is jittery. You don't want it to be jittery. When we're trying to do these shows, we try to factor that out, but its nature is that it's jittery. The other weird thing about it is that it's asymmetrical. And that's more like a violin top plate, actually, because the speed of sound along the grain and across the grain is different; but end-to-end, bi-directionally, I don't know if there are any media that are asymmetrical like that besides the Internet. So it's this kind of funny beast that we're just playing games with right now. That's the short answer, told long.

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Letter from the Editor

Over the past twenty years, Array has been a reflection of the interests and issues surrounding the International Computer Music Association. Periodically, the editors of Array have focused on the status of women in computer music. It has been seven years since the publication of Bonnie Miksch's letter and the responses to it from women working in the field of computer music. Continuing in this tradition, I have asked Gregory Taylor to write an open letter to the community, and I invite responses to his letter. Some people were concerned by my choice—they thought I should have invited a woman to write a statement about the female gender. I strongly believe that the lack of equality is not just a women's issue; it affects all members of the community. Gregory Taylor is an advocate for women in the field, programming many works by women on RTQE, a radio program of electronic, classical, ethnic, improvised and experimental music that has aired on Sunday evenings in Madison, Wisconsin since 1987. He has studied feminist theory and has a unique perspective on the computer music community because of the diversity of his background.

Recently, Harvard University President Lawrence Summers issued an apology for comments he made at an academic conference on women and science suggesting that "innate differences" between the sexes may account for fewer numbers of women in elite math and science academic positions. This created a firestorm in the media, and many articles were written containing possible explanations as to why the percentage of women earning doctorates in science and engineering is considerably higher than the percentage of women professors.

Computer music straddles two worlds: science and art. The number of women in academic positions in art and music is much higher than in science and engineering, but there is still a bias toward men in the arts. Of the 861 works that Christie's, Sotheby's and Phillips de Pury & Company offered over three days starting May 10 2004, a mere 13 percent were by female artists. Sixty-one pieces were assigned an estimated price of $1 million or more; of those, only 6 were by women. Of course, the fields of art and music are vastly different, and it is difficult to put a value on art. I mention this case merely to show a concrete example of difference in gender and the arts.

Computer music exists at the intersection of the two male-dominated fields of science and art, resulting in a subgroup that inherits

stereotypes from both parents. Gregory Taylor postulates that Open Source, iPods, Intermedia and Millennials will be the key to equality among the sexes. Much progress has been made over the past twenty years, but I am still hearing stories of sexism from young women who are just entering the field. From conversations stopping when young women enter the room, to overheard gossip about women's husbands programming their computers for them, to noticing a distinct lack of representation at the higher-level conferences, women are still being discriminated against in the computer music community. It may not be the blatant sexism of the past, but worrisome conditions still exist. I believe we, as men and women straddling the dual disciplines of art and technology, need to carefully mentor the next generation of women composers and researchers to ensure equality in the future. I encourage all readers to respond with their own replies to Gregory's statement. These statements will be published in a future edition of Array.

Thank you,
Margaret Schedel, Array Editor

Thoughts on Gender and Computer Music
Gregory Taylor

I am honored (if a little surprised) to be invited to say a few things about gender and computer music. For one thing, it provides me with the instructive dilemma that gathering one's thoughts and commenting on the history through which one has moved always provides (I am old enough to recall the original ICMA meetings that began this public discussion). I am sure that there are many of you who are flush with harrowing or amusing tales of what has not changed, and who can also bear witness with greater skill than I to the string of victories—modest or otherwise—won by patient, sustained work and attention. I'd like to briefly mention some things I see as emergent features in the landscape since the 1990s, and to wonder aloud about how, if at all, they might represent vectors of change and opportunity for computer music as an en-gendered enterprise. These changes can be summed up with four recent neologisms: Open Source, iPods, Intermedia and Millennials.

It is neither surprising nor novel to note that technological advances and improvements have changed the face of computer music practice, and that a similar shift has occurred with respect to the software tools used to create music on these machines. The creation of computer music no longer involves negotiating limited access to a small number of centers of physical, intellectual and social capital. Although the Open Source movement is of recent vintage, computer musicians were among the first groups to make use of freely available source code for the purpose of creating music (cf. Cmix), and that list of programs has now expanded to include software tools such as Pd and SuperCollider, among others. While some feminists view the Open Source movement as crucial to the task of empowering women and their communities in the developing world (based upon its low cost and the ability to modify source in ways that "localize" or tailor the software to specific communities), I'd like to suggest that it may be interesting to consider questions of gender and the Open Sourcing of software in a more general context—that of intentional communities formed around the use of common tools. This slight shift in emphasis allows us to consider how the emerging Open Source movement might change the gender dynamics of computer music in ways that are qualitatively different from user communities organized around the use of proprietary or commercial software, where common use does not necessarily imply the access or the ability to engage in the transformation of these shared tools at a low level. To what extent do Open Source communities share features with more traditional software communities in terms of gender analysis?

