

## **Mothers of Invention: An Afterword**

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### **Abstract**

This paper offers a personal perspective on exchanges at the 2014 NIME panel entitled *Gender, Education, Creativity in Digital Music and Sound Art*, and also draws on discussion at the 2013 Oxford MusDig *Gender Roundtable*. Neither anachronistic institutional positions in a fast evolving cultural environment, nor opportunistic promotion of market-driven education programmes doomed to swift obsolescence, is likely to foster the diversity needed to sustain new creative energies in digital music and sound art. Class and race barriers are often indissociable from those that characterise gender discrimination, but this is not just a question of intersectionality. It also concerns thinking specifically about the gendered constructions of the objects and concepts we employ, and about the objectification of gender itself. This overview of a decidedly heterogeneous array of projects and initiatives endeavours to reflect our panel's emphasis on the imperative to uphold diversity and otherness.

### **Keywords**

Diversity

Dynamic uncompromise

Sirens

Tokenism

Resilience of gendering

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### **Author biographical note**

Sally Jane Norman's theoretical and practical research in theatre and performance, art and technology, is focussed on expressive gesture, responsive systems, and broad readings of scenographic practice. Professor of Performance Technologies and Co-Director of the Sussex Humanities Lab, she works with arts, humanities, and science colleagues, teaches on the Music and Sonic Media MA, and supervises an interdisciplinary PhD cohort. As founding Director of Culture Lab at Newcastle University (2004–2009), she collaborated on Bennett Hogg's 'Music and Machines' programme (CMR issue on *Resistant Materials*, 2013). Sally Jane co-organised the Touch Festival (Amsterdam 1998) with Michel Waisvisz and Joel Ryan while serving as artistic co-director of the Studio for Electro-Instrumental Music (STEIM, 1998–2000). Dual citizen of New Zealand/Aotearoa and France, holder of a Doctorat d'état (Paris III), she is interested in transdisciplinary, transcultural energies that reach across and beyond institutions, and that promote art as a mutagen for the imagination.

‘A mind is like a parachute. It doesn't work if it is not open.’  
– attributed to Frank Zappa

Discussion at the NIME panel in summer 2014, like that at the Oxford MusDig panel a year earlier which largely motivated it, brought together diverse views as well as a heartening sense of the participants’ shared focus on issues pertaining to *Gender, Education, Creativity in Digital Music and Sound Art*, the title of our panel. More than actual divergences around the key issues raised by debating gender in the context of education, digital music and sound art, our un-easy diversity reflects differences in how we define them — differences deeply coloured by our individually situated perspectives and experiences. We may differ, for example, with respect to how far we dissociate factors pertaining to gender specificity, from wider socio-cultural contexts — i.e. how we demarcate discrimination associated with class or race from that related to gender. We may consider that gender biases in digital music and sound art education reflect those widely observed in STEM (Science, Technology, Engineering Mathematics), and consequently prioritise STEAM campaigns to bring Arts into the acronym. We may doubt the aptness of education institutions to host transformative, gender-related challenges, and seek solutions elsewhere. We may query the relevance of different temporal and or geo-cultural foci, particularly in our global, networked (albeit unevenly) world. We may favour pluralistic perspectives to get beyond stereotyped replacements of one hegemonic system by another, or beyond simplistic heterosexual visions that stifle the performative aspects of gendering. These issues are all relevant to the problems we seek to address. The question remains as to how they can best be defined and framed so we can effectively deal with them.

Georgina Born’s and Kyle Devine’s (2015) study of British university cohorts involved in music technology programmes and ‘digital art musics’, with its related set of open questions, offered a concrete starting point for our panel exchange. While itself not deemed hugely surprising by our panelists or audience discussants, the gender imbalance highlighted in their study triggered a range of responses. Such responses engaged with the UK institutional dynamics (or lack of) surrounding our topic, while delving into feminist and noise studies, DIY and maker communities, and the mutability of cultural stereotypes. Above all, though, our encounter was characterised by the shared valuing of diversity and ‘epistemological pluralism’ (Turkle and Papert, 1990)<sup>1</sup> that drives our respective trajectories : independent of our institutional links ranging from firmly established to extremely tenuous, panelist trajectories represent different modes of engagement with education, digital music and sound art, covering a broad spectrum of academic, independent arts, and activist initiatives. This paper picks up on threads contributed by co-panelists, weaving in further materials to loosely reformulate and re-focus some of our questions, in the hope of encouraging continued dialogue.

