointed out that “some goals will be more important than others, and some will be inconsistent in that they call for contradictory patterns of behaviour” (*Constructing Evaluation Instruments*, 1958). Thus philosophy not only contributes to the aims of an institution (school, department) but checks that what is proposed is consistent. Consider the question- “Should an institution try to make people alike or should it cultivate idiosyncrasy?” In terms of engineering this might be expressed as “should an engineering department encourage creativity and innovative behaviour among its students? If a school is to do this then it should not encourage conformity yet the curriculum press is to encourage precisely that.

It is very difficult to separate out the psychology of learning and the sociology of knowledge from such discussion. For example, the inclusion of ethics in the curriculum should not be undertaken without reference to present understandings of moral development a point that is illustrated by Harding (Psychology of ‘ought’. FIE 2008).

When it comes to pedagogy the need for teachers to understand and be able to defend their philosophical position is made the more explicit. For example does a constructivist position necessarily lead to a different pedagogy to the position taken by realists? As long ago as 1972 Sherren and Long (*Engineering Education*) argued that an educator must consciously program those desirable ‘engineering characteristic’ behaviours that have elements of

influence, thought and action that he will teach before he considers the creation or adoption of an instructional system. In order to know which “*engineering characteristics he would like to teach he must first examine his philosophy of engineering education to understand his goals and attitudes. Likewise an understanding of the relationship between the philosophies of the student and the teacher will allow him to choose a compatible educational theory which may be sensitive to the goals and attitudes of both.*” In engineering education there is no better exponent of this view than Billy Koen who has worked out a fully fledged philosophy based on the engineering method (*Discussion of the Method*, 2003).

The philosophical method has a major role to play in the screening of objectives as one of its tasks is to avoid confusion. Educators and that includes educators engaged in the study of education have not been prepared to develop a technical language. For that reason there is massive confusion in the use of terms. This is particularly well illustrated by Yokomoto and Bostwick who examined the terminology of ABET Ec 2000. “*Dissimilar words are used as synonyms such as ‘outcomes’, attributes, competencies to describe what students must demonstrate [...]*” (Yokomoto and Bostwick, *Modeling the process.. FIE 1999*) not that it is any different in the other professions as Griffin’s analysis of the term competency in nursing shows (Doctoral thesis in completion). Confusion arises because terms are descriptive rather than normative.

McGrann completed a somewhat more detailed analysis of ABET 2000 to show the relevance of philosophy to engineering education (McGrann, *Philosophy of technology...FIE, 2008*). Within that text he cited a list of research questions presented by the Dutch scholar M. de Vries that bridge philosophy of technology and engineering education. Perhaps the greatest muddle on which McGrann, or for that matter any of the others so far mentioned do not comment is on the huge confusion created by the use of technology sometimes as a synonym for engineering and sometimes it seems, as an antonym!

Philosophy has the power to contribute to educational decision making.

Philosophy within the curriculum

There is no better place to start this final section than by reference to the debate about competency about which much has been written including a substantial philosophy (Barnett, *The Limits of Competence...1994*). Barnett contrasts both the ‘know how’ of operational competence and the ‘know that’ of academic competence with an epistemology of ‘reflective knowing’ where what matters most is the provision of an education for the whole world of human life. It is a holistic approach whereas the others are essentially reductionist. Griffin points out that when it is defined in terms of doing something that is in terms of outcomes, competence remains at a level of ‘lived through experiences’. It is not at a level of reflected understanding. Where the emphasis is on outcomes “*the underlying processes in the development of competence from experiences, through education and reflection receive less attention.*” (Griffin, doctoral thesis).

While there is much more to a discussion of competing notions of competence than this as Griffin’s discourse shows it does help to locate two ends of spectrum and to see what the

possibilities of a *modus vivendi* are. At one end are those who see philosophy as having the practical import of improving engineering competence. In our discussions two views have emerged as to how this might be executed. Grimson's perspective is based on the relationship of the traditional divisions of philosophy to the design problem. Engineering is characterized by the language and activities of philosophy. This approach is essentially a philosophy of engineering that is directly applicable to engineering education, and seeks to argue for the teaching of philosophy of science within engineering courses (Grimson et al., *Philosophy matters...FIE 2008*). However in that study and in other papers it is suggested that there are clear differences between engineers and scientists, an issue that has occupied some of the "engineering meets philosophy" workshops. While there is argument for a philosophy of science education of the kind expounded by Matthews and others (Matthews, *Science Teaching*, 1994) when considering the science component of engineering there is an even greater argument for developing a philosophy of engineering education that embraces the totality of what engineering is..

