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ACT es la revista on-line dedicada a la comunicación y el intercambio entre los miembros de la comunidad artística, científica y tecnológica. Su misión es: difundir actividades, publicar artículos, informar novedades.

ACT se nutre del aporte de los propios actores de esa comunidad, deseosos de colaborar y dar a conocer sus creaciones e investigaciones.

PANORAMICA DEL COLOQUIO DE COMPOSITORES

30 y 31 de julio 2010 – Mar del Plata - Argentina

Ante los diversos conflictos a los que se encuentran enfrentadas actualmente las diferentes expresiones musicales, la propuesta de éste coloquio estaba dirigida a crear un debate abierto en el que los participantes se expresaran libremente, sin consignas previas. Este criterio responde a la necesidad de evitar lo que ocurre en los congresos tradicionales donde se establece un organigrama de ponencias, coordinadas y delimitadas en el tiempo, con el propósito de ser publicadas en las actas. En el caso actual la intención era permitir a los participantes liberar su discurso de tales ataduras y limitaciones para permitir un verdadero diálogo e intercambio de posiciones e ideas.

Este formato –bastante inusual tanto en Argentina como en Europa- resultó provechoso y enriquecedor sembrando nuevos surcos tendientes al replanteo del arte musical mismo. Asimismo, el encuentro generó lazos personales entre los participantes que, pese a conocerse algunos de ellos, no es frecuente que tengan la oportunidad de intercambiar ideas y propósitos en un ámbito apropiado. De esta manera el Coloquio cumplió con uno de los principales objetivos de la Fundación Destellos : crear un **Punto de Encuentro** para la discusión y la reflexión sobre los temas que interesan a esa comunidad artística. El encuentro generó un documento grabado del que se podrán extraer conclusiones válidas.

Los debates estuvieron planteados en dos sesiones : la primera parte enfocando los aspectos de la necesidad de crear espacios alternativos y atraer nuevos públicos, con la consecuente necesidad de diferentes formas de gestión. La segunda parte estuvo orientada hacia aspectos estéticos, como elemento paralelo y complementario del mismo replanteo anterior. Aunque no se abordó el tema de los géneros, entre los participantes hubo una mayoría de practicantes del género electroacústico (significando el trabajo con tecnología digital) y los demás pertenecían al género instrumental (también en sus distintas vertientes).

En ciertos ámbitos, actualmente se ha dejado de considerar a la música como un Objeto de Arte, para reemplazarlo por el concepto de Producto de la Industria Cultural. No obstante, y pese a los intentos por cambiar el carácter y las modalidades de producción sonora, el problema de la falta de público es común a todas las nuevas vertientes.

La preocupación por estos temas centrales responde a los diversos cambios sociales, políticos, culturales y tecnológicos que se han producido aceleradamente en lo que va del siglo y que se comienzan a perfilar a partir de la segunda guerra mundial.

La búsqueda de mayor visibilidad y de público es un nuevo elemento en la vida de los compositores. Hasta el siglo XIX las vías para alcanzar el éxito dependían del interés del rey por obtener prestigio ante sus rivales. Las cortes competían por tener los mejores músicos, las mejores orquestas etc.

Hoy, el poder ya no es divino y necesita Votos. Por ende, si el artista quiere obtener sus favores, tiene que conseguir publico.

El advenimiento de la Música Electroacústica, al suprimir el elemento visual y la memoria del instrumento nos alejó del público habitual. Desarrollar en el público la capacidad de apreciación de un arte sonoro abstracto, podría llevar siglos. Entonces los compositores se ven ante la necesidad de hacer concesiones y buscar *desde* el público sus opciones alternativas. O bien, quedar marginados.

No es por casualidad que la Música Electroacústica nace en el seno de las Radios. La Radio significó lo que es en éste momento el Internet. La posibilidad de comunicarse verbalmente (y musicalmente) a distancia, significó una revolución. Significando al mismo tiempo una importante herramienta de poder, las instituciones de estado apoyaron todas las expresiones que el medio pudiera producir. Durante un largo periodo (mas de 60 años) y junto con la evolución de la tecnología, este apoyo generó espacios en los que el público estuvo integrado por aficionados de espíritus curiosos, elementos snobs, artistas de otras disciplinas y los propios compositores. Estos públicos con el tiempo fueron decayendo por su propia inercia vegetativa.

Hoy día los festivales tradicionales y conciertos aislados presentan una disminución considerable de público que está integrado, en su mayoría, por los propios compositores. Pero las causas se sitúan mas del lado de los elementos de poder (medios, industria cultural, intereses políticos y económicos), que del fenómeno musical mismo.

La situación actual presenta una coyuntura de transición en la que las instituciones tradicionales, la "academia", coexisten con propuestas diversas de cambio, mas o menos informales, mas o menos sólidas y estructuradas. Así nos encontramos con una proliferación de proyectos que intentan acomodarse a la situación promoviendo y dando visibilidad a expresiones musicales y artísticas tan diversas como controvertidas en cuanto a sus formas y contenidos.

Entre los participantes mas jóvenes, esta demanda de nuevos espacios de visibilidad, manifiesta también su incertidumbre con respecto al sentido de su propio trabajo, que requiere el mantenimiento y la búsqueda constante de redes de apoyo. La predisposición al trabajo colectivo demuestra asimismo su voluntad de nutrirse y crecer desde un ángulo no institucional.

La desorientación en cuanto a forma y contenido que se manifestó luego en el concierto con el que se cerró el Coloquio, testimonia de un vacío de mentores, ocurrido en Argentina, durante un largo periodo. Luego de la época inicial, en que se trabajaba con medios analógicos, muchos de los primeros compositores se volcaron hacia la música instrumental, a causa de la dificultad para acceder a la tecnología y otros se fueron del país. Hubo que esperar hasta la aparición de las computadoras personales para reflotar el movimiento. El proceso de inserción en el ámbito educativo produjo también un retardo.

En el escenario europeo –a excepción tal vez de Francia que mantuvo una continuidad-, también se produjo un intervalo de espera, entre la era de los precursores y el advenimiento de las nuevas tecnologías, pero fue mas breve y su recuperación mas rápida, debido a una mayor solidez económica y al apoyo institucional.

Todos estos factores contribuyeron a que varias generaciones se vieran "sometidas" a una formación académica distanciada de la tecnología y de su proceso de evolución. Además, y como consecuencia de los factores sociológicos que intervienen en la formación de los jóvenes músicos y del manejo de la "opinión pública" por los medios, aquello que fue ruptura, (la Música Electroacústica), aparece como aburguesado y convertido en "academia".

De allí el rechazo de la "academia" que se manifestó durante el coloquio, y que tiene que ver con esa formación, no sólo rígida, sino desplazada en el tiempo y ajena a la circunstancia histórica actual. Sin embargo, esa misma generación que, en tanto que compositores independientes, reniegan de la academia, son en éste momento los representantes de ella. Son estos jóvenes quienes están reemplazando a las generaciones anteriores en los conservatorios y universidades. He aquí una incongruencia. Cual es entonces su posición ante la clase ? Como compatibilizan ese rechazo a la academia ante sus alumnos ?

Si embargo, hablar de academia en la Música Electroacústica es casi un absurdo, puesto que el género mismo nació como un repudio a la misma (y a la música instrumental) y continúa dentro de ese espíritu; pese a la profusión de materias y carreras musicales relacionadas con la tecnología dentro del ámbito institucional. Hasta ese momento solo había habido cambios en cuanto a la ampliación y organización de las alturas (serialismo, microtonalismo, espectralismo etc), pero esta fue una ruptura total con respecto a todos los parámetros anteriores. Y aun no ha aparecido una "neo-electroacústica".

Actualmente se están viendo perfilar, entre las expresiones mas jóvenes dentro del ambiente Electroacústico (o acusmático) algunos elementos de cambio en el sentido estético. En algunos casos se advierten ciertos rasgos provenientes del "Noise". Conceptualmente, este movimiento estaría muy cerca de lo que significó el "Ruidismo" de principios del siglo pasado, pero con el agregado de la tecnología digital. Estas músicas están aun a medio camino entre la electroacústica "clásica" y algo que vendrá.

La generación intermedia, presente en el coloquio, mas consciente de los factores de cambio, ha comprendido que es preciso obrar desde el *statu quo*, tratando de operar con lo posible. Convertidos en artistas-gestores, dentro y fuera de las instituciones convencionales, y convencidos de que la supervivencia de estos nuevos géneros depende del empeño de los propios creadores, han establecido nuevas estructuras que, sin perder de vista el concepto de *arte*, intentan contemporizar con los medios y recursos que ofrece el sistema socio-político-cultural.

Estuvieron presentes, además de los dos residentes extranjeros en la Fundación, responsables del Festival Sonoimágenes, de los Conciertos en el Limbo, del Projet Itinerant, de la RedAsla, del Festival Experimenta Club, que tiene filiales en España y Latinoamérica. Cada una de ellas tiene características propias, todas organizan conciertos o festivales, algunas se ocupan también de la producción discográficas, de publicaciones etc – A excepción de Sonoimagenes, que pertenece a la UNLa, las demás son autogestionadas, con subsidios privados o el aporte de los propios miembros, o sponsors diversos para eventos puntuales.

Estas estructuras logran reunir nuevos públicos en forma aleatoria, dependiendo de factores diversos como el sistema de publicidad, el contexto en el que se realizan los eventos y otros factores relativos a la gestión. Aquí se plantea la pregunta de "cuanto público queremos?". En la mayoría de los casos en los que el ámbito provee un público cautivo (como son las universidades o salas de centros culturales –Alianza Francesa, Inst. Goethe, etc), se puede contar con 30/50 personas generalmente. En otros casos, la audiencia puede ser nula o por lo menos imprevisible.

La propuesta de Destellos estuvo orientada hacia la realización de "temporadas de conciertos" (por ej. un día determinado de cada mes), del tipo "concierto a la canasta". Esta modalidad que se inició justamente como cierre del coloquio, consiste en que los participantes presenten sus propias obras, con una breve introducción, dando lugar al público a expresarse, haciendo preguntas o comentarios. El método provee también una cierta forma de crítica para el compositor. Todos sabemos que la critica de la Música Contemporánea y mas precisamente electroacústica no existe. Este diálogo con el público, a veces puede resultar enriquecedor o por lo menos clarificador con respecto al proceso de emisión-recepción. Otra de las características de esta modalidad es que no hay "curaduría". Por supuesto, esto supone las inevitables faltas de "calidad", tan frecuentes en muchos

festivales y conciertos, pero que son producto inevitable de nuestra contemporaneidad. No sabemos cual será el filtro de la historia del sXXI, sobre todo ante la potestad de los medios y el dominio de las empresas que manejan la industria cultural.

De todos modos, el formato contribuiría también a crear un público habitual, familiarizándolo gradualmente con las nuevas sonoridades y estructuras de la música contemporánea en todas sus formas. Cosa que no ocurre en los festivales que se realizan una vez al año, con la consiguiente dispersión del interés y de la memoria. Por otra parte la descentralización geográfica, puede resultar interesante ya que se tratará de un público completamente virgen con respecto a este tipo de expresiones musicales.

Se plantearon asimismo opciones de gestión y organización combinadas, conducentes a reunir otras formas de arte, creando una diversidad que contribuya a ampliar los públicos. Se incorporan por ejemplo formas interactivas, instalaciones, danza, video música etc. También se propone la ocupación de ámbitos alternativos, bares, galpones, subsuelos, y todo tipo de espacios disponibles.

En fin, estos no son temas nuevos, pero reflejan la preocupación de los compositores por la supervivencia de su trabajo. La creciente aparición de redes latinoamericanas es sintomática de esa toma de conciencia. Sin embargo, hacen faltan lineamientos directivos para que no se convierta en un caos, o en una nueva segregación y dispersión de esfuerzos. Se habló de la interacción entre redes, a través de Internet y de congresos y festivales a fin de aunar esfuerzos. Los miembros de las distintas redes muchas veces no se conocen entre ellos. Por otra parte, cada una tiene sus contactos en el extranjero. Seria entonces conveniente mantenerse en comunicación permanente con el fin de aprovechar las venidas de artistas invitados proponiéndoles giras de conciertos, seminarios, conferencias etc. En países como el nuestro, donde las distancias son grandes y los medios de transporte deficientes, este tipo de intercambios facilitaría el acceso a los eventos. Asimismo, la opción de video-conferencia por el sistema de Internet 2 –que comienza a perfilarse en algunas universidades- permitiría la transmisión en red y a distancia de los eventos.