### **Slippery and scrambled perspectives**

Anachronistic institutional responses to changing intellectual, artistic, and professional needs, coupled with competitively anticipatory industrial marketing, are two of many factors that set domains like digital music and sound art on slippery temporal horizons. In the education sector, this slippage requires effort both to catch up, to instill contemporary relevance into academic programmes, and to slow down, to avoid obsolescence and dependency traps built into creative industries investment strategies. Slippage also has its advantages: institutional inertia is the flipside of the humanities’ strength to develop deep,

critical scholarship; conversely, chronically stalled governance bodies may be goaded into action by nagging industrial imperatives.

Tensions like these scramble timescales. We forget, for example, that Sherry Turkle's insightful comparison of goal- and control-driven 'hard' computer mastery with chance-inspired 'soft' styles was published the year Macintosh's sledge-hammer wielding heroine, Anya Major, destroyed the big-brother empire (1984), thus dramatically symbolising nascent interest in embodied, 'soft' conceptualisations of digital technology alongside 'harder' visions (Turkle, 1984).<sup>2</sup> As this co-incidence itself suggests, gendering can be construed as mutable by virtue of its specific, situated aspects (Simon Waters): gender, education, and digital media have all evolved substantially in recent decades, as has the influence of feminist studies. This evolution may demarcate today's ecologies of practice from, for example, those featured in the 'gender in music technology' issue of *Organised Sound* edited by Hannah Bosma in 2003. It however fails to resolve pressing matters like the persistent and toxic lack of visibility of women's sound art practices (Cathy Lane), or the gender imbalance of UK music technology cohorts (Born and Devine 2015). Meanwhile, problems raised in the course of gender- and education-focussed discussion remain inextricably mixed with those of 'racial, cultural, and class privileges in technologically driven music'.<sup>3</sup>

Instead of glossing over the multiplicity if not incompatibility of individual views, frameworks that can accommodate this diversity might allow leveraging of critical and historical stances to give weight to urgent concerns. More representative, actionable positions might be attained by what Geoff Bowker (2000, p. 15) calls 'dynamic un compromise between agonistic groups', integrating vital contradictions into the very creation and structuring of collective positions.<sup>4</sup> In keeping with transdisciplinary research principles (Pohl and Hirsch Hadorn, 2007), this means reckoning with complexity when we contextualise a given problem, recognising the different perceptions this contextualisation includes or excludes, and identifying critical stakeholders and needs. Pohl and Hirsch Hadorn suggest distinguishing between three kinds of knowledge to inform reflection and action in complex domains: 1) systems knowledge, where we frame questions to discern the genesis and development of a problem, its real-life interpretations and instantiations; 2) target knowledge, where we frame questions to determine and explain the need for change, desired goals, and better practices, and 3) transformation knowledge, where we frame questions to identify technical, social, legal, cultural and other means of acting that aim to transform existing practices and introduce desired ones. While it would be incongruous to try and retroactively map this framework onto our wilfully open NIME panel discussion, it points to mappings that might be used in future to collectively tackle, and perhaps reduce with minimum compromise, the complexity of the problems we are trying to deal with.

### **Sirens, witches, and cyborg bitches**

Sirens resounded throughout our panel: Marie Thompson's vision of the 'feminizing noisemaker' siren, a mythical fusion of bird and woman that drives men mad, allies this creature to the gossip and the 'hi-fi wife' (see also Thompson 2013). Thompson compares Claude Shannon and Warren Weaver's definition of noise as a disruptive factor in communications processes with Henri Atlan's claims that noise is qualified as such according to one's position within such processes, and that distortion and complexity can give rise to new orders as well as negative interference. Feminist writing abundantly challenges assumptions that accord theoretical models primacy over empirical phenomena, as per Donna

