Domestic Space: Virtually Underestimated?

Julie Dare

Edith Cowan University


This Conference Proceeding is posted at Research Online.

https://ro.ecu.edu.au/ecuworks/995
Proceedings of the
Transforming Information & Learning
Conference
11 October 2008

*Transformers: people, technologies and spaces*

Edith Cowan University
Mount Lawley Campus, Western Australia

Published by:
School of Computer and Information Science
Edith Cowan University
Mount Lawley Campus
Perth Western Australia

Conference Convenor and Chair
Judy Clayden

Programme Coordinator
Dr Leisa Armstrong

Edited by:
David Cook
School of Computer and Information Science
Edith Cowan University
Mount Lawley Campus
Perth Western Australia

Copyright 2008. All Rights reserved


CRICOS Institution Provider Code 00279B
Conference Foreword

Dear Delegate,

The Transforming Information and Learning Conference 2008 has seen a small number of papers, but a corresponding increase in quality of submissions. The authors represent a cross-section of perspectives that include International and Australian viewpoints.

All published papers were double blind peer-reviewed before acceptance into the conference for publication. There were a total of 10 papers submitted for review from which 9 were accepted and presented.

The Transforming Information and Learning Conference 2008 sought to facilitate discussion of the ways in which individuals, groups, technologies and spaces may interact to transform teaching, information delivery, learning and social networks. Under the theme of “Transformers: people, technologies and spaces”, the conference focused on three main areas of discussion:

- People as transformers.
- The transformative effects of technologies.
- Spaces for transformative interaction.

The conference took a great deal of co-ordination, time and effort. I express my thanks to the conference organisers for their hard work and dedication to the conference cause. In particular, the conference committee commends the various reviewers, editors and proposal submitters for their devotion and perseverance in the face of countless other duties and engagements. In concert with this gratitude is a vote of thanks to the conference chair Judy Clayden and program coordinator Leisa Armstrong for their work in overseeing the conference.

Sincerely,

David Cook
Conference Proceedings Editor
## Table of Contents

- **A gorilla in the room: Transforming the user experience of compliance in messaging systems**  
  Mark Brogan ................................................................. p4

- **Domestic space: virtually underestimated?**  
  Julie Dare ................................................................. p15

- **Virtual learning spaces in technical Computer Science subjects: A new teaching and learning paradigm**  
  Yuwanuch Gulatee, Barbara Combes ........................................... p29

- **Current challenges facing information and communications technology: A manifesto for change**  
  Donald McDermid ........................................................... p49

- **State model diagrams and learning strategy for computer networks**  
  Chompu Nuangjamnong, Yuwanuch Gulatee, S.P. Maj, Barbara Combes................. p58

- **Men of steel or plastic cops? The use of ethnography to understand the ‘on track’ world of transit officers**  
  Christine Teague, David Leith ................................................ p72

- **HeartNET: Moving towards a transformative space?**  
  Lynsey Uridge .............................................................. p82

- **Seduction and technology in the Library: How library technology influences library services and the user**  
  Lothar von Retzlaff ............................................................ p92

- **E-learning and Communities of Practice at the National Institute of Education: challenges & successes**  
  Marissa Wettasinghe ......................................................... p103
Domestic space: virtually underestimated?

Julie Dare
PhD Candidate
School of Communications and Arts
Edith Cowan University

ABSTRACT
This paper discusses the concept of domestic space as a transformative communications environment; a space in which relationships among individuals, families and ultimately the community are sustained, and in some cases transformed. Drawing on a research project currently being conducted in Western Australia, this paper explores communication within domestic space from an historical (Fischer, 1992; Moyal, 1992) and empirical perspective (Frissen, 1995; Holloway & Green, 2004), and contends that the seemingly mundane quality of the domestic sphere has resulted in it being underestimated as an avenue for research. Moreover, a research focus on young people’s uptake of information and communications technologies (ICTs), particularly as artefacts of empowerment and independence (Boyd, 2007; Ling, 2007), has tended to overlook the degree to which ICTs have become embedded in domestic spaces through women’s appropriation of multiple communication technologies in their work as kin-keepers (Helgeson, 1994, p. 412) and ‘domestic relations specialists’ (Wellman & Wortley, 1990, p. 582). This paper aims to address this gap in the literature by examining women’s communicative agency in the domestic sphere, and the potential this have to transform relationships among families, friends, and ultimately communities.