Otro de los aspectos que se trató se refiere a los recursos que ofrece actualmente la industria discográfica. Estos nos permiten suponer que será posible ampliar el campo de distribución de la música acusmática. Los soportes de sonido envolvente (5.1, surround etc incluso Blu-ray), con o sin imagen, abren perspectivas interesantes en ese sentido. Por otra parte es evidente que no podremos sustraernos a la intervención de los recursos de la comunicación masiva, a través de Internet. Hasta el momento, este medio no ofrece la suficiente calidad, debido a los sistemas de compresión, pero eso es también un factor sujeto a cambio en un futuro muy próximo.

Todas estas alternativas –aunque divergentes y contradictorias- implican un compromiso, de parte de los propios productores del Arte sonoro, en una empresa que defienda sus intereses y haga posible su supervivencia.

Sin embargo, ellas suponen un espíritu de comunidad y solidaridad, venciendo las diferencias estéticas e ideológicas y tratando de tomar conciencia de que todas ellas reunidas, integran una minoría.

Dra. Elsa Justel
Presidente Fundación Destellos

Si usted desea anunciar un concierto, exposición ú otro evento artístico, o publicar un artículo, envíenos su proposición a través del formulario de contacto : **http://www.fundestellos.org/3.La revista.htm**
o bien contáctenos : **info@fundestellos.org**

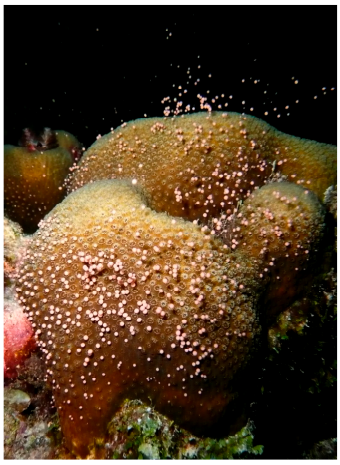
Coral Larvae Use Sound to Guide Them

Steve Simpson, a senior researcher at the University of Bristol's School of Biological Sciences, worked in collaboration with a team of researchers at the Carmabi Foundation in Curaçao in the Dutch Antilles that was led by Dr. Mark Vermeij. A previous study by Simpson found that baby reef fish used sound as a cue to locate coral reefs. The Dutch team found that coral larvae--which must quickly find a safe place to land and establish a colony or they'll die--behave in the

Las larvas de Coral usan sonido para guiarse

Steve Simpson, un investigador de la Escuela de Ciencias Biológicas de la Universidad de Bristol, trabajó en colaboración con un equipo de investigadores en la Fundación Carnabi, en Curaçao, en las Antillas Holandesas, dirigido por el Dr. Mark Vermeij. Un estudio previo de Simpson halló que ciertos peces coraleros usaban el sonido como pista para localizar bancos de coral. El equipo holandés descubrió que las larvas

same manner. The team created a "choice chamber," an artificial environment in the lab, and placed the free-swimming larvae in it. In one area of the chamber, recordings of a coral reef were played. The researchers found that the larvae were strongly attracted to the noise as they sought a suitable habitat to settle in.



An adult *Montastraea faveolata* colony spawning larvae. Researchers recently discovered that baby coral find their way home in their first days as free-swimming larvae by listening to the noise of animals on the reef and actively swimming towards it.

Una colonia adulta de *Montastraea faveolata* generando larvas. Los investigadores han descubierto recientemente que los bebés de coral encuentran su camino a casa en sus primeros dias como larvas-nadadoras, escuchando el ruido de animales en el filón y nadando activamente hacia ellos.

The researchers used *M. faveolata* larvae collected during the 2008 spawn, a type of reef-building coral that are dominant in the Caribbean. Researchers don't know for certain how coral detect sounds, but Simpson thinks it may have something to do with the tiny hairs that cover the larvae. Sound stirs up water molecules and this may waggle the tiny hair cells on the larvae, guiding them towards a reef.

Coral reefs are one of the most endangered ecosystems in the world right now due to global warming and ocean acidification. In addition, anthropogenic noise masks the natural sounds of the reef. Simpson says the dramatic increase in noise cased by small boats, shipping, drilling; pile driving and seismic testing is drowning out natural sounds of fish and snapping shrimps. This is cause for concern if baby reef fish and coral larvae rely on reef sounds to safely guide them to their destination. Understanding how these vulnerable animals complete their life-cycle is essential to ensure appropriate management.

This research was funded through a fellowship awarded to Simpson by the Natural Environment Research Council (NERC, UK) and by the National Science Foundation and Scripps Institution of Oceanography. (Date of Image: 2010)

de coral –que deben encontrar rapidamente un lugar segudo para establecer su colonia- se comportan de la misma manera. El equipo creó en el laboratorio un ambiente artificial, una "cámara de elección", y colocó alli varis larvas nadadoras. En un area de la cámara fueron ubicadas grabaciones del ambiente del banco de coral.

Los investigadores descubrieron que las larvas eran atraidas hacia el ruido y se dirigian hacia el lugar de donde provenia el sonido.

Los investigadores usaron la larva *M. faveolata*, un tipo de construccion coral dominante en el Caribe. Los cientificos no saben exactamente como los corales detectan el sonido, pero Simpson piensa que debe tener algo que ver con los finos pelos que cubren las larvas. El sonido revuelve las moléculas de agua y esto debe excitar los pequeños pelos de la larva, guiandola hacia el filón.

Los filones de Coral son uno de los ecosistemas que estan mas dañados hoy dia, debido al calentamiento global y a la acidificación de los oceanos. Ademán el ruido antropogénico enmascara el sonido natural del filón. Simpson dice que el incremento dramatico del ruido causado por los botes, lanchas, aparatos de test sismicos, esta acabando con el sonido natural del pez. Esto perjudica tanto a los peces coraleros como a las larvas, impidiendoles encontrar el camino a su destino. Entendiendo como estos vulnerables animales completan su ciclo de vida, es esencial para asegurar el manejo apropiado del medio.

Esta investigacion fué realizada gracias al apoyo otorgado a Simpson por el Consejo de Investigaciones del medio ambiente natural (NERC,UK) y por la Fundación cientifica nacional y la Institución Scripps de Oceanografía. (fecha de la imagen 2010)

Residencia de Artistas 2009

Entrevista con los residentes

1. Which are your impressions about the residence in Destellos? How do you feel in it and in the city?

Diana Simpson : The residency offers good facilities for the acousmatic composer, although the cultural resources in the city are limited and it is a shame that there is not a more vibrant artistic environment to act as inspiration.
Chikashi Miyama : The city is quite calm probably because it is winter. The scenery of the coast is excellent and I think it is quite safe compared to my neighborhood in Buffalo, New York.
Foods are also attractive. I enjoyed Empanadas, Pizzas, Black beers, and many different kinds of desserts from several European countries such as ApfelStludel or Tiramisu. The most impressive thing in this city is probably the size of cakes; it is simply gigantic in all restaurants. Usually, it is at least four times bigger than the size of ordinary cakes sold in Japan. I was wondering why people never get fat as Americans in this country. Perhaps, people do not drink too much coca-colas, that's why.
OK. it seems like 80% of my impression about the city is about the foods.... But my impressions of all other cities in the world are also mostly about foods so it is not a special case. The only problems are too many dogs on the streets. I was chased by a dog. they are sometimes very scary.
The guest house is very comfortable to stay with nice rooms, beds, bath room, and kitchen. The director of the foundation, Mrs.Elsa

Justel, and her husband are very helpful during my stay. I would really appreciate their help and support.

2. In relation with your project, did the residency fill your expectative? Have you found the necessary resources and ambiance?

D.S. :

- All of the necessary resources for fixed media (acousmatic) composition
- Likely that some composers will plug in their laptop with own software
- Not ideal for recording
- Soundproofing is very poor.
- More cultural resources available in Buenos Aires for my particular research project i.e. Caroline Neal, Tango Orchestra, Museum of Tango.

Ch.M : The studio is pretty large and it is equipped with 8 channel surround system. I think it satisfies the most acousmatic music composer's needs.
The monitor speakers, Dynaudio BM5A, are fantastic. Though it is small, it could produce as low as 55 hz.
The studio is pretty quiet during the night so that I could record several samples in the studio.
Though, the monitor speakers and working environment are splendid, I have a little bit problem with the acoustic of the room. A wall of the room is made of stones so the room produces a little bit too much reverb for me. I believe a little investments to sound absorbers would help this problem.
Besides, I thought it is more fascinating if the studio could offer an optional sub woofer for 5.1 or 8.1 channel compositions. Though 8 channel is a sort of standard in the realm of academic electro-acoustic music composition, some composers are required to adapt their works to DVD or DVD audio 5.1 channels format in order to release their music to the market. So I believe it is helpful if there is one sub woofer in the room.

TEST DE LABORATORIO

VIDEO-CAMARAS

Para realizar los tests de calidad de las video cámaras algunos laboratorios de ensayo utilizan una herramienta conocida con el nombre de « Margarita », debido a la corona de levas neumáticas que la circundan y que le dan ese aspecto de flor.

Esas levas (vérins), comandadas por computadora, ubican delante del objetivo de la cámara toda una serie de filtros de color o grises de diferentes densidades. Los pasajes de esos filtros son sincronizados con los de una serie de miras que desfilan delante de una caja luminosa que va controlando la luminancia, la homogeneidad de la luminosidad y la colorimetria.

Calidad de la imagen

Los elementos a tener en cuenta para medir la calidad de la imagen son:

Definición horizontal : la resolución o “picado” de la imagen de la cámara es su capacidad para restituir una imagen compuesta de lineas horizontales cada vez mas finas. Es esta medida la que diferencia fundamentalmente las camaras standard de las de alta definición.

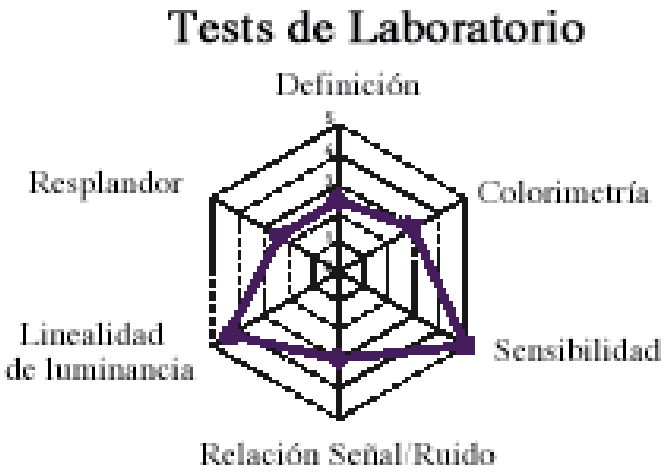
Fidelidad de colores : un blanco puro es la resultante de un nivel idéntico de los tres colores primarios que lo componen: Rojo, Verde y Azul. Todo exceso o insuficiencia de uno de los colores se traducirá en una predominante de color. Para hacer esta medición se utiliza un panel de colores de una mira específica.

Sensibilidad / Contraste : es la posibilidad de restituir una imagen contrastada y coloreada, aun en condiciones de luz débil. La medida se efectua gracias a los filtros del Margarita que disminuyen la luz que llega al objetivo de la cámara. En esas condiciones la degradación de la imagen varia de un modelo a otro, de modo que se puede medir la capacidad de la cámara para diferenciar las zonas claras de las oscuras.

Relación Señal / Ruido : cuando la cantidad de luz disminuye se produce un efecto de « nieve » que perturba la nitidez de la imagen. Este defecto –el ruido de fondo video- existe también en el caso contrario, es decir con una fuerte luminosidad. Para medirlo, la herramienta está calibrada sobre 650 candelas (sea aproximadamente 2000 lumenes) para la cámara, lo que representa un buen nivel de luz en interiores.

Linealidad de luminancia : se mide la capacidad de la cámara para restituir una imagen iluminada uniformemente, del centro hacia los bordes y en los ángulos.

El banco Margarita en funcionamiento con una mir de color delante de la caja luminosa.



Resplandor : sobre una imagen que posee mucha diferencia de luz; por ejemplo una lámpara en una semi-oscuridad; los pixeles situados en los bordes de la fuente luminosa produciran un resplandor que provocará la pérdida de detalles. El aparato de laboratorio permite medir el porcentaje de pixeles resplandecientes.

Autonomía

La autonomia de las baterías es un elemento importante, sobre todo a la hora de utilizar la cámara estando de viaje o lejos de los centros urbanos. Los tests han constatado que la duración de las baterías se reduce con paradas y arranques repetidos, con el uso frecuente del zoom y el autofoco.

El soporte de grabación

La cassette mini DV: Uno de los formatos mas comunes y económicos.

El mini DVD : Este práctico disco puede ser leído en cualquier reproductor DVD.
En calidad standard la duración de grabación varia desde 30min. (disco de capa simple), hasta 1 hora (en doble capa).
El disco rígido : Mayor capacidad de almacenamiento de grabación. La capacidad de los discos integrados a las cámaras varia entre 30Gb y 120Gb (en calidad standard aproximadamente 3Gb por hora), lo que garantiza muchas horas de grabación. Es necesario sin embargo contar con una computadora para descargar, seleccionar y copiar el contenido del disco, cuando éste se llena.