The other view as expressed by Smith and Korte (FIE 2009) is to apply the method of philosophy to developing critical thinking in engineering. Their concept of method is to be found in Rescher's study of "*Philosophical Reasoning*" (2001). This approach has been used in schools of education where philosophy is shown to contribute to all kinds of educational decision making, as for example the ability to sustain an argument in a text (FitzGibbons, 1983). But the same authors have been influenced by the work of Noddings who deals with what the central issues of philosophy (in particular education) are and this comes nearer to the view of those who seek to develop among students a philosophical disposition and see a rather more traditional approach through the history of philosophy to achieving that disposition.

Acknowledgement. I am indebted to Catherine Griffin for sight of her doctoral work on competence and assessment in nursing education.

John Heywood 16:10:2010.

Please note the timing of the programme below is arbitrary except that it is designed to take up a day. It could equally well be set over Tuesday afternoon and Wednesday morning with an evening break for a meal and discussion –or Saturday afternoon through Sunday morning.

Philosophy and its Bearing on Engineering Education

9.00 am. General welcome Chair ERM. President IEEE Ed Soc.

A. 9.15 am – 9.45 am Opening address *Overview - The Relevance of Philosophy to Engineering Practice- The Aims of education, an educationalist's perspective* (John Heywood)

9.45 am – 10.45am *The Relevance of Philosophy to Engineering Practice*

(a) from the perspective of a philosopher (Peter Simons, Natasha McCarthy, Andrew Jamieson)

(b) from the perspective of an engineer (David Goldberg, Larry Buccarelli or equivalent)

30 min. Break

11.15 am – 12.45 pm Workshop Mode - *The role of philosophy in engineering curricula and instruction.*
Chair ?

11.15am -11.30 Agree topics (quick brainstorming)

11.30am – 12.15 Three/Four breakout groups to address a limited set of topics

12.15 pm- 12.45 Reporting back by each group and discussion aimed at reaching some conclusions or positions to be resolved

12.45 pm – 1.45 pm Lunch

1.45 pm – 2.15 pm. The role of philosophy (from the perspective of an engineering student(s). Invited students

2.15 pm – 2.30 pm Moral development (what it means in practice) -

2.30 pm – 2.45 pm Ethics and Engineering Ethics- Kevin Harding

15 min. break

3.00 pm – 4.15 pm Workshop Mode (*Moral development versus Ethics*). Chair:

4.15 pm – 4.30 pm Agree topics (quick brainstorming)

4.30 pm – 5.15 pm Three/Four breakout groups to address a limited set of topics

5.15 pm – 6.00 pm Reporting back by each group and discussion aimed at reaching some conclusions or positions to be resolved

6/00 pm Workshop Chairs make short reports on areas of agreement and areas of contention

Comment from Russ Korte

Thanks Bill for laying out a program. This looks fine for now. I have three initial comments:

1. I propose that from the start we assume philosophy has a role in formulating/guiding engineering education. With limited time I don't see the value of spending 1 1/2 hours in the workshop discussing this. I suggest we lay out a philosophizing method to move toward developing aims and objectives in the first breakout 11:15 -12:45. Assuming we have a difference in aims the group could break out around three different aims/obj models and formulate a general curriculum to address that. If there is agreement or not much disagreement on aims we could form around three different parts of the curriculum (e.g., (a) first year; (b) science, math, eng. sciences; and (c) social sciences/liberal ed)

2. I like including students but I suggest we not allocate a separate time slot for student view. My contention is that there is not that much to be gained from a student view that is significantly different from the current academic view. I think a more significant difference from the academic view is found in industry and we might consider making industry a significant contributor. This was done at the Imperial College conference to great effect. And it has significant philosophical ramifications for education. For example: is the aim of education to prepare people for work, or to develop the person? This has been and is an ongoing philosophical question in education.