INTRODUCTION
Over the last five years there has been intense interest in both the popular media and the research community with young people’s uptake of information and communication technologies. Two areas that have generated much interest have been young people and mobile communication (Castells, Fernandez-Ardevol, Qiu, & Sey, 2007, p. 40); and young people’s engagement with social networking sites such as Facebook and MySpace (Ofcom, 2008, p. 17). Of particular interest to both the media and researchers is the extent to which young people are using mobile telephones and social networking technologies to negotiate increasing independence; coordinate their social activities; maintain core social networks; and in some cases extend their circle of ‘friends’ beyond their known social network. Social networking sites in particular are constructed as new media ‘spaces’.

Perhaps not surprisingly, this focus on young people’s use of ICTs has tended to draw attention away from examining the importance of new communication technologies in other social
contexts. An examination of women's appropriation of ICTs reveals a dynamic in which women, who have traditionally been socialised as 'kin-keepers' (Helgeson, 1994, p. 412), are now drawing on multiple communication technologies to help them manage family and social relationships in a complex and often challenging social environment. However, in contrast to the relatively public displays of friendship and socialising that are integral to many teenagers' use of new media, a large part of women's communication occurs in the domestic sphere, and is mediated through predominantly one-on-one private communication technologies such as email and the telephone. Women's personal communication is therefore not as open to analysis or observation as are many teenagers' social interactions through new media. Given that women have been identified as the key agents through which both practical and emotional support is delivered to family members (Habgood, 1999; Millward, 1998, p. 21), it's unfortunate that their appropriation of ICTs to fulfil their kin-keeping and care-giving responsibilities has tended to go 'under the radar' of popular and critical analysis. While there have been significant studies of women's use of the telephone (Moyal, 1992; Rakow, 1992); mobile telephone (Palen & Hughes, 2007; Rakow & Navarro, 1993); and the Internet (Boneva, Kraut, & Frohlich, 2001; Holloway & Green, 2004), there is a dearth of research into the extent to which multiple ICTs have become integral to women's role in managing relationships and providing support to family and friends.

This paper aims to address this gap by examining key aspects of women's communicative agency within the domestic sphere, as revealed in interviews conducted as part of a research project currently being conducted in Western Australia. The paper considers two specific areas in which women's communicative agency is most clearly articulated through domestic communication channels. The first section of the paper considers how women maintain close and loving connections with their young adult children, particularly after these children have left the family home. The second section considers the strategies and communication behaviours that women employ to enable them to sustain strong links within key feminine networks.

METHODOLOGY

Qualitative in-depth, semi-structured interviews were conducted with forty Western Australian women, recruited through a process of 'snowball sampling'. As one of the key aims of this research is to investigate the role of communication technologies in helping women manage transitions during their midlife years, the women were required to be between forty five and fifty five years of age. The participants presented with a diverse mix of socio-economic backgrounds and life experiences, and exhibited quite different experiences with and attitudes towards communication technologies. Interviews, lasting on average one to two hours, were recorded digitally and then transcribed. The interview transcripts were coded thematically using NVivo qualitative research software. To protect participants' privacy and anonymity, pseudonyms are used throughout this paper, and all identifying information has been removed. Italics are used to indicate questions or comments made by the interviewer during the interviews.
Family Relationships

One of the key findings of this current research project is the degree to which ICTs have become critical tools in facilitating contact between women and their young adult children. Just as a large part of teenagers’ mobile telephone use revolves around coordinating their activities with that of their peers (Ling, 2004, p. 100), so too are women increasingly relying upon mobile telephones and text messaging (SMS) to maintain contact with their children. Indeed, many of the women interviewed as part of this research project highlighted the role that the mobile telephone and SMS play in helping them keep in touch with their children. Rather than a conscious decision by the women themselves, this mobile connection is more a reflection of both the communication options available to their children, and their children’s familiarity and preference for using this form of communication. As Ling notes, young adults who have moved out of the family home may go through a ‘particularly nomadic period of their lives’ (Ling, 2004, p. 114), and may spend their early twenties moving between different rental accommodation and/or travelling. As a result, they are less likely to take out a landline telephone subscription. Indeed, according to Ling, ‘no other group is as reliant on only mobile telephones as those in their early 20s’ (Ling, 2004, p. 115).