La memoria flash : Se encuentra en dos formas : integrada a la video-cámara, por ende inamovible (actualmente hasta 16Gb de capacidad), o en forma de tarjeta de memoria (SD Memory Stick), disponibles en 4.8; 16 y 32Gb. Este es por cierto el formato de almacenamiento del futuro para todos los productos nómades, pues él ofrece numerosas ventajas : no mas mecánica de arranque, éste es casi instantáneo; consumo reducido e insensible a los golpes.
Algunas marcas asocian las memorias flash interna y la tarjeta externa, dando mas capacidad de grabación. Así como con los discos rígidos, estos productos deben estar obligatoriamente asociados a una computadora para la salvaguardia y el montaje.

RESULTATS DU CONCOURS "ESPACE DU SON" 2010

Le jury du concours Espace du Son Competition (François Bayle, Francis Dhomont, Federico Schumacher, Régis Renouard Larivière, Christine Groult et Annette Vande Gorne) ont attribué

le Premier Prix ex-aequo à **Julien Guillamat** et **Sebastian Peter**

Le second Prix à **Sam Salem**

Du 21 au 24 octobre, 8 candidats ont pris place à la console de l'acousmonium de Musiques & Recherches . Les concurrents - Julia Al-Abed (France), Panos Amelidis (Grèce), Teresa Carrasco (Espagne), Julien Guillamat (France), Sébastien Lavoie (Canada), Sebastian Peter (Allemagne), Caroline Profanter (Italie) et Sam salem (UK) - ont chacun diffusé leur répertoire lors d'un concert de 40 minutes, utilisant les possibilités du système de diffusion en fonction de leur propre sensibilité.

Musiques & Recherches tient à remercier tout les participants.

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'Materials, Meaning and Metaphor : Unveiling Spatio-Temporal Pertinences in Acousmatic Music'

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Elizabeth L. Anderson

E-mail: e.anderson@skynet.be

The opportunity to present a paper, at the Electroacoustic Music Studies Network Conference 2007, was given by the conference committee, Marc Battier, Simon Emmerson, Leigh Landy, and Daniel Teruggi. I am grateful to them for this exceptional occasion. Although amended for publication, the following text is based on my paper, which reflects my research in the frame of my doctoral dissertation, similarly entitled "Materials, Meaning, and Metaphor: Unveiling Spatio-Temporal Pertinences in Acousmatic Music."[i] *This research owes much to the valuable advice and encouragement received from Denis Smalley and Annette Vande Gorne. I am indebted to them for their assistance.*

My paper will focus on the objective material inherent in my music as well as the way I attempt to convey meaning through my works. In order to examine these concepts, I shall elaborate on the sonic properties and structural characteristics indigenous to the works and, additionally, the personal opinions and imagined ideas employed during the compositional process. These different angles originate from preliminary research on listening patterns I conducted at the inception of my doctorate. This research had considerable bearing on the development of my reception behaviours framework, which, in turn, influenced my compositional strategies. My paper, therefore, is articulated on my reception behaviours framework (I) and its four components (II-V):

I. Reception Behaviour Framework

II. Sonic Properties

III. Structural Attributes

IV. Self Orientation

V. Imaginary Realms

I. Reception Behaviour Framework

It is necessary, first, to define the musical genre to which my reception behaviours and metaphorical elements pertain. Therefore, I would like to start by defining the kind of electroacoustic music that I compose and on which my research is centred.

A. The Acousmatic Medium

Acousmatic music is a type of electroacoustic music, which exists in a recorded format, transmitted and perceived, during performance, via the loudspeaker[ii], thereby eliminating all visual stimulation that the listener customarily associates with sound production. The listener, subsequently, is liberated from a type of perception that traditionally combines the visual with the auditory.

Annette Vande Gorne proposes that this invisibility stimulates listeners to access their imagination, sensations, and emotions (Vande Gorne, 1999: 6). However, if invisibility is important, do recordings of instrumental or vocal music not incite similar types of responses, or is acousmatic music especially suited to this type of communication? While instrumental and vocal music do access the imagination, acousmatic music is particularly well adapted to this purpose for a number of reasons. Unlike instrumental music, there is no typical sound or sound world as defined by the timbres and registers of traditional instruments and their combinations. Neither are there human limits imposed on the execution of the sounds.

Acousmatic music does not rely on the pulsed structuring of time. Rather, it respects the inherent rhythmic properties found in a sound or sound world. Each work therefore contains a unique set of rhythmic properties and rhythmic relationships. In addition, the combination of possible superpositions of sounds or sound worlds a composer may create in an acousmatic piece is infinite. According to John Young, these organised acoustic images function together in a continuum between the poles of reality and abstraction (Young, 1996: 83-84). If we accept the reality / abstraction continuum we can see that the distance between the points is barely measurable between the two poles. In addition, each acousmatic work not only shifts in its unique way between these two poles but, due to the complexity of the genre, it is also possible to perceive simultaneous, yet divergent, progressions within the reality / abstraction continuum.

These concepts were particularly interesting from a compositional point of view during the preliminary stages of my doctoral research. Of equal intrigue were the seemingly inexhaustible types of listener responses to the same work. Judging from diverse listener reactions it became apparent that an acousmatic work expresses ideas exterior to itself. What, then, are the extra meanings in this music? Which sounds are 'carriers of meaning' (Smalley, 1997: 111)? Which meanings do they carry and for whom?

B. Music Analysis and Reception Behaviours: *Sommeil* by Pierre Henry: A Summary of the Listening Strategies devised by François Delalande

The listening strategies, devised by François Delalande at the *Groupe de Recherches Musicales* in Paris in 1997, were helpful for the orientation of my research.[iii] The main objective of Delalande's listening experiment, conducted with the movement *"Sommeil"* from Pierre Henry's acousmatic work *"Variations pour une porte et un soupir,"* was to study, describe and differentiate listening or reception behaviours.

I reviewed this research, thinking that Delalande's reception behaviours theory could help deepen my understanding of the perception of electroacoustic music. However, it became clear, through Delalande, that the methodological considerations for this type of research are numerous. An in-depth examination into an acousmatic work is not without its difficulties, as unlike traditional music "...this type of music presents the analyst with all problems simultaneously: no score, no system, and no "pre-segmented" discrete units like notes." (Delalande, 1998: 14). Pierre Schaeffer's[iv] prior research distinguished between the 'sound object'[v] constructed phenomenologically by the listener, and the 'physical signal'[vi] to which it is attributed. While Schaeffer focused on the analysis of the sound object Delalande centred on the analysis of the physical signal "defined as the material product of creative work [which provided] a more general base for comparative study of esthesic constructions" Delalande, 1998: 17). The reception behaviours framework, on which I based my dissertation, is additionally, founded on the investigation of the physical signal, which I define as the acousmatic composition.

In addition to methodological considerations, one must also decide what are the criteria for one's own, or any listener's reactions. According to Denis Smalley, the issue of uncovering pertinent criteria is problematic. He notes that, "In trying to analyse electroacoustic music aurally there is always the fundamental problem of uncovering pertinent criteria. What I find depends on what I hear, what I strain to hear, what I choose to hear" (Smalley in Delalande, 1998: 22). The manner in which listeners interpret music is influenced by the interplay of diverse parameters during the listening experience. These include personal background, and culture as well as mood, a capacity for memorisation, and a general level of interest during listening. In addition, one never hears a piece the same way twice. Despite obstacles in establishing criteria, Delalande maintained that there were consistencies in listening strategies and that there was not an infinite variety of ways a listener could apprehend a piece.

Delalande admitted that the small scale of his experiment would prevent the formulation of conclusions about reception behaviours. His aim was to discover if similarities existed and, in regards to listener reactions to "*Sommeil",* he noted a coherence in reception behaviours despite the small sampling. I shall now discuss the three primary types of listening behaviours revealed in his experiment.

1. **Taxonomic Listening:** This mode of perception is born out of the desire to make a brief, general survey of the work. The subject searches for an overriding structure in the piece, and in addition, shows sensitivity to the temporality of events. *Taxonomic listening*, therefore, occurs when the listener differentiates the larger morphological sections in a work, identifies them, and creates an overall image of the work that takes into consideration its proportions. Additionally, the listener searches for contrasts and introduces discontinuities in the musical flow. Finally, the listener attempts to memorise the data (Delalande, 1998: 26-27).

2. **Empathic Listening:** The listener who displays this attitude responds to the "physiological" product of the sound. Delalande noted that listeners comment first on the level of feeling. *Empathic listening* can be distinguished when subjects describe the events in the music as if they are subjected to these movements themselves. Listeners also focus attention on the present moment and avoid establishing

connections with the musical discourse prior to that instant. They do not attempt to score the music. Furthermore, listeners also use metaphorical descriptions to attempt to develop the object / subject association. These descriptions emerge as 'sensations', the objective of this listening behaviour (Delalande, 1998: 37-40).

3. **Figurative Listening:** A stage for the 'living' being. *Figurativisation* is a reception behaviour in which narrativity is not only a metaphor for form but it also provides a model for perceptual construction. Figurativisation has characteristic traits in which the listener imagines, during the listening experience, that various sounds suggest something that moves, ultimately living. The listener searches for a contrast between sonic constructions associated with the image of the 'moving entity', and other elements that have a contextual function, for example the stage, the scene, or the decor. Metaphors are used to describe the images, which imposed themselves during the listening act. The listener also creates metaphors that are personal and illustrate the opposition between the central characters in the sound world and the context that frames them (Delalande, 1998: 47-49).

C. The Listening Experiment

In 1999, I devised an experiment in order to try out Delalande's reception behaviours. During this procedure, a group of subjects listened to three acousmatic extracts and a short acousmatic work. They were invited to notate their reactions freely via text, drawings, or diagrams that they could make during and immediately after the experiment. The works chosen represented diverse styles and trends in acousmatic composition.[vii] The experiment was carried out three times: May 26, 1999 at City University in London during a post-graduate music research seminar, May 31 and June 1, 1999 during the electroacoustic composition course at the Academy of Soignies (Belgium), and on June 15, 1999 during a general music class at the International School of Brussels.[viii] Although this listening experiment was limited in scope, a survey of the findings from the experiment yielded a number of issues.

First, listeners often elaborated on sonic properties. This tendency sometimes appeared independently of other strategies, though occasionally listener articulations about the sound world did include taxonomic, empathic, or figurative overtones. However, it was the focus on sound, which separated, ever so slightly, a behaviour that was oriented to the sound world as opposed to one that was anchored in the territory of the structural, the empathic, or the imaginary.

Second, listeners occasionally deliberated the *function* of the sound or sound world, in addition to articulating its audible pertinences, assigning to it, notably, a structural role. In the case of function, a sound or sound world appears to operate as, or represent another sound or sound world. The term 'function' can also impart another signification that may not necessarily overtly divulge structural particularities pertaining to the work. Additionally, structural particularities can be subsumed to the listener's imagination.

Third, listeners sometimes articulated a significance the sounds or sound worlds *evoked,* in addition to discussing their spectromorphological pertinences. Evocation, meaning to elicit or provoke, was often observed to be a forerunner of the imaginary. Subjects first acknowledged and referred to the sound or sound world that subsequently became the basis for an extra-musical construction.

It is necessary to clarify the slight but distinct difference observed between function and evocation. As I noted, in the case of function, a sound or sound world appears to operate as, or represent another sound or sound world. In the case of evocation, the listener appears first to contemplate the sound or sound world. The *act* of contemplation, expressed during the listening experience, becomes allied to an extra-musical thought during the course of listening. It is difficult, at this early stage, to fully comprehend the relationship between function and evocation and the resulting shifts in meaning they impart, however this will be the subject of future research.

Fourth, although Delalande suggests that listeners might exercise different reception strategies in one sitting, he proposes that simultaneous behaviours are incompatible and discusses the challenge as to how these opposing strategies can be resolved (Delalande, 1998: 63). We must then inquire if multiple reception behaviours are inherently conflicting. Does the listener migrate from one strategy to another via auto-command, as suggested by Delalande or is it possible that listeners can entertain two or more behaviours simultaneously? The findings yielded by the experiment indicate the latter. What remains to be understood are the dynamics that motivate behavioural co-existence and behavioural shifts[ix].

Fifth, the results from the experiment exhibit an array of listener responses that impart a wider domain of personal reflection than the concept of empathy, defined by Delalande as a behaviour that first centres on the physiological, notably at the level of feeling. Dispassionate remarks abounded. These contrasted with other stronger yet non-physiological reactions. Although it is difficult to gauge the intention of listener remarks, it seems logical to enlarge the concept of empathy in order to include a broader range of responses that also comprises more neutral and contemplative reactions.