Haraway's 'situated knowledges' (1988). Tara Rodgers contributes to this line of critique, setting aspects of sound and audio technologies in contexts that 'denaturalize common ideas in audio-technical discourse that are inherited by contemporary practitioners as neutral, epistemological 'truths' and without history' (Rodgers, 2001, p. 511). Drawing on Rodgers *et al.*, panelist Holly Ingleton brings another kind of siren into the mix: August Seebeck invented the polyphonic siren in 1841 to explore our ability to hear non-isochronic pulses, arguing for empirically researched perception. As Ingleton points out, Seebeck's findings, which challenged idealisations of the 'pure tone' as a sine wave (Ohm), could have underpinned radical alternatives to conventional readings of tone and pitch, introducing a new and legitimate focus on timbral variations. Heteronormative abstractions have however tended to override such grounded approaches, in the sonic domain as elsewhere.

Like women's music that has been denigrated because of 'the conflict between the cerebral connotations of the act of composition and the bodily connotations of femininity' (Green, 1997, p.113), embodied understandings of tone and noise, hearing and acoustics that take into account real-life anchorage in domains such as race and gender have most often lost out to purportedly objective theorisations. Yet a growing body of work—by women, men, and artists who refuse gender-locked identities—is challenging the longstanding predominance of cerebral, purportedly disembodied values. Inspired by Haraway's cyborg noise politics (cited by Thompson), denunciations of hidebound traditions can be loudly heard all round, including those voiced by the TransHackFeminist manifesto in the following extract:

*We are geek whores, cyborg bitches (...)*  
*We scream noise and cyborg covens,*  
*soldering and alchemy,*  
*we spit out performances and install gnu-linux (...).*  
*We parody what is socially understood to be feminine, what is supposed to be masculine.*  
*We question the identity of assigned genders,*  
*we exaggerate it, ridicule it. ([http://pechblenda.hotglue.me/?transhackfeminism\\_en](http://pechblenda.hotglue.me/?transhackfeminism_en)).*

Male stereotypes being as prevalent and unhelpful as female ones (Waters), the TransHackFeminists' injunction to question assigned gender identities is indispensable to get beyond what Barry Truax has described as 'techno-macho' culture (Truax, 2003). Feminist and queer studies scholarship is by no means a female (p)reserve and, at the same time, much scholarship by women (like much by men) is not couched a priori in gender specific terms. To recognise that the situation is consequently richly nuanced is not to say that we need not address inequalities and their causes, but that we must avoid repeating superficial categorisations that are themselves at the heart of the problem. Replacing a dominant (patriarchal) construct by another (matriarchal) one merely reinforces unhelpfully binaristic models. Equally problematic, however, is the dissolution of boundaries suggested by post-structuralist readings of masculine–feminine metaphors and practices as solely performative and contingent.<sup>5</sup> Such views may lead to further underestimation of structural or enduring inequalities and imbalances that require urgent corrective action. While concepts of performativity can certainly help to fire narratives of difference and alternative visions of empowerment, to presume that deeply instated socio-cultural boundaries might be miraculously transcended thanks to reformulated discursive frameworks is to run the risk of hegemonic re-colonisation of fragile areas naively left up for grabs. As noted by Haidy Geismar during our Oxford MusDig discussions, our commitment to holism dissolves categories, and at the same time allows us to investigate and excavate those categories and the power dynamics they represent. The implementation of holistic power dynamics without duly

investigating and excavating the structures thereby replaced may irremediably disenfranchise those whose interests it purports to defend.

Another issue that confounds simplistic analyses of gender stereotypes and power structures is the fact that they are often vigorously reinforced by professionally ‘successful’ women, including (if not especially) in so-called creative industries areas like digital music and sound art. Whether they are viewed by others or by themselves as token representatives admitted to a malestream power system, women may feel the need or desire to endorse gender stereotypes even more forcefully than their male counterparts.<sup>6</sup> As a result, instead of heightened diversity across arts demographics, we end up with deadly forms of ‘equality’ that reduce unequal binaries to their stronger term, which thus subsumes the weaker element and aggravates an already oppressive denial of difference.

Truax wryly asks whether, if everyone gains the opportunity to sound alike, this will be called equality. Taking issue with mainstream gender models in electroacoustic music, he notes that if art mirrors society, and if you look in the mirror and see no reflection, then the implicit message is that you don't exist (Truax, 2003). Instead of this bleak non-existence, Truax sees new sound technologies as offering potentially powerful means for alternative voices, freed from traditional constraints. And as Cathy Lane insists, the prerequisite for realising any such potential is the radical reframing of our histories, theories, orthodoxies, and categories.