When asked how she keeps in touch with her children now they’ve moved out of home, a participant in this current research project highlighted how her communication needs adjust to meet her children’s limited communication options at this particular stage in their life: ‘Text message. They don’t... neither of them have email, and neither of them have telephones [landline], they just have mobiles, so it’s mainly text’ (Lyn). In this context, Lyn is compelled to use the mobile telephone to connect with her children, not for the portability it offers, but rather because it facilitates a communication method (text messaging) which meets her children’s specific communication preferences; and because it allows her to reach out to her children no matter where they are physically located. In a sense it echoes Rickard’s notion of ‘home space’ and ‘youth space’, in that women are using their mobile telephones to reach out to their children from their home base: ‘In contrast to youth, older adults ‘age in place’ keeping connected to family from their own space, whereas youth venture away from home into new spaces and use the phone to keep connected with family at home space’ (Rickard, 2008). As such, Lyn’s use contrasts sharply with how mothers of younger children may be likely to use their mobile telephones. As Rakow and Navarro’s research identified, many women with school-age children valued the flexibility of mobile telephones, particularly if they were stuck in traffic when their children were due home from school. As one women participant explained, ‘I just feel better knowing that if they need me I’m available all the time’ (Rakow & Navarro, 1993, p. 153).

As children grow older and become more independent, the way women use mobile telephones to connect with their children tends to change as well. As Palen and Hughes note, parents of young adults are more likely to use their mobile telephones for the purpose of simply connecting with their children, rather than for micro-coordinating activities such as arranging pick up times from sporting events, as might be the case with younger dependent children:
For Sandra’s daughter who is away from home during her first year at college, daily contact in the morning with her mother and in the afternoon with her father on his drive home from work means that the mobile phone helps maintain a direct emotional connection. (Palen & Hughes, 2007, Findings)

Several women in this current research project use text messaging as a non-intrusive method of initiating contact with their young adult children who no longer live at home. Such is the case with Katherine, who finds it difficult to find an appropriate time to call her son because of his work commitments and busy social life:

I communicate with [son] [laughs] ... cause it’s really [difficult]. He’s just shifting now to days instead of shift work, but with him doing shifts, and sleeping at odd times, if you phone him... I tend to SMS him or email him. I’ve been known to SMS him and say ‘are you awake? If you are, phone me or I’ll phone you’, because you could phone him and wake him up. He’s sleeping during the day, or could be evening, or you know, if you don’t know what his schedule is, which changes. (Katherine)

Even where a woman’s preference is for face-to-face or telephone communication, they seem to invariably fit in with their children’s preferences and circumstances. As Janette’s comments suggest, women’s communication choices often reflect their children’s changing schedules:

When my daughter’s at work, I will email her. She’s at her computer a lot of the time, so she’ll email back, and my son, too, he works at [a computer] so he [has access to email], but, typical boy, he won’t get back to later that day or the next day. But yes, communication [by email] is sometimes easier than actually picking up the phone, because they don’t always answer their mobiles during the day. So I do actually communicate with them quite a lot that way. SMS at the weekend, or, email during the working week. (Janette)

While Robyn’s use of texting is obviously shaped by her children’s preferences, she makes use of the convenience of SMS to arrange more fulfilling telephone calls:

*How do you keep in touch with your children?*
Mobiles [laughs]. Mobiles, mobile phone. [My son] SMS’s all the time. I feel like saying, could you just phone me? But then as they say, you can SMS. You SMS when you don’t have time to talk.

*It’s a lot easier just to ring someone?*

Well that’s what we say to them. We say, well you know, when things start going backwards and forwards, wouldn’t it have been cheaper to phone? And then what usually happens, with [daughter] in Adelaide, what I’ll do is I’ll SMS her and say ‘when you’re free, SMS me and I’ll call you’. And that’s usually what happens with her. (Robyn)

Regardless of whether the young adults have left the family home or not, conflicting work schedules and active social lives may mean that even where families cohabit, it is often rare that all family members are at home at the same time. Such is the case with fifty year old Stella, who, as the following comment demonstrates, uses email throughout the day to connect with her son:

*Who do you email the most?*

Mmm, good question. Probably my son, actually, we email quite a lot during the day. Yer, probably my son.

*So he’s in a situation where he has easy access to a computer?*

Yer, yer, he’s [in workplace] and he’s at a computer quite a bit. Yer, he’ll email me and if I haven’t caught up with him cause he’s out with his girlfriend we’ll sort of email during the day.