Finally, with regard to listener responses to *"Sommeil,"* Delalande defines the behaviour figurativisation as being the tendency "… to think that certain sounds evoke something that moves, ultimately living..."(Delalande, 1998: 47). Furthermore, allied to figurativisation is a search for a contrast between sounds that are associated with the living being and others that represent the context or frame (Delalande, 1998: 47). The responses from the experiment suggest that the listening imagination can be referenced in additional ways to that of figurativisation.

D. Framework for Reception Behaviours

I formulated a framework for reception behaviours in light of the issues encountered while analysing the findings from the listening experiment using Delalande's strategies. Refer forward for an explanation.

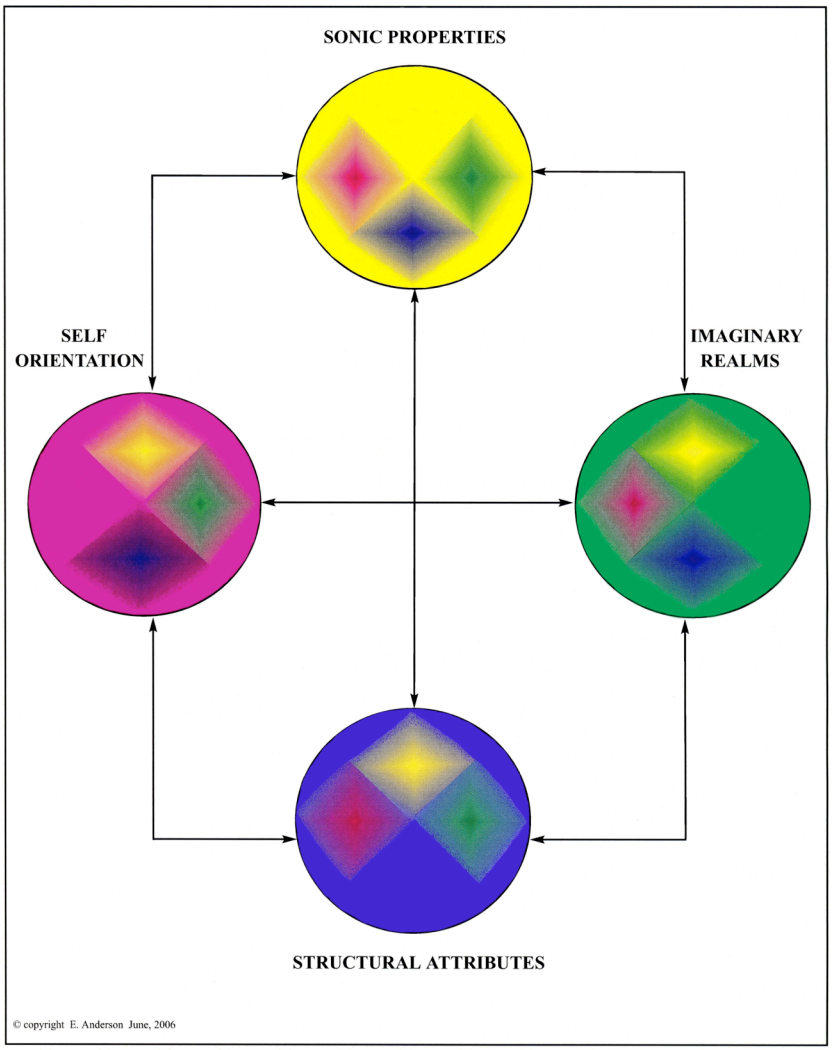

Figure 1

The listening strategies in my framework for reception behaviours comprise:

1. **Sonic Properties:** Although the notion of *Sonic Properties* was not developed in Delalande's framework, listeners in my experiment often elaborated on this topic. My awareness of this behaviour is born from a myriad of listener responses where the discussion of "sound" was cultivated. The concept of Sonic Properties, therefore, centres on the analysis of source-based sounds, different levels of abstraction regarding particular sounds, as well as the debate of sound groups, and / or sound worlds. Listeners may also take into account one or more of the components of a sound such as its morphology, texture, spectral content, or spatial disposition. Additionally, speculations about the sound world may at times include personal assessments, forays into the listening imagination or overtones that suggest an appreciation of structure.

2. **Structural Attributes:** *Structural Attributes* is an expansion of taxonomy. Like taxonomy, a discussion of structural attributes takes into account the global design of the work. The concept of structure is discussed characteristically using formal terms and listeners may embrace descriptions of morphological units to enable the process, but metaphors and imagery can additionally be utilized if their ultimate goal is to describe and otherwise illuminate structure. The latter is liable to be a predominant behaviour with listeners who lack a 'formal' vocabulary.

3. **Self Orientation:** *Self Orientation* is an expression of opinions and thoughts that centre on or emanate from the self. The 'listening consciousness' is mobilised by personal estimation or judgement. Listeners who engage in this strategy may respond to the physiological qualities of the sounding flow or are observant of their own emotional and physiological reactions *to* the sounding flow and, more broadly, to the listening experience. These terms are qualified as *sensations* and *emotions.* Self Orientation also refers to a type of intellectual analysis of the sounding flow or the listening experience that allow for more neutral deliberations resulting in contemplation or reflection. These deliberations are qualified as *evaluation*. Self Orientation thus, also includes the prospect of a dispassionate and detached discourse, one that permits listeners to focus on their impressions without confining their appreciation only to the expression of sensation or emotion.

4. **Imaginary Realms:** *Imaginary Realms* is an enlargement of figurativisation insofar that it allows for variations in figurativisation as well as other reception behaviours in which the listener exercises imagination as an *end* in itself. Listeners may build a perceptual construction of an acousmatic work by addressing the sound world, structure, or personal sensations, emotions and thoughts using imaginative terms. Nevertheless, Imaginary Realms differs in that the images fabricated by the listening consciousness are not wedded to the work nor to a culturally or universally appreciated concept, although certain spectromorphological[x] qualities apprehended during listening may influence the inception of image and the manner in which it unfolds.

I would like to mention four additional parameters relating to the listening strategies illustrated in the reception behaviour framework (Figure 1).

1. **Listening Patterns:** Although Delalande proposes that simultaneous behaviours are incompatible and discusses the problem as to how these opposing strategies can be resolved in the listener's mind, I found that listeners sometimes employed more than one reception behaviour at a time, and therefore, allowed for this in my framework. An *independent* listening strategy, which is very rare, is one that does not operate in tandem with another. It is notated by the monochrome quadrant in each circle, in the diagram, to which no arrows are connected. A listener engaging in a *hybrid* listening strategy combines, in a stable manner, two or more reception behaviours, one of which is frequently more pronounced. The hybrid strategy is denoted by the three polychrome quadrants of each circle. *Dynamic* listening occurs when a listener's focus shifts, repeatedly, from one reception behaviour to another in the course of the listening experience. A *combination* of strategies, independent, hybrid, or dynamic is a conglomerate of behaviours a listener may adopt in the course of the listening act. The arrows in the diagram denote the listener's capacity to navigate between strategies.

2. **Directionality in Reception Behaviours:** Reception behaviours that appear on the vertical axis of the framework, sonic properties, and structural attributes, are strategies that focus on the traits intrinsic to the composition. Self orientation and imaginary realms, which appear on the horizontal axis, are behaviours whereby reflection is shifted away from the composition, either towards the listener in the case of self orientation, or outwards toward non-real conceptions as expressed in imaginary realms.

3. **Global - Specific Continuum:** Listening strategies are articulated in a global - specific continuum. Listeners may choose to elaborate in a global manner, they may summarise their listening experience using precise terms, or they may combine both methods.

4. **Space:** Spatial parameters, known collectively as the 'composed space' in an acousmatic composition, are innate to the multiple components of the sounding flow, in that each sound comprises a spatial frame. Accordingly, space, the sole common denominator in all four listening strategies, is omnipresent in perceptual constructions whether explained overtly, or insinuated.[xi] For example, listeners who elect to concentrate on sonic properties will frequently comment on the proximity of the composed space in the work in general, or the proximities of individual sound events.

If the composer considers all sonic traits as potential structural material for an acousmatic work, the spatial parameters relevant to each sound will also serve as structuring processes. As a result, listeners may

consider the composed space in the work to be part of the form by referring to the immediacy of sound events in the context of a discussion about form.

In an acousmatic work, the listener may respond dramatically or dispassionately to the composed space, translating it in the form of sensations, emotions, or evaluations that are impregnated with spatial contexts or vice versa. In this circumstance, listeners may often consider the composed space in the work to be an extension or constriction of their personal space.

Fictive scenes that are contrived by the listening consciousness often reveal an extraordinarily accurate translation of the composed space in an acousmatic piece. Listeners may conjure scenarios that take place in extreme spatial or atmospheric conditions, notably underwater, underground, or in outer space, but also frequently in standardised spatial circumstances, such as indoors or the out-of-doors. The context for the fictitious anecdote is often a metaphor for the general spatial framework of the piece. Still, listener interpretations of the spatial positions and trajectories inherent in the sounding flow may influence the breadth of the 'imagined' activity within its corresponding spatial structure.

E. Poiesis and Esthesis

During my lecture, I refer to my music using two points of view, which I borrow from the Semiological Tripartition as defined in *"Music and Discourse - Toward a Semiology of Music",* by Jean-Jacques Nattiez. They include the *poietic dimension* (the process of creation), and the *esthesic dimension* (the constructed meaning of the receiver). The *material trace*, in this case the acousmatic work, exists between the poietic and esthesic processes[xii].

I would also like to draw attention to the fact that the composer has, by definition, a poietic awareness but also does need to develop an esthesic strategy in terms of the discussion of composition. Because the acousmatic genre 'returns' the sound immediately during the compositional process through the method of *faire/entendre*[xiii] (making / listening), the composer veers, constantly, between a type of listening that is steeped in poietic knowledge and a listening that is solely based on esthesic appreciation. It is difficult to have objectivity when listening to, and discussing, one's music, but the composer must attempt it.

II. Sonic Properties

From an objective viewpoint, the analysis of the sounds in an acousmatic composition offers an understanding of the aural, and thus physical level, of the entity created by the composer. *Sonic Properties*, elemental to the acousmatic idiom are, collectively, "the material reality of the work (…) the physical traces that result from the poietic process" (Nattiez, 1990: 15).

Sonic Properties concerns my understanding of the sound world (poietic discussion). As a composer, I cannot overstate how important it is, in acousmatic music, to create different types of sounds each with its own spatial personality – the possibilities are limitless. Making finalised sounds for an acousmatic piece is a challenge, compounded by the equally limitless array of potential source sounds and techniques of montage, transformation, and superposition currently available to the composer. The sound world, though, is the base component for the creation of meaning and metaphor in acousmatic music.

A. 'Source-Cause Diagnosis'

'Source-cause' refers to the sound and its cause. 'Source-cause' comprises three elements. The first is a gesture, understood here as the unfolding of energy into a tangible level which is expressed through human, physical movement.[xiv] The second concerns the physical object acted upon by the gesture, while the third element is the corresponding aural trace. This composite definition may translate, effectively, into the initial recordings for acousmatic composition when it is underpinned by an understanding of energy as a vector for the conveyance of ideas, and which counts among its elements the principles of energy models.[xv] A more extensive understanding of 'source-cause' may include transformed and synthesised sounds. For example, energy models imagined by the composer may also guide the techniques of sound metamorphosis and facilitate the creation of arborescent links between source recordings and their respective alterations. I shall now discuss the importance of the concepts of energy and gesture in my music. I shall then examine the various guises gesture may take, including source-bonded sounds[xvi], hybridised and ambiguous sounds, synthesised sounds, and meta-sounds.

Hitherto, energy was seen as the capacity of matter or radiation to do work. Sheldrake elaborates:

> "In the technical sense of physics, energy is the property of a system that is a measure of its capacity for doing work. Energy can be potential or kinetic, and it takes a variety of forms: electrical, thermal, chemical, nuclear, radiant and mechanical" (Sheldrake, 2005: 2).

