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CHAPTER THREE

“THE MUSIC ONE PARTICIPATES IN”

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1. Introduction

Content created by users is a public affair. In the cultural field of music, this includes diverse activities of listening, sharing, editing, recording. Jacques Attali predicts that music will become a network of *composition*, where people actively participate in music-as-process, as a form of collective play [Attali, 1985]. Christopher Small coined the term, *musicking*, to describe music as a social act [Small, 1998]. This sets a context of participation for acts of sound making practice - how can composers, authors, and artists conceive of new forms of music where the listener enters into the process of co-creation?

Barthes [Barthes, 1977] divides music into two categories: the music one listens to and the music one plays. The former occurs when people engage passively with sound representations through the act of listening. The latter occurs when people subjectively engage in the creation of sound where listening takes on a subordinate role. In recent sound making practice, the boundary between the two is becoming increasingly blurred. Here, we describe a body of musical work where people subjectively engage with sound representations through listening and simultaneously engage with the creation of sound. In these pieces, each person is a listener of others, and a performer to others. We describe this practice as “the music one participates in”.

In such a dynamic of participatory creativity, traditional distinctions between musicians (composers, performers) and audiences, or, for that

matter, between musicians and non-musicians become less clear. Conventional musical training and skills, while still useful, are no longer an absolute requirement: each participant, regardless of level of training, is able to produce something they could call and enjoy as “music”. [Auslander, 2000]

Cooperation and collaborative musical experiences [Blaine and Fels, 2003] and interconnected musical networks [Weinberg, 2005] have been discussed mostly from the point of view of interactive technologies. Here, we focus on the human dimensions of participatory sound making practice. In this, we are not conclusive about the fastened role of people in music making. Our emphasis instead is on the boundary of the roles and the dynamics of participation.

We consider the meaning of participation by looking at various roles in sound making practice. While this includes familiar roles such as composer, conductor, or performer (i.e. artist), in contemporary sound making practice they have gradually shifted. We see a shift of focus from the listener as consumer, who once passively received sound representations to becoming an actor, or actant, actively involved in sound production.

2. Participation

Participation has been discussed in fields ranging from education through social science to contemporary art. Lave and Wenger view learning as situated activity [Lave and Wenger, 1991]. Drawing on examples of practice from apprenticeship systems they describe the process by which newcomers become part of a community of practice. They argue that the mastery of knowledge and skill requires newcomers to move toward full participation in the socio cultural practices of a community.

In the social sciences, Arnstein defines broad three levels of citizen participation: *non-participation*, *tokenism*, and *citizen power* within which are eight rungs (from *manipulation* to *citizen control*) [Arnstein, 1969].

... “non-participation” that have been contrived by some to substitute for genuine participation. Their real object is not to enable people to participate in planning or conducting programs, but to enable power holders to “educate” or “cure” the participants.

... “tokenism” allow the have-nots to hear and to have a voice. When they are proffered by power holders as the total extent of participation, citizens

may indeed hear and be heard. But under these conditions they lack the power to ... changing the status quo and retain for the power holders the right to decide,
 ... “citizen power” ... increasing degrees of decision-making clout. ... enables participant to negotiate and engage in trade-offs with traditional power holders. ... have-not citizens obtain the majority of decision-making seats, or full managerial power.

In the area of contemporary art, Bishop describes the social dimension of participation in art practices that strive to collapse the distinction between performer and audience [Bishop, 2006]. She observes three motivating agendas: 1.) activation to create subjects who determine their own social and political reality in a work, 2.) authorship to cede control of a work entailing aesthetic benefits of greater risk and unpredictability, and 3.) community as the social bond through a collective elaboration of meaning.

3. Musical Participation

In order to map these sociological notions of participation to the open-ended potential of music noted by Attali, Barthes, and Small, the sustainability of musical communities and methods for encouraging participation become crucial. Here we adapt Arnstein’s three levels of participation to explore different means of participation in sound making practice. We are interested in understanding and supporting how people engage socially with music. Instead of directly proposing new modes of musical production, we propose ways of looking at emergent creative situations that may lead to new forms of musical engagement.