*He lives at home still?*

Yer, but I don’t see him. That’s probably why we get on [laughs]
In this situation email facilitates a good fit for mother and son during the working day, as both have ready access to a computer. Moreover, as Stella explains, emails don’t distract her from work in the way that a telephone call might: ‘But sometimes I can email whilst I’m working at work. The phone call would interrupt what I’m doing, but I can have the email set up on the side and just do that’ (Stella).

As with text messaging, several of the women also view email as a non-intrusive way of communicating with young adult children. This was particularly evident in the interviews conducted with mothers of young adult sons; some women appear to walk a fine line between maintaining a suitable level of communication with their sons, while at the same time not being perceived as interfering or nagging. As fifty three year old Rita explains, email offers a discrete channel to talk to her son without impinging too much on his life and his new marriage. When asked if she telephones her son, Rita explained:

Yeah I try not to unless there’s something we have to talk about [laughs]....I’d only ring him at work if it was important, mainly because he’s dealing with customers and obviously I don’t want to interrupt....So I’ll flick an email and I’d ring him if I need to talk to him, I mean I’ll ring him tonight because you know, as I said [he’s] starting a new job but he’s at uni Mondays and Tuesdays, Wednesday’s he [plays soccer]. Thursday he could have been shopping, you know? Friday it’s the weekend, and he doesn’t need to hear from his mother. You know, they’re busy and you try and give them space but I want to know how his new job’s going.

As these women’s experiences illustrate, mobile telephones, text messaging and emails are key channels through which many women maintain contact with their young adult children, particularly where their children have moved out of home and may not have regular access to landline telephones. The following section considers women’s communicative agency in a different context, by examining how women use these same communication technologies to sustain close and supporting friendship with other women.

Women’s Friendships – Mediated Relationships

The significance of friendships in women’s lives has in the past been largely overlooked in academic research. In part, this neglect reflects a tendency to trivialise the importance of personal relationships (Apter & Josselson, 1998, p. 288; O’Connor, 1992, p. 1), and may also reflect a gendered construction of women’s communication with each other as ‘gossip’ and ‘chit chat’ which is in some ways less meaningful and consequential than men’s communication
(Marvin, cited in Fischer, 1992, p. 230). Fortunately, the importance of women’s friendships has gained increasing recognition over the past two decades, as research has highlighted the link between close and supportive personal relationships and emotional and psychological wellbeing (House & Landis, 2003; Rubin, 1985). While personal relationships are important for both males and females, friendships appear to play a more central and defining role in women’s lives (Apter & Josselson, 1998, p. 288; Mercer, Nichols, & Doyle, 1989, p. 127), and can be crucial sources of nurturing and support during periods of crisis and/or transition (Apter & Josselson, 1998, p. 205).

The importance of female friendships is highlighted by a fifty two year old participant in this current research project, in her reflections on a recent conversation with a friend:

A friend whose really close, you know, we were talking about female relationships recently and friends, and I suppose it’s really important to me cause I don’t have a family here except for my two kids. We were talking about intimacy with female friends, and she’s in her forties, and she said ‘you know, I never had that until you came in to my life’. I was blown away....and I think expressing my emotions like that, how I feel, has given her permission to do the same. (Yvonne)

Increasingly, women’s friendships are enacted and sustained through mediated communication technologies, and manifested through domestic, private sphere communication channels. A landmark Australian study conducted in the late 1980s noted the increasing significance of the telephone in sustaining women’s friendships (Moyal, 1992). Indeed, Moyal’s study found that after family communication, ‘the second most important site of telephone networking was between close women friends’ (Moyal, 1992, p. 57). As Moyal’s research revealed, ‘[t]he sociological importance of confidantes, girlfriends and women’s enduring friendships is well understood. What emerged conspicuously from this study was the high importance of the telephone in maintaining and enhancing these key feminine links’ (Moyal, 1992, p. 57).