### **Institutions, ek-stitutions, collectives**

How (higher) education institutions might best contribute to such radical reframing is an open question. Techno-utopian discourse, like that rife in UK universities competing for student-clients with promises of alluring creative professions (another kind of siren), tends to consolidate, rather than challenge, main- or malestream stereotypes. At the same time, opportunistically practice-obsessed rhetoric devalues the deep and extensive critical scholarship in which such institutions traditionally excel, and which is equally key to sought reframing processes (Grusin, 2013). For universities to remain viable creative environments, rather than costly credentialing establishments (Stone, 1999), we must find ways to meet this challenge. Some structures are uniquely equipped to do so: as panelist Freida Abtan affirms, arts institutions can correct for bias in the social sphere (economic barriers notwithstanding), allowing the acquisition of techniques including crucial social skills that enable artists to generate contexts for their work. Regarding the declared aims and names of pedagogical programmes, catchy, market-driven emphasis on the digital or the technological soon wears thin, prompting quests for more expansive and comprehensive cultural and organological histories (Waters). There is also a need to uphold porosity across curricula to let students evolve in keeping with emerging interests, in the face of increasing pressure associated with expensive, vocationally-targeted higher education. This requires dogged work in areas like timetabling, equivalent credits, electives, etc.—in short, dry, pragmatic tasks on which the effective implementation of new content-based initiatives depends.

In principle, there is of course plenty of scope for content design to contribute to the needed reframing of educational programmes. Taina Riikonen’s ‘Gender Issues in Sound Studies’ programme, at Media Lab, Aalto University, is structured by means of exploratory topics related to the acts of listening, vocalizing, and sensing.<sup>7</sup> Through emphasis on verbs, Riikonen asserts a thoughtful politics, foregrounding the embodied, sensory/sensual

knowledge, and somewhat random, self-taught, experimental qualities she considers characteristic of many women's contributions to the broader realm of sound arts (encompassing sound studies, electroacoustic music, and music/sonic performance). Riikonen contrasts these qualities with the aesthetic, compositional, and more formal authorial characteristics that often demarcate masculine contributions to the field. By designating acts of doing and meaning-making, and the importance of sensuous knowledge in the realm of sound arts and sound studies, approaches like Riikonen's generate different pedagogical contexts from those conveyed by conventional thematic groupings of composers, works, cultural movements, institutional or socio-economic entities. There are good reasons not to expect women (or men, or anyone) to engage with the jaded stereotypes attached to many music technology programmes and their wider pedagogical settings. Insights to help reframe our institutional and educational offerings can be gleaned from within our community if we devise appropriate channels and ethics for sharing experience. Given the ferocity of inter-institutional competition, this means careful work and a real commitment to reciprocity.

Beyond institutions, informal structures and initiatives can be well placed contributors to the shakedown of orthodoxies needed to stimulate diversity in digital music and sound art, and better-honed educational settings. It would be paradoxical, to say the least, to expect a call for diversity to be adequately answered by a body of more-or-less like institutions with ultimately similar goals. As Florian Schneider notes, deinstitutionalization and deregulation arising from digital technologies and networks have steadily undermined public institution monopolies over the manufacturing of knowledge (Schneider, 2010). This unstable context is productively exploited by initiatives like panelist John Richards' Dirty Electronics, a community crafted outside the academy to focus on shared experience and social interaction, ritual, gesture, and touch. Roving from workbench invention of instruments to their very open public performances, Dirty Electronics dissolves gender and other social stereotypes in vibrant new mixes of skills and energies.