We propose a matrix that maps Arnstein’s levels of participation against four different perspectives of sound making practice. Drawing upon acoustics, computer music, and performance theory, we identify the perspectives: *sound*, *instrument*, *process*, and *performance*. We validate the matrix by using it to describe existing works from experimental music, contemporary art, and new media. We then apply the matrix to specific examples from our own sound-based artistic projects where participation was a fundamental element. By doing so, we hope to elucidate the boundary across artistic roles and the dynamics of participation.

3.1 Four perspectives of sound making practice

3.1.1 Sound

We begin by considering acoustics as a way of distinguishing sound making practice from music. Acoustic sound is defined as the coupling of resonating bodies in a fixed or dynamic relationship. With electronic sound, the relationship becomes decoupled – sound and the resonating body can be considered independently [Bongers, 2007]. As a definition of sound, we follow the notion of timbre, “the attribute of sensation in terms of which a listener can judge that two sounds similarly presented and having the same loudness and pitch are dissimilar” [ASA, 1960], and extend the notion from notation-based musical representation to naturally occurring aural phenomena. People articulate their expression of sounds through the control of parameters that include but are not limited to pitch, volume, spectral shaping, and timing.

3.1.2 Instrument

We distinguish the set of objects that people manipulate to produce sounds as musical instruments. The range of objects can be diverse, from acoustic instruments through electronic equipments, to recorded media. An instrument is able to change musical context and produce different kinds of music, at the same time similar sounds can be created from different instruments. How we choose to control instrumental parameters affects the perception and the playability of the instrument [Hunt et al, 2002]. We distinguish the idiosyncratic, expressive quality of instruments from the utilitarian quality of tools. A musical instrument is not meant to carry out a single defined task in the way that a tool is. Instead, a musical instrument is able to change context, withstanding changes of musical style played on it while maintaining its identity. What might be considered imperfections or limitations from the perspective of tool design often contribute to the personality of a musical instrument [Tanaka, 2009].

3.1.3 Process

We define the sequence of actions that people carry out during their participation as process. In the traditional classical orchestra, the composer’s score provides indications for the performers. Process in this case is the execution by instrumentalists of notated representation of music written by a composer as indicated by a conductor. Likewise the process of music listening in a concert is the ritual of seating, listening, and expressing appreciation by applause. In other sound making practice, these procedures range widely from designing instructions for game-like

processes [McClary, 1986] to reaction to and from the others in improvisation [Bailey, 1980].

3.1.4 Performance

Schechner defines performance as “an activity done by an individual or group in the presence of and for another individual or group” [Schechner 1988: 22]. We follow this and draw upon Goffman’s notion of social performance [Goffman, 1959] to consider people’s listening and participatory musical activities as dramaturgical interaction, and thus forms of performance.

The position and resonance of sound define acoustic fields of space. The parameters allowing manipulation of an instrument provide diverse forms of playability. The movement of other participants by process result in dynamic change of sound localization. Depending on sound, instrument, and process, performance varies its scope from individual episodes to shared practice.

3.2 Participatory Matrix

By placing Arstein’s three levels of participation in the vertical axis of a grid, and our four perspectives of sound making in the horizontal axis, we arrive at the matrix in Table. 3-1.

Table. 3-1: Matrix of Music One Participates In

	Sound	Instrument	Process	Performance
Citizen Power				
Tokenism				
Non-participation				

In the first column, we see different levels of participation with *Sound*. In column 2, we see the levels in *Instrument*. The level of participation represents the choice of sound-making object to produce musical output.

While an instrument is highly coupled with the sound it produces, the respective roles of an instrument and sound produced in a musical activity are distinct from a participatory point of view. Column 3 covers different *Processes* for participation, linking method and behavior to sound-making practice. In the last column, we see varying participatory levels in *Performance*. Following our definition of performance as one that is inherently social, we focus on participants’ potential for listening linked to playing that create forms of exchange during sound-based activity.