Indo-Tibetan tradition, as illustrated by Tarab Tulku Rinpoche XI,[xvii] suggests a parallel between the universe's energy-matter continuum and the interdependent physical and psychological systems inherent in the human being. They are manifested in three interconnecting continua[xviii]:

Three Interconnecting Continua by Tarab Tulku Rinpoche

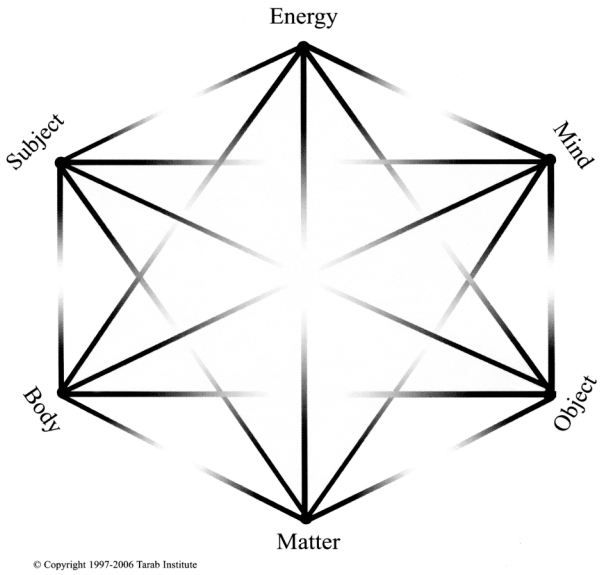

Figure 2

> "In accordance with Tibetan metaphysics matter emerges from … energy … such that energy is seen as both the basis of matter, and is continuously pervading matter. From this energy resource, all forms arise and return … in a continuous movement of birth, existence, and death. (…) We can understand the interconnection between body and mind as well as subject and object through this interrelatedness of matter and energy. Our solid bodies are inseparable from the basic energy of ourselves from which also mind develops…" Tarab Institute (2006) Studies and Training, *Symbolic I.* [xix]

1. **Morphogenesis of Gesture - The Fulcrum between Energy and Sound:** If we transpose the principles of the energy-matter continuum to a human level, as seen from Indo-Tibetan tradition, part of the 'energy resource' native to a human being contains the potential for all forms of expression.[xx] I propose this basis for expressive potential be extended to the creation of gesture in acousmatic sound. The unfolding of energy into a tangible level concerns the aural trace left by the *morphogenesis of gesture.* Since I consider that energy pervades all conceivable forms, the possibilities for gesture are not limited to the articulation of existing sounding and non-sounding models. They are governed by the subject, in this case, the composer's imagination, which is understood as an expression of the mind. Seen from this point of view, the energetic perspective, accessed through the subject, allows gesture to be created as an unbridled expression of the imagination, thus facilitating an unhindered approach for the transfer of the composer's extra-musical ideas onto the acousmatic canvas.
2. **Energy-Matter Continuum:** The acousmatic composer creates and works with gesture through the tangibility of its aural trace, in this case the sound file of the source recording, the transformation, or the synthesised gesture. During this conference, I shall occasionally refer to a gesture by way of its aural trace, the sound. Figure 3 exhibits specific gesture-types viewed through the energy-matter continuum. The 'materiality' of the source recording relates to 'matter' and the entirely revised spectromorphological qualities inherent to a meta-sound[xxi] relate to 'energy.' The six categories illustrate an evolution from a type of gestural expression that translates into 'dense' and 'matter-oriented' spectromorphologies frequently associated with source recordings, to expressions where matter is 'thinned out,' yielding to energy. The latter spawn more 'intangible' and 'energy-oriented' spectromorphologies, often found in transformed, synthesised and meta sounds.

Forward-Moving and Self-Propagating Gesture as seen through the Energy-Matter Continuum

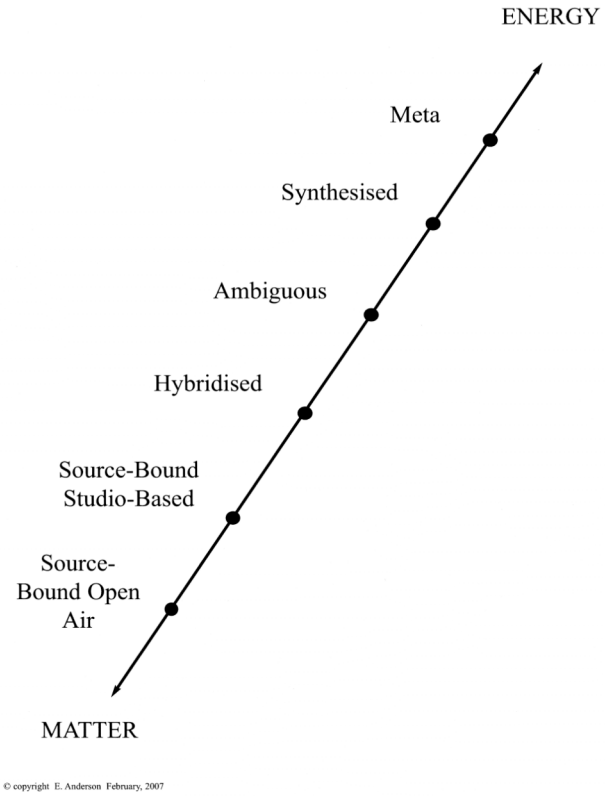

Figure 3

3. **Forward-Moving Gesture:** I shall now elaborate on different types of sounding gestures, where energy is manifested in a *forward-moving* way. Forward-moving signifies the unfolding of energy in such a manner that gesture develops through time. The following categories have different relationships to source-bondedness,

a. ***Source-Bound Open Air:*** Source-bound gestures can be obtained directly from recordings made in the open air, either in environmental settings or settings that divulge evidence of civilisation.

b. ***Source-Bound Studio-Based****:* These gestures are created in a recording studio. The sounding body employed is chosen in function of 'energy models.' Gesture, animated by - and at the service of the energy model - is explored as an end in itself. Studio recordings of instrumental gestures are also treated and perceived according to the principles of 'energy models', as opposed to a traditional instrumental context.

c. ***Transformed Gestures:*** Transformed sounding gestures are those whose spectromorphological components have been altered.[xxii] Despite the alterations, these gestures retain a sense of temporal evolution. They include:

i. *Hybridised Sounds:* Hybridised sounding gestures that are situated in a continuum between the poles of source-bondedness and abstraction. They are transformed and yet they retain vestiges of recognisibility.

ii. *Ambiguous Sounds:* These sound shapes have little or no perceptual link to their sources. Nevertheless, they do have a delineated morphological form that evolves over time. I often re-shape a source-

bound gesture entirely by modifying its internal energy flow, morphology, and spectral content in order to enlarge its capacity of function beyond that offered by its source-bound guise.

e. ***Synthetic Sounds:*** I also create and use synthetic sounds in my compositions. I attempt to structure such a sound so that it contains temporal thrust and an evolving form despite its synthetic nature.

f. ***Meta-Sound:*** A meta-sound is a sound-shape that is constructed, and unfolds on a tremendous scale. It is inspired by the enthusiasm for the source-bound sound but is not a mere amplification. A meta-sound impinges upon the listener due to any combination of the following characteristics, which are exaggerated: spatial or spectral properties, density, or amplitude, some of which may occur naturally while others may be induced. However, all characteristics work together to create a sound that is perceived on the scale of the environmental.

Sound Example N° 1: *We will now listen to an extract, 6'35" – 7'40," from my electroacoustic work in stereo, "Neon." This section of the piece contains a meta-sound at 7'26" in the form of a forceful percussion resonance. It is preceded by source-bound recordings of wind-whipped sail rigging against empty masts of sailboats in dry dock, which are superposed on each other in order to create a complex sonic topology leading up to the meta sound.*

3. **Self-Propagating Gesture:** *'Self-propagating'* denotes the unfolding of energy in a manner that impedes gestural development through time. Like forward-moving gestures, self-propagating expressions of energy, and their 'embodiments', self-propagating gestures, may take any shape. I shall now elaborate on different types of sounding gestures, where energy is manifested in a way that does not evolve. The following gestures, which are very important components in my sonic vocabulary, are transformed source recordings, or they are synthetic in origin.

a. ***Noise:*** Noise (white) is a sound containing every audible frequency at approximately the same intensity. Although noise is often considered to be undesirable aurally, it is a very useful sound-type in acousmatic composition due to its extreme malleability.

b. ***Mechanical Sounds:*** These gestures have a faint, repetitive, 'machine-like' character. This type of, repetitive nature is in extreme opposition to forward-moving source-bound gestures. However, they are valuable in an acousmatic context because they can aid in preserving the dimensions of existing spatio-temporal topologies.

c. ***Iterations, Crépitements***[xxiii] ***(crackling sounds) and Granulations:*** I quantify these three types of gestures in terms of their mass. Iterations are very thin, spectrally impoverished, soft, ultra-high-pitched, repeated sounds. *Crépitements* are similar, however, they have a larger mass. Granular gestures have the same characteristics as the latter two, however, they have an even greater mass and, therefore, have a more prominent, pithy, and well-developed texture.

d. ***Repeated Sounds:*** In my compositional approach, repeated sounds differ from mechanical sounds, iterations, *crépitements,* and granulations in that they have a smoother morphological shape and they are pitched.

e. ***Elastic Sounds:*** An elastic sound is a self-propagating gesture that contains fluctuating, spectrally transparent, filigrees, which appear, contract and dissolve, often rapidly, into the larger context of the sounding flow, giving the impression that the gesture is able to perpetuate its shape spontaneously after the appearance and disappearance of these micro events.

f. ***Spun Sounds:*** Spun sounds are made of tiny sound particles and are characterised by a semi-pitched, diaphanous, translucent, and airy quality produced as the sound evolves in time.

g. ***Drones:*** A drone is a type of sustained sound. It comprises small, pitched components that repeat, giving an impression of an aural kaleidescope. The drones, which exist in three of my octophonic works, *"Ether," "Les Forges de l'Invisible,"* and

"Tesseract," were created with the UPIC system at the *'Centre de Création Musicale Iannis Xenakis'*, in Paris.

h. ***Veils:*** A veil is a very smooth, spectrally and spatially immobile, transparent sound-shape, like a see-through curtain, that occupies a pitch space.

B. Abstract Musical Properties

Abstract Musical Properties signify musical qualities that are less tangible and less readily apparent than, for example, morphological contour. Abstract musical properties denote spectra, the sonic content of a sound-shape. Spectra refer to the distribution of energy as a function of frequency for a particular sound.[xxiv] I found Smalley's more general definition to be useful in view of electroacoustic composition "spectra […] represent the wide variety of sound-qualities, timbres and pitches perceived over the spectrum of audible frequencies" (Smalley, 118: 1997). The spectral content of a sounding gesture, thus, can be harmonic (pitched) or inharmonic (unpitched).[xxv] Furthermore, several pitched gestures can be superposed, creating intervallic or harmonic relationships in the sounding flow. Spectra may also evolve in time, usually in conjunction with the morphological evolution of a gesture, or they can be static.

1. **Spectra:** Having defined *spectra* as the distribution of energy as a function of frequency for a particular sound, I would like to discuss its role in gesture. Although the unfolding of energy into a tangible level concerns the aural trace left by the morphogenesis of gesture, the distribution of energy *within* the gesture-type is a function of spectra. Because I consider that energy pervades all conceivable forms, the possibilities for spectra are not limited to the articulation of existing combinations of frequencies. Furthermore, like gesture, spectra are also governed by the subject, in this case, the composer's imagination. I would like, now, to examine some aspects regarding spectra in my works.

a. ***Spectral Content:*** In my music, I very often focus on the pitch 'factor' inherent in a sound, and how pitch is calculated in reference to other spectral components. A pitched sound, while not changing pitch, can travel in and out of a pitch space. I shall discuss this in the section on spectral change. Conversely, a sound that has no 'pitch' can take on qualities of pitch in a subtle way. This effect can be achieved through the application of a generalised or resonant filter to a sound, which acts on the ensemble of frequencies in the sound. It can also be accomplished by applying a filter that acts on specific spectra, creating an effect of striation (pitched spectra adjacent to non-pitched spectra) within the sound.

b. ***Occupancy of Spectral Space:*** This parameter is another important component in my spectral thinking. Although Denis Smalley devised four qualifiers of spectral space, I shall limit myself to discussion of one, the continuum of emptiness – plenitude (Smalley, 1997: 121), as it offers a platform for the examination of spectral occupancy in my works. The concept of spectral emptiness and spectral plenitude is applicable to all my works in equal measure in that each work contains instances where spectral space is rarefied as well as filled.

For example, the creation of a sounding flow that is spectrally sparse is a compositional strategy I often employ at the beginning and at the closure of my pieces as well as immediately after sections that are spectrally dense. The elaboration of a spectrally dense sounding flow is another compositional strategy I employ in my works during and, increasingly, at the end of a section.

c. ***Spectral Movement:*** Spectral movement in a sound can take different forms. The most obviously audible form is that of pitch change, which we most frequently associate with instrumental music. Nevertheless, spectral change can also imply timbral change. Timbre refers to the distinct character of a sound independent of its pitch and intensity. Timbral qualities are what make a sound vivid, indistinct, mellow, deep, hollow, intense or subdued. Timbral change means the character of the sound is changed independent of its pitch, volume, or morphology. I would like to examine tendencies regarding spectral movement in my works:

i. *Timbral Change:* Spectral movement may be manifested as a change of timbre in non-pitched and pitched sounds.

ii. *Movement Expressed as Pitch Change or Toward a Pitch Space:* Spectral movement in pitched sounds can occur as a change of pitch, or in non-pitched sounds as movement away from inharmonicity toward a pitch space (harmonic).

iii. *Note / Noise Continuum*[xxvi]*:* Spectral movement can take place within the harmonic (note) / inharmonic (noise) continuum.