3. I don't understand the reason to single out ethics. My humble view is that ethics is one of three or four branches of philosophy and should be integrated from the start--along with ontology and epistemology and I like to add aesthetics. These three or four components should be integrated in my view. I also believe that formulating and discussing aims along the lines of prep for industry or develop the person would take much time and be very stimulating and provocative. I wouldn't want to cut this off because we ran out of time. I truly believe that it takes people some time to get deeply involved to the point where they make significant discovery. To use the Imperial College example: the most frustrating part was that they packed so much into the program that no one had time to contemplate anything beyond the tired *cliches* and well-worn perspectives that were quite superficial and unproductive in the end. Anyway, I might easily be off base here, but I wonder if ethics is a significant enough problem to warrant this much attention or if other issues of industry prep/personal develop/holistic education are more philosophically important to this workshop.

ASEE LED Committee on Interdivisional Cooperation Open Conversation on Interdivisional Exchange and Coordination

Synopsis of Conversations and Recommendations

7/28/2010 – 8/5/2010

Introduction

During the last annual meeting in Louisville, Ky., the Liberal Education Division (LED) created a Committee on Interdivisional Cooperation for exploring opportunities for interdivisional exchange and coordination, and for exploring a possible realignment of the PICs in such a way that divisions with similar “professional interests” would in fact be grouped together. Based on encouragement from several of the PIC chairs, the committee hosted an online conversation on these topics between July 28th and August 5th, 2010. Twenty-three individuals representing 16 divisions participated in the conversation. A summary of the conversation, including recommendations were circulated and discussed among the participants. A full synopsis of the conversation is attached below. Meanwhile, the recommendations produced through this process were as below:

Recommendations (Action Items)

In summary, the recommendations of our committee and the participants to the above conversation are as follows:

- Promote greater interdivisional collaboration by
 - Creating a 3-member committee on interdivisional collaboration within each PIC, AND/OR
 - Move to a chair & chair-elect model for the PICs, with the chair-elect being given explicit duties, as noted above, for fostering interdivisional collaboration
- Suggest enhancements to the Monolith system that would facilitate greater interdivisional collaboration and exchange. Begin with the list provided above, and solicit additional suggestions at a workshop during next year’s annual meeting.
- Encourage the incumbent, or former and incoming PIC chairs and chair-elects to begin speaking with each other about possible PIC realignment. However, hold all requests until next year’s annual meeting where these can be discussed in person, and submitted as a group to the ASEE Board, via the PIC chairs.
- Hold an open meeting on interdivisional collaboration at next year’s annual meeting in Vancouver, with co-sponsorship from as many divisions as possible. Ask division chairs and program chairs to publicize this meeting to their membership. (And circulate this document as background information.)
- Make several additional changes to facilitate stronger representation of division interests to the Board, including
 - Holding an annual meeting of all division officers for each PIC
 - Have online discussions, whether formal or informal, among divisions chairs prior to such a meeting
 - Begin thinking of the PIC chair as something that we do in rotation across the divisions within the PIC.

Background

During the annual meeting in Louisville, Ky., the Liberal Education Division (LED) created a Committee on Interdivisional Cooperation for exploring opportunities for interdivisional exchange and coordination, and for exploring a possible realignment of the PICs in such a way that divisions with similar “professional interests” would in fact be grouped together. Following conversations with several of the PIC chairs, we were encouraged to collect further input from various divisions. Our committee therefore decided to host an online conversation, held between July 28th and August 5th, 2010, with the following as the defined scope of our conversations:

SCOPE

- Discuss the desirability and options for realigning the PICs more explicitly around shared “professional interests”
- Explore other options/reasons for fostering interdivisional cooperation / communication, such as
 - organizing joint plenary sessions
 - fostering communication across divisions
 - coordinating when our business meetings take place
 - making our work known across the divisions
- Formulate a preliminary agenda for a workshop on interdivisional coordination at the 2011 (Vancouver) annual meeting

Eighteen (18) individuals representing 16 divisions agreed to participate in the conversation in addition to the five members of the ASEE LED Committee on Interdivisional Cooperation. Altogether, these were:

List of Participants: (7/28 – 8/5/2010)

	<u>ASEE division or unit</u>
Jim Widmann	Design in Engineering Education
Shane Brown	Educational Research Methods
Doug Tougaw	Engineering Ethics
Bill Jordan	Engineering Ethics
Bob Heyer-Gray	Engineering Libraries
Ertunga Ozelkan	Engineering Management
Gene Dixon	Engineering Management
Steven P. Nichols	Entrepreneurship
Chris Rowe	First Year Programs
Carla Purdy	Graduate Studies
Malinda Zarske	K-12 & Pre-Engineering
Trevor Harding	Materials
Josue Njock-Libii	Mathematics
Andrea Ogilvie	Minorities in Engineering
Donna Riley	Liberal Education*
Carherine Skokan	Multidisciplinary Engineering
Daniel Bumblauskas	Student Constituent Committee
Adam Carberry	Student Constituent Committee
John Krupszak	Technological Literacy

Atsushi Akera	Chair, Committee on Interdivisional Cooperation, LED
Judith Norback	Committee on Interdivisional Cooperation, LED
Steve Vanderleest	Committee on Interdivisional Cooperation, LED
Sarah Pfatteicher	Committee on Interdivisional Cooperation, LED

*also member, Committee on Interdivisional Cooperation, LED.

Synopsis

During our conversation, we identified that there were two distinct issues, one having to do with encouraging collaboration across divisions, and the other having to do with restructuring the PICs so that each division has better representation via a more uniform voice on the Board. I'll summarize each conversation in turn.

Interdivisional Collaboration

With regards to interdivisional collaboration, the main points of discussion were that,

- **It was wonderful that much of our conversations revolved around promoting interdivisional collaboration.** Many felt that the ASEE organization and structure had shifted to where it excelled at conversations within a division, but that conversations across divisions occurred less often, or less consistently, and that more of this was desirable. A couple of the posts made it clear that there were certain divisions such as MIND that have developed strong protocols for interdivisional collaboration, based on obvious affinities. Others perhaps have done so more sporadically, for a variety of reasons, but not necessarily because there are no obvious reasons for doing so. It was also suggested that certain divisions, including Liberal Education, have historically had a reason for reaching out to other (often “technical”) divisions, and other divisions have long had reason to work with others with which they have had certain affinities (e.g., Minorities in Engineering and K-12; a few other examples were also offered).
- **One of the common problems of any voluntary organization is the difficulty they have in finding a mechanism to carry forward institutional memories.** Two important thoughts that emerged out of our conversations was that both the PICs and the new Monolith system could serve as a kind of mechanism for capturing and conveying some of the best practices that we have for interdivisional collaboration. Recognizing that we did not want to burden the PIC chairs any further, we came up with two alternatives:
 - Create a committee on interdivisional collaboration within each PIC, or at least for PICs where there is active interest in joint sessions, greater networking opportunities, etc.... Use the typical “rotating membership” approach—for example, a three member committee with staggered three-year terms—to help uphold institutional memory.
 - Or, as was apparently already suggested at the last ASEE Board meeting, move to a chair plus chair-elect structure for the PICs. In addition to having a second person to help cover the business meetings, it would be made an explicit duty of the PIC chair-elect to focus on interdivisional collaboration. This would itself help ensure that a chair-elect is more familiar with her or his divisions before she or he steps up as chair. It would help expand the perspectives that the PIC chair carries to the Board, and would also help with continuity.

Either way, it would be the responsibility of the committee and/or the chair-elect to focus on the following:

- Helping program chairs to coordinate schedules; organize joint sessions, featured speakers, and banquets, and shared networking opportunities
- To the extent possible, help rationalize the schedule of business meetings so there are fewer conflicts.
- Maintain a list of best practices, and distribute this to the program chairs as ‘suggested actions’ early in the program cycle

It was recognized that some scheduling conflicts would always be inevitable in a society as large and complex as ASEE, but we felt that some subtle forms of coordination could help improve the situation (e.g. gradually changing the ‘customary’ meeting time of some divisional business meetings so that the times for those with the greatest affinity are staggered; see also some of the suggestions under “Monolith,” next.)