4. Examples

To illustrate the matrix, we situate existing works on the matrix. These works range from traditional musical ensembles through historical avant-garde compositions to sound-based works in the field of media art.

Table. 4-1: Matrix of music one participates in existing musical practice

	Sound	Instrument	Process	Performance
Citizen Power		Drum Circle Dialtone	33 ⅓	Orchestra (Performer)
Tokenism	Drum Circle Orchestra 33 ⅓		Orchestra (Performer) Drum Circle	Drum Circle 33 ⅓
Non-participation	Dialtone	Orchestra 33 ⅓	Orchestra (Audience) Dialtone	Orchestra (Audience) Dialtone

4.1 Classical Orchestra

The classical orchestra typically performs and interprets music notated in score form. The score, as written by the composer is regarded as the original work and the performance is an act of interpretation, a medium to pass the experience of the work to the listener. An instrumentalist in the orchestra engages at several levels of participation. As the score indicates precise instrumentation, participation at the *Instrument* level can be considered *<Non-participation>* in the sense that the instrumentation or orchestration of a traditional symphonic work is not actively modified by

performers. Meanwhile, the performer articulates tonal expression through interpretation of dynamics markings in the score. From the point of view of tonal, timbral, thereby *Sound* participation, we can say that the instrumentalist's participation is situated on the matrix at *<Tokenism-Sound>*, that is to say, that the participant (instrumentalist in this case) “hears and is heard” (their interpretation has a real impact on the resulting music), but do not engage at the level of “changing the status quo” (do not actually alter the structure of the composition). The act of performing from a score, and following a conductor is a process we consider to be *<Tokenism-Process>*. Here the notion of “hear and is heard” point out the interaction between conductor and performer. A successful orchestral performance is contingent not only on the precision of the score or the quality of the conductor, but on inter-performer communication that lies at a level of subtlety between the written note and between the conducted beats. The orchestra member's engagement with this act of listening-as-performance is crucial to the success of a concert, and ultimately gives members of the orchestra a form of *<Citizen Power-Performance>*.

The audience of an orchestral concert experience in a concert in a way markedly different from the performers. Members of the audience are typically assigned pre-assigned seating, and thus fixed spatial and temporal occupation at the venue, resulting in *<Non-participation-Process>*. They are not able to influence the event, and so the act of communicative listening amongst audience members remains at *<Non-participation-Performance>* in the matrix.

4.2 Drum Circle

A drum circle is a group of people playing drums together in a self-organized fashion. Stevens [Stevens, 2003: 13] describes the principles of drum circle as follows: “There is no audience”, “There is no rehearsal”, “There is no right or wrong”, “There is no teacher”, “It is inclusive”, “Spontaneity thrives”, and “It's about more than drumming.”

In this practice, the sound and the instrument are tightly coupled as a form of extended “drum.” People manage their own drumming within the constraints of (*<Tokenism-Sound>*) the drum of their choice (*<Citizen Power-Instrument>*). There is no score, but the pulse and foundational rhythm are set by a facilitator, *<Tokenism-Process>*. The performance has a duality of self-expression and the unity of group rhythm, open

contributions to collective rhythm that is nonetheless implicitly guided by a named or unnamed group leader, resulting in *<Tokenism-Performance>*.

4.3 33 ⅓ [Cage, 1969]

33-⅓ is a work by the American composer John Cage. In the work, people enter a room where a set of turntables and more than 200 vinyl records are arranged on tables around a room surrounded by speakers *<Non-participation-Instrument>*. Despite the lack of explicit instructions *<Citizen Power-Process>*, people are able to play records on the turntables, resulting in *<Tokenism-Sound>*. The selection of which record and music to play is left with each participant, who listened to what music other participants were then playing *<Tokenism-Performance>* [Hitchcock, 1992].