2. **Harmony:** To avoid confusion, *harmony* must be differentiated from harmonicity. Harmonicity (pitch) refers to the specific organisation of frequencies found in one musical sound. I consider harmony to be the superposition of three or more pitched sounds in a sounding flow. However, the concept of harmony in the acousmatic genre can become complex when its components, pitched sounds, comprise inharmonic frequencies, allowing the sounds to shift in an out of a pitch space. These attributes reflect on the strength of the harmonic relationship and how it develops over time.

a. ***Intervallic Content and Motion:*** Occasionally, I create intervallic relationships within a sounding gesture or between gestures.

b. ***Harmonic Content and Motion:*** The most obvious appearance of harmonic content and motion in my works is the 'orchestral' hue. I use this technique extensively. It can be heard in two formats:

i. *Harmonic Content:* Several sustained pitched sounds that are heard simultaneously in a sonic context.

ii. *Harmonic Motion:* Sound material that contains many pitches, which repeat in quick succession (i.e. a drone).

Sound Example N° 2 : *We will now listen to an extract, 8'30"' – 9'25", from the second movement of "Les Forges de l'Invisible," an octophonic electroacoustic work in two movements. Within this section of the movement are many noise-based sounds, which contain pitch colouring, as well as ambiguous sounds that are overtly pitched.*

C. Transferral

I shall now introduce the concept of *transferral* of the meaning of a sound or sound world. This is an esthesic viewpoint that broaches an extremely complex series of topics, all of which are portals to the formulation of metaphoric value.[xxvii] Transferral is introduced in Sonic Properties because it concerns sound and some of the ways we relate to it.

The concept of transferral involves three methods: transfer of behaviour, transfer of function, and transfer of meaning.[xxviii] What is striking about these three is their relationship with the outcome of the transfer. All transfer processes conclude with some shift of significance, however the method varies as well as the degree of the shift. For example, transferring the behaviour and / or function of one sound to another sound or (more rarely) to a non-sounding concept, ultimately influences the meaning of the sound 'acted on'. However, these two types of shift are instigated by a re-routing of behaviour or function, which results in a shift in meaning that, when analysed retrospectively, is rooted in a re-assignment of function and / or behaviour. In this case, a listener frequently notes, first, the 'slight' shift in meaning and needs to reflect backwards to uncover why. Additionally, it is possible for the listener to transfer meaning directly, from one sound to another or to a non-sounding concept without engaging a transfer of behaviour and / or function. Through the direct transfer of meaning, a sound can, in many cases, impart a non-sounding idea such as a visual image or a degree of luminosity, an emotion, an atmospheric state like a degree of humidity, or constructs borne from the faculties of the human mind, such as fictional literary references.

Spatial, temporal, and contextual factors inherent in sounds as well as silence are vital components to the transfer process, and they can influence the transfer. For example, source-bound sounds can behave and / or function like non source-bound sounds in certain settings. The converse is also true. In that electroacoustic sounds are infinitely malleable it is possible to vary, even slightly, one of these components while keeping the others intact, and the function, behaviour, or meaning of the sound or sounding flow will be changed.

1. **Transfer of behaviour:** Transfer of meaning through transferral of *behaviour* occurs when a sound or series of sounds behaves like, or, more remotely, sounds like it behaves like another sound or series of sounds, or is a vector for the expression of non-sounding ideas in sound.

An example of transfer of behaviour can be found in *"Neon"* in the first section of the work, from 0' – 3'07", where the motion of the source-bound wave sounds is mimicked by other accompanying sounds that have higher and lower spectral registers than the waves. The sound shapes with a higher spectral register move more quickly, are linear, (forward-moving) and are spectrally transparent. They behave, to me, as spume and mist might sound if they sounded. The wave-like sounds with a lower spectral register move more slowly and behave, to me, as cold deep-sea currents if cold deep-sea currents sounded. There is a subtle transfer of meaning through this transfer of behaviour, but it is important to say that this section does not 'mean' the sea to me although it behaves as such and can be considered as an extension of how it actually sounds.

2. **Transfer of function:** In this case, a sound, or series of sounds, *functions* as another sound or another series of sounds. Transfer of function often occurs when one sound is used in a particular sonic context, and then a second sound, with similar morphological attributes but devoid of the contextual province of the first, 'replaces' the first sound in the same context. The spectromorphological attributes of the 'replacement sound' might be slightly different than the 'original' sound, but the listening imagination accepts the substitution.

In my octophonic work, *"Ether,"* three slightly transformed percussive attacks in the first three minutes of the piece precede a source-bound percussive attack. All attacks 'function' in the same manner even though they are not all hybridised sounds nor are they all source-bound. Furthermore, I am aware of this dissimilarity but my listening imagination allows for it.

3. **Transfer of meaning:** A direct transfer of *meaning* occurs when the listener decides that the signification of a sound is other than a role provided by its obvious spectromorphological attributes or its presumed structural province in a musical context. For example, most source-bound sounds, if played separately outside a musical context, can be identified as such, and their meaning is usually linked to their cause. A pre-established meaning can also be ascribed to a transformed sound before it exists in a musical context. A transfer of meaning occurs when the sound immediately signifies something other than its source/cause or its structural role. A transfer of meaning can be catalysed by the sound's energy / motion trajectory, which goes beyond cause and structural pertinence. Since I consider that energy pervades all conceivable forms (tangible and intangible), the listening imagination can identify with the tangible energy / motion trajectory apprehended in a sound, which can be conducive in propelling the sound out of a 'preconceived' role. However, an energy / motion trajectory does not, alone, dictate the type of transfer.

An example of transfer of meaning occurs for me in the first movement of my octophonic work, *"Les Forges de l'Invisible."* Here, rapid, descending, source-bound violoncello glissandi, that are interspersed in a 'flowing' sonic fabric between 30" – 2', do not aid in the construction of a figure-ground relationship, nor do I ascribe them to the violoncello. Instead, I perceive the sounds as birdcalls.

4. **Incomplete transfer:** An *incomplete* transfer regarding behaviour, function, and meaning, occurs when the process of transferral is incomplete or uncertain. The listener may veer from contemplating the 'assigned' behaviour, function, or signification of a sound to its 'original' status *before* the transferral process.

In *"Ether,"* the transfer of function between the source-bound, non-pitched violoncello bowed sounds to that of human breath, in the 9th minute, is, in my perception, uncertain.

III. Structural Attributes

I would like to talk to you about *Structural Attributes* in my music. One of my compositional strategies includes dislocating sounds from their traditional musical or environmental settings and repositioning them in an acousmatic setting, where their function, structural purpose, and, I hope metaphorical value, is entirely different.

There are inevitable overlaps between the various categories of structure. Although a sound or sonic context can have several structural roles, I shall concentrate on the role that appears to be the most pertinent.

A. Gesture

I would first like to discuss the importance of gesture in structure:

1. **Small-scale gesture:** I define a *small-scale* gesture as the expression of energy materialised as a distinct source-bound, transformed, or synthesised sound. I also see it as a specific shape that the composer further alters or conceives due to the structural needs of a piece. During the compositional process, I

noticed that small-scale gestures based on natural energy-motion trajectories, whether source-bound, transformed, or synthesised, could act as structuring agents. Examples include:

a. ***Natural Energy / Motion Trajectories:*** Many energy/motion trajectories inherent in source-bound sounds are structuring agents. For example, a percussion resonance[xxix] can announce the beginning or end of a work, as well as a new section.

b. ***Swells:*** I invented the swell, which is based on the energy model fluidity. The brief energy surges indigenous to a swell can gently push a musical context forward in time, help to shape or steer a musical idea, aid in definition and development of a musical context, or propel one context into another.

c. ***Swirls and rotations:*** These concern very small-scale rotations (small diameter and fleeting) that may, like swells, help to define one musical context, develop it or thrust it into another.

2. **Combining gestures:** *Combining gestures* means the juxtaposition and / or superposition of gestures on the acousmatic canvas.

a. ***The Meta-Gesture:*** I define the meta-gesture as consisting of multiple layers of source-bound, hybridised, ambiguous, and, occasionally, synthetic sounds that have certain common spectromorphological characteristics. A meta-gesture is created with the same logic as the meta-sound in that it is constructed, and unfolds on a tremendous scale. However, in contrast to the meta-sound, the meta-gesture comprises many smaller gestures. Meta-gestures are vital structural pylons. Because they are spectrally and spatially outsized, they tend to terminate large sections.

A meta-gesture, like a meta-sound, is inspired by enthusiasm for source recordings. The enthusiasm drives its construction. However, this kind of topology is also the fruit of interest and eagerness which extend beyond the source recordings to embrace sounding and non-sounding phenomena associated with the source sounds' corresponding landscape.

b. **Incomplete Gestures / Distorted Gestures:** Incomplete and distorted gestures are a vital part of my gestural language. These sound-shapes include incomplete rotations, short semi-circular trajectories, and brief, spectrally upward-moving surges. Incomplete or distorted gestures help to enhance and steer the motion of the sonic flow or punctuate it without slowing it down or stopping it. Because the gestures are incomplete or deformed, the listener has the opportunity to complete or re-form them mentally.

An incomplete gesture exists in *"Chat Noir,"* where a rotation of 270° is audible at 3'10". If we use the image of a clock lying face up on a table, the gesture begins at 3 o'clock and travels 'backwards' in space and around in counter-clockwise motion to 6 o'clock. This gesture leaves an unfinished segment at the end of its trajectory, if rotation is to be a goal. Without closure, it enhances the existing sounding flow without closing it off. The listener is, thus, free to imagine the closure or not.

B. Spectra and its Various Guises as Structuring Elements

In Sonic Properties, I defined spectra as the distribution of energy as a function of frequency for a particular sound. I also mentioned that because I consider energy as pervading all conceivable forms, the possibilities for spectra are not limited to the articulation of existing combinations of frequencies. The formulation of spectra is governed by the subject, in this case, the composer's imagination. The spectral content intrinsic to the sound shapes in my acousmatic pieces, thus, takes many different *guises*, and these guises aid to structure the piece.

1. **Pitch (Overview):** *Pitch* refers to a specific organisation of frequencies found in a musical sound. In acousmatic composition, the concept of pitch often is referred to as pitch-space. Listeners are inclined to be extremely receptive and sensitive to 'acousmatic' pitch by virtue of exposure to pitch in traditional music. Therefore, a listener may tend to apprehend a pitch-space in an acousmatic sound before apprehending its other spectromorphological attributes. Because it is a 'known musical parameter', pitch is a powerful structuring process in acousmatic composition. In my works, pitch is often expressed, amongst other non-pitched frequencies in thin filaments, iterations, and short gestures as well as in webs, figures and / or grounds, and granular sound shapes.

2. **Veils:** In Sonic Properties, I defined a *veil* as an expression of self-propagating energy in the form of a very smooth, spectrally and spatially immobile, transparent sound-shape - like a shimmering curtain - that occupies a pitch space. The immobile, transparent, pitched attributes of a veil aid it, to operate as a cohesive, stabilising element in the sounding flow.

3. **Canopies:** In my music, *canopies* are sustained or iterative sounds, or groups of sounds, which have a high tessitura. Canopies often comprise a combination of pitched and inharmonic spectra and serve to 'contain' the upper spectral register of certain parts of certain works. They provide a spectral 'lid' under which other material can be introduced and flourish.

4. **Pedal Points:** *Pedal points* are low-pitched, sustained sounds that often comprise a combination of pitched and inharmonic spectra. They serve to 'contain' the lower spectral register of certain parts of certain works. Pedal points provide a spectral base over which other material can evolve.

5. **Harmony (Overview):** While intervallic relationships are created by two simultaneous, pitched sounds, *harmony* is created by the superposition of three or more pitched sounds. Intervallic and harmonic relationships are woven into the sonic fabric of all my works in a relatively constant manner. These relationships act as cohesive elements in a sounding flow. Thus, they unfold, frequently, in developmental sections of works, as connective elements between sections, and during moments when the sounding flow is in repose.

C. Time

I would like to broach the topic of *time* by quoting Susanne Langer "Music ... suspends ordinary time and offers itself as an ideal substitute and equivalent" (Langer in Kramer, 1988: 3). I shall look at the structural importance of sections of my works with a high quotient of 'forward-moving' energy, which can be understood as a manifestation of 'linear time', a term devised by Jonathan Kramer (Kramer, 1988: 20). Afterwards, I shall turn to sonic contexts that are self-propagating and lack forward-moving energy that Kramer defines as 'vertical time' (Kramer, 1988: 50), which has another structural significance. Finally, 'unusual temporal contexts', will be defined, and I shall highlight areas in my works that have a bi-polar, uneven, or hybridised temporal flow.