- **We also discussed some possible enhancements to Monolith that could help facilitate interdivisional exchange and collaboration.** Jenna Carpenter (PIC III chair), in a brief conversation at the Louisville meeting, suggested that ASEE might be very open to suggestions on how to add new features to Monolith. (The system is now being created in-house, so ASEE has the capacity to make such modifications.) While it was noted that we didn’t want to rely exclusively on technological solutions, and that it was important to maintain flexibility for program chairs and to “have a person in the mix,” these were some of the suggestions collected regarding some possible (future) enhancements to Monolith:
 - Create a feature that allows program chairs (and division chairs) to easily extend an invitation to other division chairs for joint sessions, featured speakers, networking opportunities and the like. (Make these “common options” for collaboration visible by making them, for instance, a click-to-execute radio button.)
 - Divide scheduling into two separate phases. During the first phase, have program chairs post all joint sessions, business meetings, and technical sessions with strong potential interest to other divisions. Make these visible to all program chairs so that they can schedule the remaining technical sessions so as to reduce known conflicts.
 - Implement a (controlled-list?) keyword-sensitive query so that members can print a list of sessions related to a specific issue or topic.
 - Make it so program chairs can compile one or more lists of relevant sessions (not necessarily limited to their own division) and post it visibly on the annual meeting website so individuals do not have to run a query in order to obtain a list, for example, of all “communication” related papers at the conference.

PIC Realignment & Reorganization

The conversations pertaining to the realignment and/or reorganization were somewhat more wide-ranging. There was general agreement on the principle that the PICs should be structured to represent the divisions. But given that the devil is in the details, our discussion hinged on:

- Whether divisions experienced significant problems conveying their thoughts and interests to the ASEE Board

- Whether a realignment of the PICs around shared interests would solve the problem
- Even if it didn't "solve" the problem, whether it could provide them with a more uniform voice with which to air their ideas, and
- Whether, and by what means we could come to agreement on a realignment or reorganization of the PICs

All those speaking to the issue also affirmed that the current PIC chairs were doing their best to solicit input from the divisions so that the question lay with whether a PIC realignment, or any other modification could help improve this channel of communication.

A couple of direct quotes from the conversation may help illustrate the range of views expressed:

- "The PIC chairs [did] their level best to represent my division's views to the board, but I believe the PIC structure marginalizes the views of my division relative to the PIC. Because the PIC chairs come from divisions very different from my own, they sometimes have trouble understanding perspectives from my division."
- "We have been served well in our PIC by a fabulous [chair, so] I cannot relate to divisions who feel they have been marginalized. [But that] shouldn't happen and I support an action that will minimize it in the future."
- "I am not in favor of reorganizing PICs at this moment. ... I think that we should uncouple reorganization of PICs from improving communication/collaboration across PICs. ... My guess is that the former may be easier than the latter; and we may be tempted to follow the path of least resistance, out of convenience."

There were also a number of related remarks that should be noted:

- There was the sense that while a formal request to reorganize the PIC structure might be more difficult for the board, individual (or even multiple requests) to be assigned to a different PIC would be much easier, so long as we were attentive to workload issues for the PIC chairs. (i.e., that there would be reasonable balance in the number of divisions in a PIC.)
- Some divisions would like to be assigned to a different PIC. Others find that they are already aligned with the divisions with which they share the greatest interests—although they would not mind being assigned to a different PIC if the groupings that were important to them were maintained.
- This led to the suggestion that all reassignments should be voluntary. (It was recognized that after collecting all requests, the PIC chairs or the board itself may want to make further changes for reasons that we're less attuned to. In that case, they may wind up approaching certain divisions to see if they could come to agreement on some additional changes.)

Some divisions were eager to proceed with realignment, but one person also voiced the thought that there were advantages to waiting. A consensus seemed to emerge around the idea that we could encourage folks (especially division chairs) to speak with each other between now and next spring to talk about the possible realignments, but with the understanding that a) both the former and incoming division chairs would be invited into the conversation, and b) no requests for realignment would be submitted now, but would be conveyed to the ASEE Board (via the PIC chairs) only after we've had a chance to discuss this in person at a workshop at next year's annual meeting.