4.4 Dialtones (A Telesymphony) [Levin, 2001]

Dialtones (A Telesymphony) is a work whose sounds are produced through the audience’s own mobile phones *<Citizen Power-Instrument>*. Participants are assigned the seat at the site and new “ringing tones” *<Non-participation-Sound>* are automatically downloaded to their mobile phones. During the performance, the artists dial the telephone numbers of the audience, causing their mobile phones to ring. While audience member's telephones are used as instruments, they actually have no control in how they are used, resulting in *<Non-participation-Process>*. With their spatial position and sounds from their own phones, people listen spatially distributed melodies and chords determined entirely by their fixed seating and dialing activity by the artists, creating ultimately *<Non-participation-Performance>*.

5. Own Practice

While we are able to apply the matrix to existing musical works, they were most likely not conceived with the forms of participation we describe here in mind. In this section, we present several works from our own artistic practice that were designed specifically to be participatory in the sense proposed here. We begin by describing two projects of The SINE WAVE ORCHESTRA, “Stairway” and “stay”, the Chiptune Marching Band (CTMB) and the locative media work Net_Derive. We then compare and contrast the two of The SINE WAVE ORCHESTRA works in detail.

5.1 The Stairway of The SINE WAVE ORCHESTRA

The SINE WAVE ORCHESTRA (SWO) is a sound performance project that creates participatory sound representations since 2002 [<http://swo.jp/>]. Ken Furudate, Kazuhiro Jo (co-author here), Daisuke Ishida, and Mizuki Noguchi are the core organizers of the project. Under the basic concept that each participant plays a sine wave <*Non-participation-Sound*>, people are invited to create a sea of sine waves as a collective sound representation [Jo et al, 2008].

Table. 5-1: Matrix of music one participates in own practice

	Sound	Instrument	Process	Performance
Citizen Power	Net_Derive	Stairway (own) CTMB	Stairway (provided) CTMB	Stairway CTMB
Tokenism	CTMB		Stairway (own) stay Net_Derive	stay Net_Derive
Non-participation	Stairway stay	Stairway (provided) stay Net_Derive		

In “Stairway”, the public are invited to participate via website and mailing list announcements. The organizers provide the participants with 50 instruments to play sine waves <*Non-participation-Instrument*>. The frequency and volume of a sine wave change depending on the amount of light the instrument receives. Some people bring their own instruments (e.g., laptop PCs and synthesizers with speakers) <*Citizen Power-Instrument*> to play sine waves freely at varying frequencies and volumes <*Citizen Power-Process*>.

In a 2004 performance in Tokyo, 200 participants came and played sine waves on the instruments for about two hours at dusk in the large public

area of a building atrium. Because of a decrease in sunlight at the end of the day, and the light sensitivity of the instruments provided, people gradually gathered around building lighting fixtures [Figure. 5-1] <*Tokenism-Process*>. Participants moved around the atrium on their own accord and listened to variations of sine waves at each specific location they occupied <*Citizen Power-Performance*>.



Figure. 5-1: The Stairway of The SINE WAVE ORCHESTRA

5.2 The SINE WAVE ORCHESTRA stay

“stay” consists of a set of controllers and multiple loudspeakers horizontally mounted on the wall in an echoless chamber <*Non-participation-Instrument*> (Figure. 5-2) [Jo et al, 2005]. People select the frequency and the loudspeaker position of a sine wave with knob controllers and then add their sine wave to an accumulated sum, creating a collective sound representation <*Tokenism-Process*>. During a 2005 exhibition, about 8,000 people participated in the work. Depending on the

moment of their participation, people hear changes in the collective sound representation from one where each sine wave is discriminable to one where clusters consisting of mutually interfering sine waves to white noise that contains all frequencies <Tokenism-Performance>.