Collaborative, cooperative dynamics are integral to much contemporary technology-based creation, and open source software and hardware are thriving in the area of digital sound. Active since 1997, the Brussels-based Constant collective engages with the ways technological infrastructure, data exchange, and software condition our daily lives, through a community-oriented programme focussed on cyberfeminism, free software, and copyright alternatives: 'The publishing of sources is to share mistakes and solutions. (...) Software in progress is learning in progress and learning in motion' (Constant website publication).<sup>8</sup> Learning in motion is a hallmark of artist Sher Doruff's ten-year involvement building, monitoring, and refining KeyWorx, a distributed, multi-modal, synchronous media platform for online multi-user artist collaborations. Hosted by the Waag Society for Old and New Media (Amsterdam), KeyWorx was a unique pioneering initiative geared towards collaborative aesthetics through its mobilisation of novel social software affordances. As well as spawning significant publications, KeyWorx has inspired groups in numerous educational and cultural institutions that have hosted workshops led by Doruff and her Waag collaborators.<sup>9</sup>

Mobility across and between different types of organisations can play a vital role in the reframings of our histories, orthodoxies, and categories. Like the shared pedagogical experiences mentioned above, this demands that we be mindful of how we can ethically and effectively achieve reciprocity amongst non-symmetrical players: institutional position-holders sometimes entertain visions of their own magnanimity that ring strangely with their non-institutional counterparts. That said, Schneider describes productive iterative movements

between institutions and ekstitutions, where he describes the latter as networked environments, deinstitutionalised and deregulated spaces such as informal networks, free universities, open academies, squatted universities, night schools, or proto-academies. Border economies allow a wide variety of actors to switch from institutional to ekstitutional mode and back. This type of mobility translates as the dual or multiple roles assumed by many people who work across boundaries to invest in, and reinvest the dynamics of different communities into, artistic and academic research.

### **Electric Ladyland and other uncharted terrain**

An issue raised at our NIME panel, as at the MusDig event which prompted it, was the general lack of visibility surrounding women's sound art practices. Drastic remedies like gender quotas in performance programmes, publications, and curricular design trigger mixed feelings, since their reinforcement of stereotyped identities readily leads to oppositional, antagonistic rather than constructively agonistic situations. Here as anywhere else, simplistic, often transient inversions of values are unlikely to yield the sought diversity and fluidity — on the contrary. Yet there is a case for foregrounding inspiring work that gets beyond tokenistic nods to gender, as the following examples attempt to demonstrate.

NIME 2014 keynote Laetitia Sonami, erstwhile student of electronic music composer Éliane Radigue, simultaneously undercuts and underscores sexual stereotypes with poetic exuberance. Her NIME lecture-performance featured the 'Lady's Glove', a black lycra, sensor-packed glove that she describes as sexy, French and feminine, and which she initially designed as a part playful, part irritated response to heavy-handed DataGlove and Power Glove type gesture controllers that were sweeping through the interactive arts and gaming worlds.<sup>10</sup> Several of Sonami's 'glove' creations have drawn on texts by performance-oriented writer Melody Sumner-Carnaham, but at NIME Sonami modulated her own words, moving uncannily from a speaker's standard introductory formulae to a bewitching sonic environment, spectacularly gesturally tuned. Her 'keynote' was uniquely deserving of this sometimes underrated term and office.

Like many electronic music and sound artists enthused by DIY, Sonami evokes the excitement of the analogue circuit, which has a 'palpable causality that you don't understand, but (that) is left to be deciphered, like magic' (Sonami interviewed in Rodgers, 2010, p. 228). Darsha Hewitt's *20 Oscillators in 20 minutes*, a feat that took place during one of the MusDig Oxford performance evenings, is full of such noisemaker siren magic. In contrast to Tetsuo Kogawa's performances that have captivated generations of audiences with his calm building and implementation of radio transmission equipment, Hewitt's race to make twenty sound-generating square wave oscillators in twenty minutes, fabricating circuits with wires, chips, small components and nine volt batteries, opens up adrenalin-filled realms of performance virtuosity. The image of the artist deftly crafting her intricate sonic materials, working like an alchemist or jeweller at a brightly lit table in a dark, crowded room, a large hand-drawn score projected on the wall behind her, was captivating. Contagious jubilation as she progressively layered the oscillators' audible, rhythmic weave reached a peak when she activated the twentieth circuit on time.<sup>11</sup>

Another NIME event that opened up scope for forms of agency beyond dichotomies of the embodied and the computational was Marije Baalman's *Wezen-Gewording* performance, which explores links between physical and sonic gesture through combined body movements

and live coding.<sup>12</sup> In this steadily evolving piece, Baalman's gestural data controls the sonic output and is recorded and looped, while the code mapping data to sound is manipulated live with SuperCollider. The artist navigates between her laptop and a free-standing position facing the large central screen on which the process is projected, letting the audience discern links between gesture and sound as she activates wireless accelerometer controllers on her hands and wrists. In her focus on the composition of behaviours and interaction modalities, Baalman mobilises both her expertise in applied physics engineering and her social networks as a committed contributor to open source communities.