1. **Linear Time:** According to Jonathan Kramer, *linear time* is "the temporal continuum created by a succession [of] events in which earlier events imply later ones and later ones are consequences of earlier ones" (Kramer, 20: 1988). In other words, linear time signifies temporal impetus or forward-moving motion. Examples of time expressed linearly exist in all my works. I would like to discuss an example of it in *"Neon."* Although the temporal flow in Neon is not unified, an overall impression of forward-moving motion occurs because the factor of temporal 'disagreement' between the various sound-shapes is not as prominent as the sensation of overall thrust to one goal.

2. **Temporal Multiplicity:** *Temporal multiplicity* is a variation of the concept of multiply-directed time by Kramer. Multiply-directed time defines a situation where the direction of motion is so frequently interrupted by discontinuities that the sense of time seems to be re-ordered (Kramer, 46: 1988). Having thought about the suppleness of the temporal continuum within my own music, I define temporal multiplicity as a situation where several sounds are heard simultaneously, each one with a different temporal (forward-moving) thrust.

3. **Vertical time:** *Vertical time*, another Kramerian term, is characterised by a lack of temporal articulation and impetus (Kramer, 55: 1988). A sonic context that is 'vertical' does not evolve. One of the ways vertical time is produced is through repetition. In acousmatic music, vertical time is often expressed in the form of granulations, iterations, and *crépitements*, all of which are self-propagating and include repeated material. These types of sounds manifest little or no sense of spectral or spatial trajectory over time. Therefore, we can say that temporal flow is arrested.

   An example of vertical time can be perceived in *"Chat Noir"* at 7'22". Following a section that is forward moving, the violent cut away to large-bore granulations, at 7'22", gives the impression of pushing the listener over a virtual ledge. This is because the listener's interior sense of time, propelled forward by the previous passage, continues while the forward motion of the piece is momentarily, but forcibly, restrained, although not completely impeded due to the interest inherent in the granulations and, the audibility of other simultaneous sound material. I think the momentary temporal incongruity is structurally and metaphorically meaningful.

   > ***Sound Example N °3 :*** *We will now listen to a section, 7'10 – 7'32," from my electroacoustic work in stereo, "Chat Noir," where linear time is confronted with vertical time.*

4. **Unusual temporal contexts:** *Unusual temporal contexts* such as those with a bi-polar, uneven, or hybridised forward-moving energy flow each have considerable structural relevance in my work. I shall now share with you several contexts, within my music, that illustrate a bi-polar, accelerated or impeded forward moving energy flow include:

   a. ***Swaying / Swinging:*** Although swaying/swinging is an energy model, it is employed in my works in a structural fashion because it is bi-directional. A 'return' of the energy trajectory exists despite the temporal push forward. The swaying / swinging trajectory can create a sense of atemporality or temporal impedance within a forward moving sounding flow created by other sounding elements.

   b. ***Rebound:*** The energy model rebound can facilitate temporal contraction and / or expansion if rebound is reversed.

   c. ***Rotation:*** The double bi-polar form of the energy model rotation can restrict temporal flow, particularly because its trajectory into and out of 'distant' space takes the emphasis off of linearity.

   Sound Example N° 4 : *We will now listen to a section, 4'45" – 5'18", from "Tesseract," an octophonic electroacoustic work. I shall attempt to convey (via stereo format) the concept of rotation (in clock-wise and counter clockwise direction).*

   d. ***Hybridised Temporal Contexts:*** The superposition of sonic contexts that are linear (forward-moving) onto those which are vertical, which, in my music, comprise textures made of *crépitements*, granulations, iterations, and drones, is a compositional approach I use frequently. Superposing forward-moving sound elements onto vertical (self-propagating) sound elements and / or vice versa creates a particularly elastic temporal flow. This is because if the composer enhances one or the other of the linear or vertical elements anywhere in the discourse, temporal flow can be subtly accentuated, enabled, hindered, or arrested.

D. Figure / Ground relationships and Sonic Webs

I would like to highlight the importance of figure / ground relationships and sonic webs in my works.

1. **Figure / ground relationships:** *Figure ground relationships* provide a constant interaction between the foreground and the background in the temporal flow. Background material in figure / ground relationships, in my works, can coalesce in energy and mass and push, nudge, or fling sounds into the foreground. Conversely, foreground material can develop and blot out the background. Furthermore, there is an interconnection between grounds and voids. A ground can, like the void, function as the 'area' around a sound, the 'area' after a sound, the 'fulcrum' between a sound and silence, or between a sound and other sounds. Like the void, the ground is as important as the sound itself.

2. **Sonic Webs:** A *sonic web* consists of sheer swaths or woven filigrees of transparent and / or translucent sound material, much of which occupies a pitch space. Sonic webs sit on the fulcrum between figures and grounds and can 'reach out' toward a figure or 'stretch' back toward a ground. Sonic webs are, therefore, an essential part of figure / ground relationships.

As a structural entity, a sonic web can precede, build up to, and participate in an important event in the sounding flow. It can then recede into the background to act as a 'ground' for the event and then serve as an 'absorbing place' in the wake of the event. In this last circumstance, the web operates as the environment around the sonic detritus (the last aural vestiges of a sound before it disappears out of the range of audibility), which exists in the wake of a very potent sound event. Thus, a web can create the 'ground' for a sound event, which can in turn, overpower or even destroy the web. Nevertheless, the destruction can yield a new sonic context in a new space for a new web to be built.

Webs, if participating with a ground can, thus, help create a context for foreground events and if participating with a foreground can aid to create a context for background events. Webs can be in spectral and temporal agreement with other simultaneous sound material or not, or alternatively, they can weave in and out of such an agreement.

An example of a type of sonic web that acts as an ongoing background while gradually thickening and developing into a foreground exists in the first movement of *"Les Forges de l'Invisible"* between 4' – 4'50".

> ***Sound Example N° 5 :*** *We will now listen to an example, from 4' – 4'50," of a sonic web in the first movement of "Les Forges de l'Invisible,"*

E. Silence, Stasis-Points / Inactivity, Voids and Omission

Silence, Stasis-Points / Inactivity, Voids and Omission are not sounds but concepts that create structural and perceptual 'allowance' in a spatio-temporal frame. These concepts are allied to the energy flow of a work in such a way that the energy flow, at times, can be expressed in one of these five guises. In my music, structural allowance is frequently concerned with the often non-linear or very weakly linear sound event or events that follow a temporally charged section. A section that contains such a 'dip' in energy flow infuses the structural and metaphorical significance of an upcoming sonic context. Furthermore, this same 'dip' aids in perceptual constructions, notably, structural recall, by allowing the time and space for the listening consciousness to imbue the preceding section with a specific structural and metaphorical significance while the temporal flow moves forward.

1. **Silence:** *Silence* can be a real or perceived elimination of the sounding flow. The structural and metaphorical pertinence of silence is as profound as the sounding flow. For example, temporality can be borne from silence or, conversely, it can continue through silence, if silence follows a sounding flow. Additionally, once the 'impression' of silence and atemporality is established in the listener's mind, it can continue for some time *during* a new sonic context.

2. **Stasis-Points and Inactivity in the Sounding Flow:** In this case, the sounding flow exists, however it does not contain a temporal thrust. Neither is this construction an antithesis to a highly energized and forward-moving section of music. Instead, a *stasis point* or a place of *inactivity* refers to a non-evolving point in a sounding flow. We can think of them as brief 'resting points'.

3. **Voids:** *Voids* are moments in a sounding flow that are characterised by a distinctive lack of energy. Voids are antithetical to motion and they frequently follow particularly intense sections. Additionally, voids are related to the concepts of vertical time. Their non-developmental character and their structural function, which opposes momentum, operate in tandem to create a situation where the listening imagination is 'free' to engage in structural recall or can anticipate future events.

4. **Omission (and delay):** *Omission* occurs when the listener perceives that an element is absent from the sounding flow and structure. Omission comprises incomplete gestures but goes further to include the concept of absence on a larger spectral and structural scale. The omitted element can occur later in the work or perhaps not at all, leaving the listener free to invent it.

IV. Self Orientation

Self Orientation has its roots in the reception behaviour empathy, devised by François Delalande. As I noted earlier, the listener who engages in this strategy reacts to the "physiological" product of the sound. Empathic listening can be distinguished when listeners describe the events in the music as if they are subjected to these events themselves. Listeners also focus attention on the present moment and avoid establishing connections with the musical discourse before that instant. Neither do they attempt to score the music. Instead listeners use metaphorical descriptions to attempt to develop the object / subject association. These descriptions emerge as 'sensations', the objective of this listening behaviour (Delalande, 1998: 37-40).

A. Development of Empathy into Self Orientation

The findings from my experiment exhibit an array of listener responses that impart a wider domain of personal reflection than the concept of empathy. Dispassionate remarks abounded. These contrasted with other stronger yet non-physiological reactions. I have, therefore, enlarged the concept of empathy in order to include a broader range of responses that also comprises more neutral and contemplative reactions.

1. **Definition:** *Self Orientation* is an expression of impressions centred on the self. Perception is focussed inward toward the listener. This strategy has its inception partially in the emotional or physiological response which is labelled as *emotion / sensation*. Self orientation also refers to that area of the mind which allows for more neutral observations about one's own personal reactions such as contemplation or intellectual reflection, labelled here as *evaluation*. Although emotion and sensation can be

construed as evaluation and vice versa, I have attempted to make an initial distinction between the three subsections of this reception behaviour for the purpose of analysis. These subsections may be further divided into the subgroups *subject* and *object* because listeners can focus on themselves as noted in the remark "I am tense" as well as on the piece, as observed in the comment, "it provokes tension."

Behaviour	***Subject***	***Object***
Sensation	"I am hit by the piercing quality of the sound."	"The sound is sharp, like a laser. It pierces me."
Emotion	"I feel wonderful and light-hearted every time I listen to that piece."	"For some reason, this piece made me happy."
Evaluation	"I am somewhat confused and lost."	"This work is illogical and confusing - a mess!"

Figure 4

2. **Expansion of Self Orientation:** During examination of the findings from my listening experiment, I discovered that references to the human condition, for example, tension, loneliness, joy, pain, confusion and boredom, abounded and existed almost by default. However, I would like to make two points. The first is that references to the human condition are not limited to expressions about the 'self'. For example, a listener might describe the tension perceived in a sound, in the structure or in an imaginary scene. The second point is that subjects also use self orientation as a platform on which to vent feelings and thoughts about subjects other than that of the human condition.

3. **The relationship between the more profound stages of Self Orientation and Imaginary Realms**: Although the observations, in self orientation, are based on known elements, they are used as a vehicle to explain personal responses and do not necessarily call upon the act of imagining as an end in itself. However, listeners who engage in the strategy self orientation, can use complex metaphorical descriptions which can serve as a springboard for the imaginary.

B. Self Orientation - An examination of concepts from a poietic viewpoint including subtleties of meaning

1. **Langer:** I would like, first, to share a quote with you by Susanne Langer:

> "The real power of music lies in the fact that it can be "true" to the life of feeling in a way that language cannot; for its significant forms have that ambivalence of content which words cannot have. […] music is revealing, where words are obscuring, because it can have not only a content, but a transient play of contents." (Langer, 1942: 243).

2. **Terms Relevant to Self Orientation:** I shall now introduce several terms that are germane to the discussion of my works in the context of Self Orientation. However, I would like first to mention the term *'écoute reduite'*[xxx] (reduced listening) and its value in the compositional process. I have found that the process of reduced listening, in addition to disclosing spectromorphological pertinences, allows the sound, very easily and readily, to be re-associated with another meaning than that with which it was originally and / or directly connected. Thus, one way reduced listening aids in the poietic process, is by 'preparing' the transfer (explained in Sonic Properties). The different shades of 'new' significances, then, are cultivated in the composer's mind for a subsequent poietic process, the creation of the acousmatic work. It will be a goal of further research to know how the composer and listener mediate, esthesically, between the broad base of significances implied and received, several of which are briefly described here:

> a. ***Icon:*** According to Naomi Cumming, an icon can denote something, in its own character, as a possibility and do so irrespective of the actual existence of anything to which it corresponds, either in appearance, or in sound, or in any other attribute. It can have the character of a sign by being the stipulated "likeness" of a nonexistent thing…"(Cumming, 2000: 87).

b. ***Representation (non-iconic):*** A representation is an image, likeness, reproduction, or imitation of something. In the case of representation, a direct and obvious semblance exists between the 'object' and its depiction.

d. ***Symbol:*** According to the Oxford Dictionary, a symbol is a "thing conventionally regarded as typifying, representing, or recalling something, especially an idea or quality" (Oxford, 1996: 1048). I consider symbolism to offer a direct connection between a sound and the intangibility of an idea or thought.

e. ***Reference:*** A reference is an allusion to something. Allusions, to physical objects, actions, or ideas by way of the sounding flow, can be constant, sporadic and intermittent or remote. Nevertheless, a distance always exists between the sound and the physical object, action, or idea to which it refers. It is the nature of the referential relationship.

f. ***Resemblance:*** A resemblance is a likeness or similarity to something. The notion of resemblance, between an electroacoustic sound and an extra-musical idea / thing, in my opinion, is more constant than that of reference, however distant or vague the relationship might be.