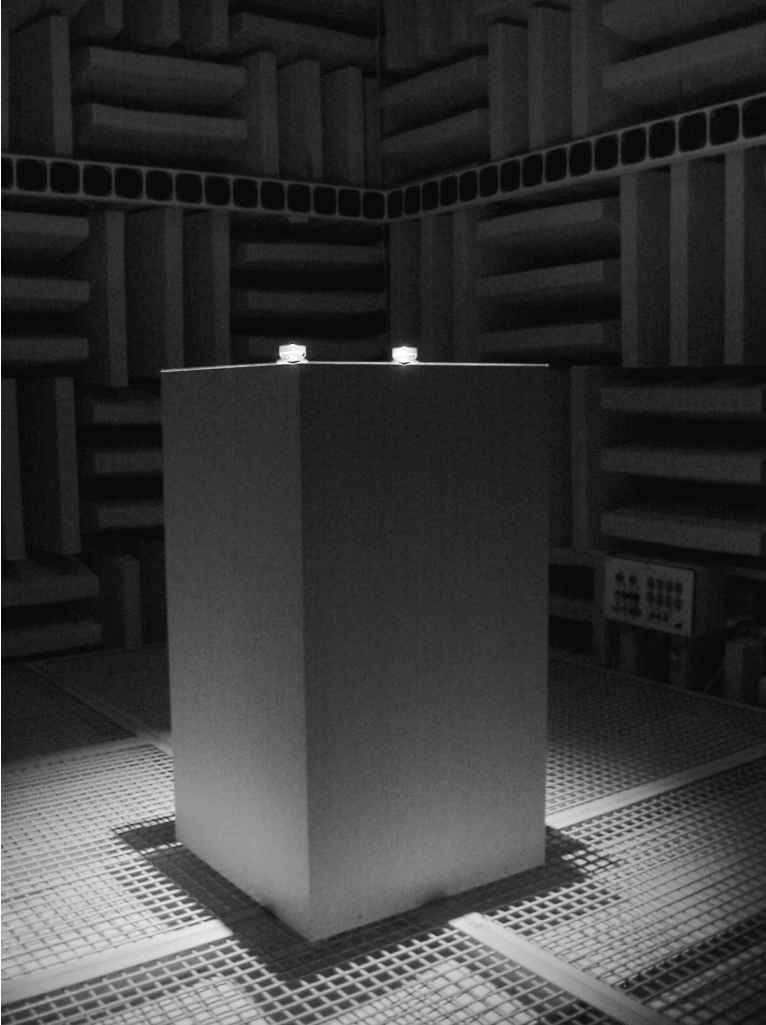


Figure. 5-2: The SINE WAVE ORCHESTRA stay

5.3 Chiptune Marching Band

Chiptune Marching Band (<http://chiptunemarchingband.com>) is a public workshop and performance that invites people to learn about self-generated power resources, sound producing electronic circuits, and takes part in collective street performance [Allen, Jo, and Galani, 2009].

The workshop is comprised of a presentation of basic circuit building and instrument fabrication. In building a sound producing electrical circuit as their own instrument, the participants have a choice of three sensors (i.e. fader, potential meter, and photo resistor) to incorporate into their instrument, as well as a choice of capacitor value that determines the tonal range of the instrument. This choice of component is integrated into a basic fixed circuit, so represents *<Tokenism-Sound>*. Participants fit their circuit with the cardboard tube and fabricate and personalize their instrument with paint, markers, and stickers in their own way, resulting in *<Citizen Power-Instrument>*.

After the participants finish the workshop, they enter into discussion about how to organize a street performance with their instruments *<Citizen Power-Process>*. Following the discussion, participants form a “marching band” and parade in the streets as a public performance *<Citizen Power-Performance>*.

5.4 Net_Derive

Net_Derive is a multiuser mobile music work in the tradition of locative media art [Tanaka and Gemeinboeck, 2008]. Participants are provided with a white scarf containing two mobile phones and a GPS module, an instrument inspired by wearable computing technologies *<Non-participation-Instrument>*.

Participants explore the neighborhood surrounding the exhibition gallery. The GPS coordinates of the participants are used to generate a series of polyrhythmic pulses, where the speed depends on relative proximity of up to three participants. Certain latitude/longitude combinations also trigger nonsense voice commands, instructing the participant to stop, turn, or continue. As the participant chooses to heed or ignore these instructions *<Tokenism-Process>*, a trace of his path is carved out in the city.