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'My mother was a computer', the startling assertion that begins Chapter 6 of Anne Balsamo's *Technologies of the Gendered Body*, is often cited without its next clause, 'but she never learned to drive' (Balsamo, 1996, p.133).<sup>13</sup> For all their technological evolution, the 'soft' computational and 'hard' mechanical functions Balsamo evokes remain as entangled now as they probably were for her comptometry-certified mother who, after learning to operate an electromechanical calculator mid-way through the last century, was replaced by another machine. Today, women's coding skills are personified by legendary figures like Ada Lovelace and the Bletchley Park Enigma team, while those gained in the course of two World Wars by female mechanics, engineers, builders of ships, aircraft and weapons, and drivers of all manner of vehicles are well recognised. Equitably gendered engagement with contemporary digital music and sound art practices, however, seems to stay curiously out of reach.

The present paper holds no answers to this problem. Rather, it stresses the need to resist over-simplification of its multiple, intertwined roots, and to prioritise problem-framing efforts that respect 'epistemological pluralism' and the agonistic implementation of 'dynamic uncompromise'. Expedient categorisations risk entrenching heteronormative stereotypes, thus inhibiting the potential diversity offered by novel creative resources. Instead, focus on evolving differences and resonances throughout our communities of practice might lead to fuller forms of engagement. If we want to account for the resilience of observed gendering and the reproduction of imbalanced musical literacies, we need to recognise these differences and resonances, avoid tokenism and fleeting celebrations of simplistic value reversals, and above all continue working 'on the ground', in ways that treasure diversity and complexity.

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## Notes

<sup>1</sup> Term used to denote acceptance of the validity of multiple ways of knowing and thinking.

<sup>2</sup> See also Victoria Armstrong, 2010, who analyses the kind of 'hard' and 'soft' mastery discussed by Turkle, in the specific context of music composition.

<sup>3</sup> From the *Leonardo Music Journal* call for papers for its upcoming edition on 'The Politics of Sound Art'.

<sup>4</sup> Bowker proposes to thus resolve the integration of distinct but enmeshed types of data in biodiversity databases.

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<sup>5</sup> Jonathan Sterne emphasised this point during our Oxford MusDig conference discussion.

<sup>6</sup> This point was made at our panel by Cathy Lane, and at the previous Oxford MusDig conference session by Lane, Sterne, and Victoria Armstrong.

<sup>7</sup> Personal correspondence. Riikonen's responses to my questions exemplify the kind of generous, shared commitment this paper and our panel seek to promote. I am grateful to Antti Ikonen, from Media Lab Aalto, for creating this link to his colleague and collaborator Taina Riikonen.

<sup>8</sup> See <http://www.constantvze.org>. I am appreciative of our NIME panel reviewers' emphasis on the importance, in this context, of critical Free Software/ DIY/ Maker communities, and on their signifying the exemplary work undertaken by Constant.

<sup>9</sup> See <http://spresearch.waag.org/papers.html>.

<sup>10</sup> See <http://sonami.net/works/ladys-glove/>. Sonami's first version, for *Mechanization takes Command*, a 1991 Ars Electronica collaboration with Paul DeMarinis (who used a Power Glove), employed housewives' rubber kitchen gloves, while the latest lycra version was developed around 2003 by Bert Bongers from the Studio for Electro-Instrumental Music, and employs STEIM'S Sensorlab. Gesture controllers have long been a STEIM hallmark, including Michel Waisvisz's wooden 'Hands' built in 1984.

<sup>11</sup> See [www.darsha.org](http://www.darsha.org).

<sup>12</sup> See <https://www.marijebaalman.eu>.

<sup>13</sup> Truncation partly imputable to N. Katherine Hayles' book entitled, *My Mother Was a Computer. Digital Subjects and Literary Texts* (2005), which acknowledges the appropriation of Balsamo's words.