As this current research project highlights, while women today still rely heavily upon face-to-face communication and the landline telephone to maintain these ‘key feminine links’, many are also expanding their communication repertoire by drawing on a range of newer technologies such as mobile telephones, text messaging and emails. In doing so, they are not only maintaining a more connected presence in each others’ lives, but are expanding domesticated communication channels beyond the confines of the home. As the interviews indicate, women have integrated multiple communication technologies into their daily communication routines in ways that meet both their own needs, and which ‘fit’ the particular communication task and social context. For many of the women, email and text messaging are generally used more for organising activities
and arranging to meet in person, while in-depth exchanges are reserved for meeting in person. This dynamic is expressed in the following comments by Katrina:

*Do you receive emails from friends at home?*

Yes, yes I do. We probably communicate more by phone, than by email. I mean we certainly do communicate by email as well, yer, sort of bit of 50/50 as well, I guess. If we’re communicating by email, it’s more arranging to meet somewhere type of communication. So it’s pretty short and sweet. (Katrina)

Katrina’s use of email mirrors Matzko’s description of ‘quick and dirty’ email messages which are sent for logistical purposes (2002, p. 50), and highlights the perceived convenience of email (Boneva, Kraut, & Frohlich, 2001, p. 541; Matzko, 2002, p. 63). As Corinne explains, ‘it’s about time, and it’s about energy too. Because there’s a lot less energy attached to an email’. A similar pattern is evident in Lyn’s account of how she uses text messaging with a friend. When asked whether she telephoned her friends, forty nine year old Lyn replied:

No, we don’t telephone at all really. She’ll send me a message on my mobile phone, but we don’t... in fact, I can’t even remember the last time we spoke on the phone, because it’s usually arranging a time to meet, so it’s much more that sort of relationship, rather than....it’s much more messaging. (Lyn)

As well as using email and text messaging for these organisational purposes, the women describe sending emails that serve both instrumental and intrinsic purposes as well. As Lyn explains, “the thing I like about it is that you can just write a quick email. You know, “I’m just thinking of you”, this type of thing. You don’t have to write a long one’. A similar sentiment is expressed by Corinne:

*What sort of emails do you send your girlfriends?*

They’re usually check-in emails. That’s what I consider them. They’re usually not that long. Look, if they’re overseas or interstate, yes they are chatty emails, definitely. For locals, it’s more checking in, you know? ‘Hope your week’s going well’ or ‘Did that problem solve last week?’ or you know, ‘Do you want to have a coffee on Saturday?’; that sort of thing. (Corinne)
And yet, while the messages may be brief, and, when taken in isolation seemingly insignificant, the frequently enacted nature of such messages can in fact serve to reinforce a sense of connected relationship across time and space (Licoppe, 2004). Indeed, research indicates the use of email can lead to an overall increase in both the quantity and quality of interactions across other mediums as well (Wilding, 2006, p. 138), which has the potential to enhance relationships (Lawton, Silverstein, & Bengtson, 1994, p. 58).

Several of the women use frequent emails and/or text messages to exchange support with friends, in between seeing them in person. As Licoppe and Smoreda explain, ‘[p]hatic communications becomes increasingly important, because simply keeping in touch may be more important that what is said when one actually gets in touch’ (Licoppe & Smoreda, 2005, p. 321). As these interviews revealed, phatic communication through email and text messaging becomes even more intense during times of need. This is evident in Ellie’s comments:

*How do you contact your friend?*

I’ve got another girlfriend ... now she also has just split up from her husband, and she moved out a couple of weekends ago ... at work they’re very quick emails, but it’s usually in work time, cause she’s sitting on her computer, I’m sitting on mine. We send each other just little feel good stuff, you know, ‘here, you might need this today’, or ‘this one came in as an attachment, this makes me feel good’. And we’ll communicate like that now.

*What would you have done previous to email [with your friend]?*

We do text a lot. We walk, we try and walk ... we text a lot... have you got time for a walk, meet you at four at the steps. We do that, or even, still text over the weekend – ‘how’s it going, still thinking of you, I can come up now... I know it’s a bad time’. You know, I’ll communicate like that....So I’ll text on the weekend cause she’s alone now, down there....I would probably do it [text and email] a bit more with her, I do a lot more with her because she needs a friend, yer. (Ellie)
While Ellie is comfortable with the level of support offered through these mediated channels, overall the interviews revealed a general perception that the higher social presence (Short, Williams, & Christie, 1976, p. 65) or sense of connection afforded by face-to-face or telephone communication is a more appropriate channel through which to discuss personal or sensitive issues. Despite these perceived limitations, there are occasions when the lower social presence offered by email may offer advantages over channels considered to be richer in communicative cues (Trevino, Lengel, & Daft, 1987, p. 557). As Moyal’s research some twenty years earlier found, mediated communication technologies can offer a unique platform: ‘[t]he survey’s reiterated finding, indeed, was that women talk more freely and intimately on the telephone with close friends than they do face-to-face ... and that women can reach “greater depth in conversation on the telephone”’ (Moyal, 1992, p. 58). A similar pattern is evident in some women’s use of email, with Matzko’s research suggesting there are occasions when email can also facilitate the sharing of innermost thoughts and feelings that an individual may have been unable to express through any other communications medium. It can also provide a ‘non-threatening’ space to work through potentially emotive conflicts (Matzko, 2002, p. 52). Echoing this dynamic, a number of women in this current research project have found email to be a useful medium through which to manage difficult or sensitive issues with friends:

If I was going through another difficult time I would choose to possibly email, if I didn’t want to be bringing up all those emotions....So depending on what stage our friendship or relationship was at the time I might think twice about ringing. (Zoe)

For fifty two year old Yvonne, email has provided a discrete platform to work though some difficulties she had been having with a friend:

The other thing I’ve found it [the Internet] really helpful for is communicating problems in relationships with friends. You know, sometimes um, you know if there’s been a difficulty arise in a relationship, and I’ve had to think about it for a while and I haven’t had the opportunity to like, approach the person in private, then I’ll send them, I’ll type a letter and send a letter by email. That’s been really beneficial. (Yvonne)

As well as offering a safe channel to raise difficult issues, Yvonne’s comments also allude to the opportunity email provides to carefully compose and edit writing, so it more accurately reflects a person’s intentions, in contrast to face-to-face or telephone communication, where individuals may speak before really thinking (Matzko, 2002, p. 74). Moreover, the process of writing emails can also reveal qualities and dimensions in individuals that aren’t ordinarily expressed through more spontaneous channels such as face-to-face or the telephone. A participant in Matzko’s research felt that written emails, as opposed to voice conversations, ‘clearly enhanced relationships with others’ (2002, p. 53). A similar pattern emerged in this current research project. When asked whether the process of writing emails had impacted on forty five year old Corinne’s relationship with a friend living overseas, she replied:
Yeah, I think so. I do. I think … I have a real love of writing actually so it’s really something very special in it. It also gives you that chance to reflect that perhaps in a face-to-face conversation, you know, sometimes it can really click the two of you in a face-to-face conversation and you can get that sort of depth that you might be needing at that time, and sometimes it doesn’t. But somehow with email with certain people, because there is that time for them to respond when they’re ready; I think it is very unifying.

*Do you feel it has helped you to become closer to this friend?*

Yeah. And probably not just her, because I think there is that thing of discovering other sides of people when you write, and then when you see them again it’s kind of lovely because you’ve shared all of that through the written word. (Corinne)

As Corinne’s reflections illustrate, email functions not only as a means through which women remain connected and in touch with each other’s lives, but it can also represent a transformative environment through which a deeper and more fulfilling relationship can develop.

**CONCLUSION**

Through these women’s stories, a clearer picture emerges of the degree to which ICTs have become embedded in domestic spaces through women’s communicative agency. While much research attention has been focused on young people’s appropriation of new communication technologies, an examination of women’s communication indicates they are often just as adept as their younger counterparts in appropriating multiple communication tools to maintain family and social connections. This paper has examined two specific areas in which women’s agency is most clearly illustrated; firstly, their efforts to maintain close and meaningful relationships with their young adult children, and secondly the strategies and choices they make in sustaining ‘key feminine links’ which are integral to women’s wellbeing. In doing so, it is evident that not only are women capable of adjusting their communication patterns to meet the needs of those they love and care for, but that they are also actively reshaping domestic space to better meet their own needs. In the process, they are fundamentally changing the nature of domestic communication environments. Perhaps more importantly, through their proactive use of multiple communication technologies, they are enhancing, and in some cases transforming relationships among family, friends, and ultimately, communities.
REFERENCES


Copyright

Dare, J. © 2008. The author/s assign Edith Cowan University a non-exclusive license to use this document for personal use provided that the article is used in full and this copyright statement is reproduced. Such documents may be included on the World Wide Web, CD-ROM, in printed form, and on mirror sites on the World Wide Web. The authors also grant a non-exclusive license to ECU to publish this document in full in the Conference Proceedings. Any other usage is prohibited without the express permission of the authors.