There is also an audio upstream from each mobile serving as a roaming live microphone with each participant *<Citizen Power-Sound>*. The street

sounds feeds a server-side music engine, is cut up, looped, processed, and mixed algorithmically, and layered under the blips and voice commands. This applies notions of musique concrète to machine processes, composing automatically with real world sounds. With the mobile participant receiving this “concretized” mix streamed back in real time, the process of becomes real time, live, and in direct connection to the participant’s immediate surroundings <*Tokenism-Performance*>.

6. Contrast of two works of The SINE WAVE ORCHESTRA

In 1822, the French mathematician, Fourier, discovered that sine waves could be used as the basic components to form nearly any periodic signal [Fourier, 1955]. Based on his theory, SWO regards each sine wave as individual persons and the collective sound representation as community. The interference and resonance of sine waves depict the relationship of the participants much as that of individual sine wave components in a complex timbral amalgam. Although all SWO works use the same *Sound* (i.e. sine waves) as a starting point, the two works described here employ different *Instruments* and *Processes*. The differences result in different forms of listening and playing activity as *Performance*.

In “Stairway”, as the provided instrument can not produce sound with the small amount of light at sunset, we observed that participants gathered around lamps and other light sources with their instruments. As the amount of light that defines the frequency heard, local variations in luminosity produced small frequency differences resulting in beating patterns from mutual interfering sine waves. We also observed that some participants dynamically changed the volume by illuminating the instrument with a flashlight. We also saw that some of the participants shared their knowledge and showed others how to play, negotiating ways of playing the instruments, whether they be those provided by the artists or brought by the participants. Some passersbys stopped to ask the participants what they were doing and finished by taking part in the work.

In “stay”, we provide an instrument for a large number of exhibition visitors. Each participant listens to the sound that other participants had played, and one by one, produces a sine wave at different moments in time. Every time a participant uses the instrument, one sine wave is added to the collective sound. The work uses 116 speakers as a part of the instrument. Each speaker outputs a cluster that consists of mutual interfering sine

waves with different frequencies from different participants. Therefore, depending on where the participant stands in the room relative to the location of the multiple speakers, what is heard changes dynamically.

In each work of SWO, the collective sound representation actively changes its state through user involvement. The sound and instrument act as dynamic interactive systems to include output from the participants [Cornock and Edmonds, 1973]. In a traditional classical orchestra, skilled performers produce collective sound representations by playing instruments on which they have practiced for long periods of time. In SWO works, the instrument is an unfamiliar device to the participants. By restricting its sonic possibilities, participants quickly learn to play it in the course of their participation.

7. Discussion

We have mapped out a matrix of musical participation that correlates social levels of empowerment with different aspects of sound creation. We explored how the matrix could help to understand the nature of the styles and the dynamics of musical participation. We have discussed different facets of sound making practice through three levels of participation.

The matrix enables us to understand the transfer of authority in existing sound making practices. Eco, in describing open works, notes a shift of initiative from the composer to the individual performer [Eco, 1959]. He mentions the difference between works that the composer arranges in a closed, well-defined manner before presenting it to the listener, and works that are brought to their conclusion by the performer with multiple formal possibilities of the distribution of their elements.

The aim of this paper was to look beyond the fixed roles of participants (i.e. composer, performer, audience). We are interested in works with indefinite boundaries between roles and dynamics of participation where people subjectively engage with sound representation through listening and simultaneously engage with the creation of sound. Each person is a listener of others, and a performer to others. In these works, the evolution of the collective sound representation is unpredictable and depends on the total involvement of the participants [Ascott, 1966].

The traditional role of the artist, composer, or writer is thus called into question; it may no longer necessary to assume that he/she is a specialist in

art - rather he is a catalyst of creative activity [Cornock and Edmonds, 1973]. She intervenes in each perspective of sound making practice by sculpting levels of participation. The resulting representation is produced by the participants as much as it is by the artist who has conceived the system. Our work is consistent with ideas of shared knowledge where “every posting is just another person's version of the truth; every fiction is just another person's version of the facts [Keen, 2007].” In the paper, we offer the matrix for the *Music One Participates In* as a basis of further discussion to cultivate emergence in creative practice.

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