Similarly, what effects might the arrival of new approaches toward intellectual property associated with Open Sourcing, such as Creative Commons, have on the landscape of computer music practice for the community and the for the individual composer herself?

Composition itself is and largely remains a private and personal undertaking, whose results are mediated through a set of complex social interactions whereby music is distributed, received, experienced, discussed and appreciated. While various parties have worked to create wider opportunities in these interactions as currently constituted, we are seeing shifts away from historical mechanisms for "vetting," producing and distributing music, as well as the rise of "iPod culture" as a default mode of listening—a shift away from the traditional modes and sites for listening, which involve the gathering of communities who agree to listen together, toward experiences that are simultaneously public (wherever we sit with our headphones on) and private (what we're listening to). I believe that the challenge lies not only in working to encourage diversity in the current modalities of the computer music community, but in thinking about what these shifts in enabling technologies and new forms of production, distribution and attention suggest. Are we looking at the beginnings of a discourse that allows us to surround

ourselves with voices and objects we agree with, to engage more easily in the guilt-free demonization of an "other" that the rise of Talk Radio demonstrates (remembering that we ourselves may be tempted to create our own more salutary aesthetic or political "bubble" that varies from that of others in content but not in form), and to withdraw from the communities we could be creating and nurturing with more direct engagements (whose new forms we must also imagine)? What happens to forms of mentoring (formal and informal) and the exchange of information and enthusiasms when communities become increasingly non-geolocal, and creative output comes to us as objects we interact with privately with no audiences nearby? How do we replace or account for the million little bits of back- or sub-channel information that are mediated along with the direct experience of art and persons in physical/social/communal settings as our works travel (and travel a wider and more unpredictable path) without us or our friends by their side? The so-called "second wave" feminists saw, quite rightly, that their task involved not only working to create a place for their works, but to create new contexts and discourses in which works were situated. That work continues, but new contexts are also emerging.

I also believe that recent history suggests that the nature of those contextual shifts also concerns boundaries of genre and

shifts in goals and norms that might best be described as generational. An acquaintance of mine once suggested that anyone wondering what "happened" to gender in computer music should entertain the notion that some feminists have simply decamped to newer forms that are more hospitable to them—to some new "frontier" more amenable to homesteading and settlement. As I understand it, this view argues that feminists have migrated from what we would define as the traditional boundaries of "computer music" to Intermedia in the same way that the dinosaurs evolved to become birds. I find such a Darwinian characterization exceptionally problematic, and would generally argue that feminist enterprises have been more involved in maximizing the number of places in which people are free to work (and, thus, computer music is and should remain a choice for anyone who wants to compose or create audio art) and nurturing those choices wherever they occur. But there is a sense in which the past decade has seen the emergence of Intermedia as both a new genre and a collection of attitudes about work that arguably represents a change in the landscape. If so, is this new landscape more amenable to the goals, values, and practices that thematize gender? What effect, if any, does this new landscape of practice have on the ways that computer musicians define themselves? To the extent that the current landscape of

Intermedia work and practices could be said to reflect the cultural practices of more "traditional" genres from which it is partially constituted, how might feminist analyses of those constituent practices elucidate the dynamics of new and emergent collaborative Intermedia enterprises?

In addition to new tools and new forms of activity, the intervening years since the '92 ICMA meeting have also seen the arrival of a new group of computer musicians who came of age and entered the practice with their own energies and strategies for transforming the discourse. While I find it ironic that scholarship and study about "generations in the workplace" that is intended to oil the machineries of production and consumption remains one of the primary sources of potential insight into the forms these differences of perspective may take, feminist study has consistently and properly argued that our knowledge is situated in a set of overlays of gender, class, race, and historical circumstance. While there remains a strong and widespread set of shared goals and values where issues of gender and computer music are considered, I would also argue that we have and will continue to see emergent differences within the discourse that are best characterized as generational. The older generation of women and men in our midst who worked for inclusion and greater opportunity

may now find themselves serving as "gatekeepers" to a younger group of "gen Z" or "Millennial" composers, who have come of age in a different set of historical conditions and who may view their apparently "shared" circumstances and surroundings quite differently. I would like to suggest that acknowledging, translating and reconciling differences borne of age and cultural/historical circumstance is an important part of creating a consensus that empowers communities, as well as provides opportunities for empathy, enlightenment, and personal growth.