There were also a number of other suggestions for improving the representation of divisional interests to the Board that seemed to receive support from all or most of the participants:

- Hold an annual meeting of all division officers for each PIC
- Have online discussions, whether formal or informal, among divisions chairs prior to such a meeting
- Begin thinking of the PIC chair as something that we do in rotation (not necessarily via an actual change in the bylaws, but more in terms of a tacit agreement about which divisions put candidates forward) so that the concerns, if any, of all the divisions can be brought forward in turn.

Generally, there was also the sense that while it was obvious to some folks what the problems were, others felt that they were entering a conversation midstream, and needed to be better educated as to the underlying issues and concerns. It was noted that the ASEE Board had reached a similar conclusion at its last meeting: While a discussion about PIC reorganization had been raised at the meeting, the Board apparently felt that it did not have sufficient information to act. We understood that they were encouraging us to have just this sort of “bottom up” dialogue to gain further input from the divisions. It was suggested that while our conversation here was a good start, further conversations in person via a workshop at next year’s annual meeting would allow us to accomplish this more broadly.

Proposed Workshop and Agenda

Partly based on this last discussion, but based as well on our interest in strengthening interdivisional collaboration more generally, we agreed that it was in fact desirable to organize an open workshop at next year’s annual meeting. The following were suggested as the possible agenda items:

- Sharing and conveying specific information and experiences related to representation
- Coordinating voluntary requests for PIC realignments
- Compiling a list of best practices for interdivisional collaboration
- Creating a structure for interdivisional collaboration
- Requesting additions / changes to Monolith
- Deciding how to convey our ideas to the PIC chairs and the ASEE Board

As recorded by
Atsushi Akera
Chair, LED Committee on Interdivisional Cooperation

ASEE ERM Interdivisional Collaboration Summary Document

During the last annual meeting in Louisville, Ky., the Liberal Education Division (LED) created a Committee on Interdivisional Cooperation for exploring opportunities for interdivisional exchange and coordination, and for exploring a possible realignment of the PICs in such a way that divisions with similar “professional interests” would in fact be grouped together. Based on encouragement from several of the PIC chairs, the committee hosted an online conversation on these topics between July 28th and August 5th, 2010. Twenty-three individuals representing 16 divisions participated in the conversation.

During the conversation, we identified that there were two distinct issues, one having to do with encouraging collaboration across divisions, and the other having to do with restructuring the PICs so that each division has better representation via a more uniform voice on the Board. I’ll summarize each conversation in turn.

Collaboration across divisions

- Committee on interdivisional collaboration for each PIC
- Chair and chair –elect
- Monolith
 - Program and division chairs can extend a invitation to other division chairs for joint sessions, guest speakers...
 - Schedule in two phases, 1st chairs post all joint sessions or sessions of great interest, 2nd schedule remaining sessions
 - Keyword query for sessions on a specific topic
 - Program chairs can develop lists of sessions (across divisions) across a topic and post it

PIC Representation

- Whether divisions experienced significant problems conveying their thoughts and interests to the ASEE Board
- Whether a realignment of the PICs around shared interests would solve the problem
- Even if it didn’t “solve” the problem, whether it could provide them with a more uniform voice with which to air their ideas, and
- Whether, and by what means we could come to agreement on a realignment or reorganization of the PICs

All those speaking to the issue also affirmed that the current PIC chairs were doing their best to solicit input from the divisions so that the question lay with whether a PIC realignment, or any other modification could help improve this channel of communication.

Individuals divisions can request moving to a different PIC.
Some are happy with their PIC and others are not.

All PIC assignments should be voluntary...if a division wants to change PIC's they can request this

For now...

Division chairs can think about this and talk to other chairs

PIC chair can be done in rotation

Annual meeting of all division officers for each PI

Next year at ASEE hold a town hall to discuss PIC realignment that is sponsored by lots of divisions, including ERM

- Sharing and conveying specific information and experiences related to representation
- Coordinating voluntary requests for PIC realignments
- Compiling a list of best practices for interdivisional collaboration
- Creating a structure for interdivisional collaboration
- Requesting additions / changes to Monolith
- Deciding how to convey our ideas to the PIC chairs and the ASEE Board