3. **The Sound Image / Intended Message:** It is well known that iconic and non-iconic representation, as well as symbolism, reference, and resemblance, conceived by the composer, can provoke or steer the various types of meaning and / or signification received by the listener. The strength of an idea imparted, in acousmatic music, is particularly dependent on the level of clarity or transparency of the relationship between the sound image and the intended message.

C. Self Orientation and My Acousmatic Works

1. **Objectivity:** It is very challenging to attempt to speak, objectively, of one's own response to a stimulus and, to examine with equal objectivity, the resulting composition.

2. **Self Orientation and Three Stages of the Poietic Process:** First, this denotes an initial awareness of the composer's response to an external stimulus. Second, it refers to the relationship the composer has with the stimulus. Third, it refers to the role of the stimulus in the creation of the work. In this way, Self Orientation acts as a steering agent in the compositional process. However, the concept of Self Orientation is pervasive. It is inherent in the other three strategies, Sonic Properties, Structural Attributes, and Imaginary Realms, because composers will have a personal drive, be it intellectual, emotional, or physiological, behind the conception of the form of a work, the sounding flow, and thereby, an imagined topology.

3. **Discussion of the Three-Staged Poietic Process in Two Works:**

   a. ***"Chat Noir":*** The expression of opposites in music has always appealed to me. The possibility of expressing psychological opposites, as discussed in the book *"Owning Your Own Shadow: Understanding the Dark Side of the Psyche"* by Robert A. Johnson was a further inspiration. The possibilities offered by the concept of opposites is corroborated by Hans Mersmann "The possibility of expressing opposites simultaneously gives the most intricate reaches of expressiveness to music as such, and carries it, in this respect, far beyond the limits of the other arts" (Mersmann in Langer, 1942: 243).

Input	***Relationship to input***	***Output***

The input is the concept of the shadow as presented in *"Owning Your Own Shadow: Understanding the Dark Side of the Psyche"* by Robert A. Johnson.	The shadow concerns those human characteristics that have not adequately entered into consciousness. It is the despised quarter of the human spirit. However, some of the gold in our personalities is, often, relegated to the shadow because it can find no place in that great levelling process, that is culture (Johnson, 1993: 4-7).	The exploration of the shadow is conceived as unbridled energy expressed in the form of non-developing (atemporal) turbulent sounds. I describe them as 'tumbleweed' sounds because they sweep across the stereo axis, like a tumbleweed would sweep across one's path in a desert. This is the shadow character, the 'Chat Noir,' and it contrasts strongly with the other character in the work, the young being, who does develop and who is represented, loosely, by linear (temporal) material.

Figure 5

b. ***"Neon":*** The elevation of the concept of opposition, as inspired by Johnson, to the scale of the environmental.

Input	***Relationship to input***	***Output***
The input is the concept of the mandorla, the place in human consciousness where light and dark touch. This concept is also taken from the book: *"Owning Your Own Shadow: Understanding the Dark Side of the Psyche"*.	Physically, the mandorla is an almond-shaped segment made when two circles overlap. From a psychological viewpoint, the mandorla is a symbol signifying the overlap of opposites, and a place where they may be reconciled (Johnson, 1993: 97-103).	The gestures in *"Neon"* are constructed to work together to impart a central theme: the elevation of a microcosm of non-sounding phenomena, consisting of contrasted thoughts and feelings we experience in the human consciousness, to a macrocosm that is incarnated as sound. Key to this construction was a series of source recordings I made on a deserted stretch of the North Sea coast in Belgium and on a Spanish plain, where it was possible to witness energetic expression in an environmental proportion.

Figure 6

4. **Double Continuum:** In view of the multitude of different ways my works can be interpreted, within the scope of Self Orientation, I created a double continuum in order to examine the relationship between meanings accrued during the listening experience[xxxi] (esthesic) and the clarity of the concept(s) conveyed (poietic).

a. ***The Double Continuum consisting of 'Plurivocity' / 'Univocity' and Clarity / Obscurity:***

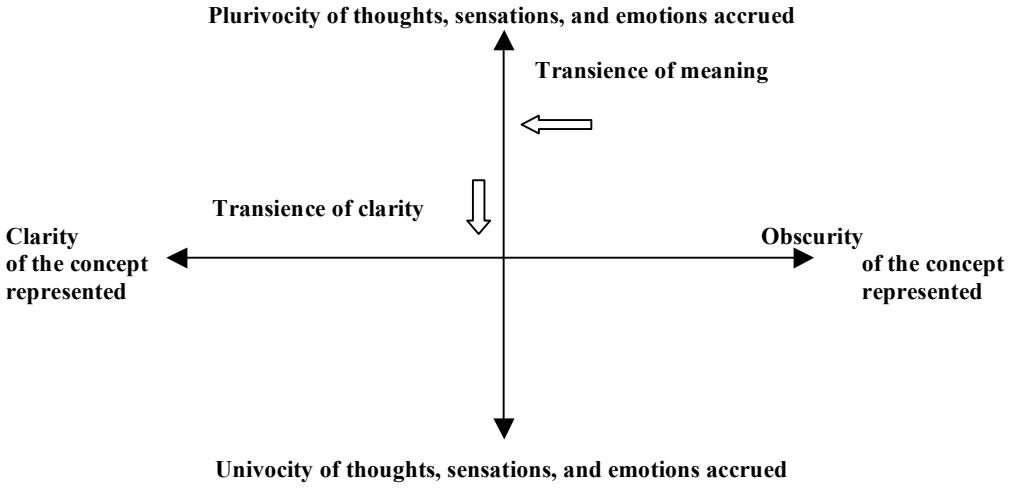

Figure 7

b. ***Definitions of Terms in the Continuum:***

i. *Univocity:* Univocity denotes the existence of one thought, sensation or emotion expressed within the context of the entire work, a precise section in a work, or during an instant in the sounding flow.

ii. *Plurivocity:* Plurivocity signifies the existence of several thoughts, sensations or emotions expressed within the context of the entire work, a precise section in a work, or during an instant in the sounding flow.

iii. *Clarity:* Clarity in Self Orientation refers to the level of transparency concerning the relationship between the sound image and the intended / received message.

iv. *Obscurity:* Obscurity in Self Orientation indicates the level of opacity regarding the relationship between the sound image and the intended / received message.

c. ***Issues Regarding the Continuum:***

i. *The Relationship between Sensation, Emotion and Thought:* The relationship between sensation, emotion and thought, the three primary components of Self Orientation, can be expressed as co-existence or transience (on the plurivocity / univocity axis).

ii. *The Relationship between Temporal Context, Meaning, and Clarity:* A sound or sonic context may carry a different meaning or set of meanings for the listener at the beginning of a work and at the end of it. Additionally, the level of transparency of the concept or concepts on which a musical work is thought to be based may be different for the listener at the beginning of a work and at the end.

d. ***Examples from Two Works Represented on the Double Continuum from a Poietic Viewpoint***[xxxii]***:***

i. *A Section from "Chat Noir" as an Example:*

Sound Example N° 6 : *We will now listen to an extract, 3'" – 3'46," from "Chat Noir." Within this extract are examples of temporal multiplicity. The clarity of the*

concept on which the piece is based, temporal multiplicity, is clear for me (poietic knowledge). Hence, it offers me the liberty to engage in a number of thoughts, sensations, and emotions (esthesic awareness) surrounding the concept. However, in certain cases, clarity of concept (poietically) can be allied, esthesically, to one thought, sensation, or emotion. It will be interesting to see if the characteristics of my esthesic viewpoint resemble those of other listeners.

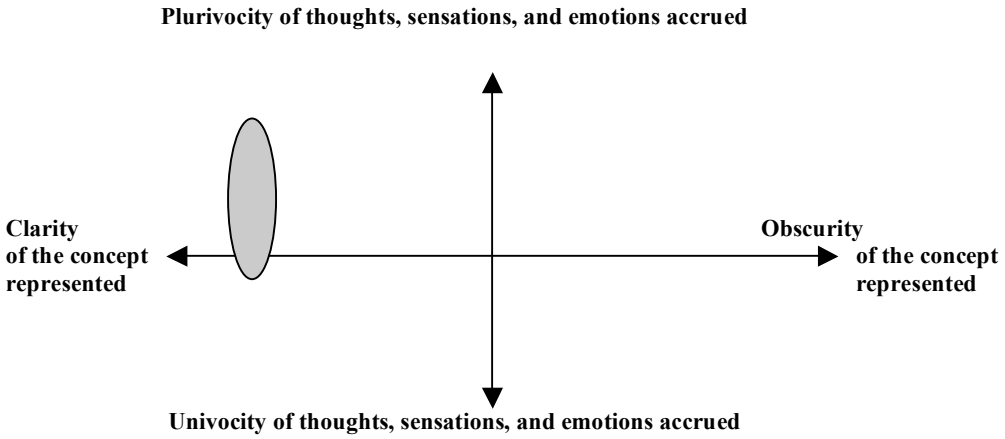

Figure 8

ii. *A Section from "Neon" as an Example:*

Sound Example N° 7: *We will now listen to an extract, 2'48" – 3'15," from "Neon," where the meeting of opposites is expressed in sound on an environmental scale. The clarity of the concept on which the piece is based (poietic knowledge) is clear and the number of thoughts, sensations, and emotions I have in regards to the concept is abundant. It will be interesting to see if the characteristics of my esthesic viewpoint resemble those of other listeners.*

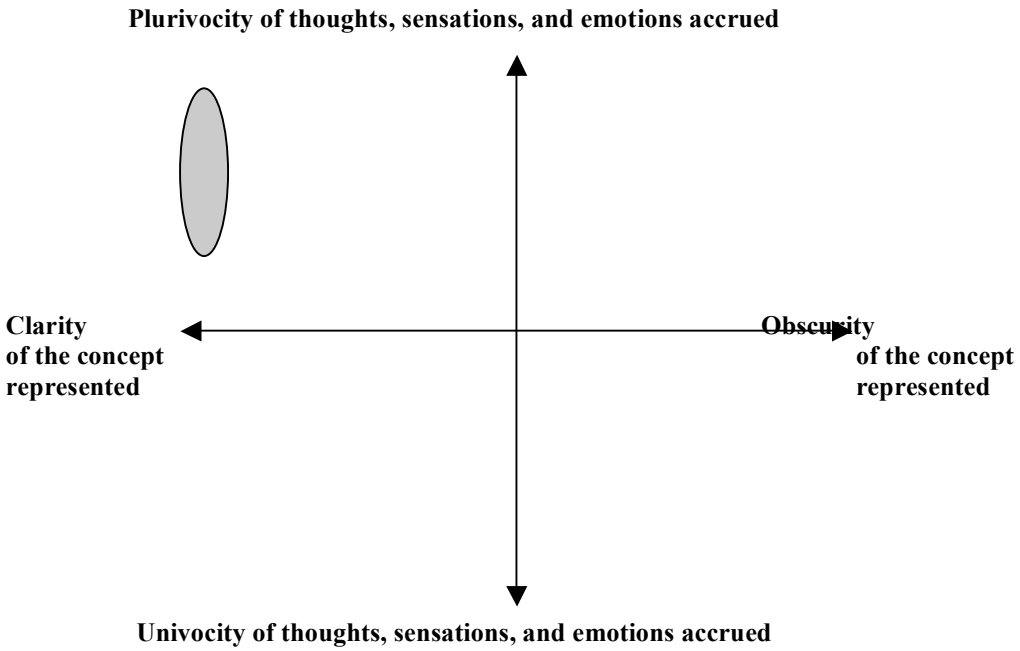

Figure 9

V. Imaginary Realms

By now, I hope that I have given sufficient evidence, through discussion about Reception Behaviours, Sonic Properties, Structural Attributes, and Self Orientation, for you to have a glimpse of the variety of poietic mechanisms that I employ in order to create sound, structure, meaning and metaphor in my acousmatic works.

Rather than to expound on my research for Imaginary Realms, which is in under construction, I would like to close this conference by re-affirming my respect for the *imaginary* through the ideas offered by several philosophers as their thoughts serve as the basis for my work on the imaginary.

Please allow me to cite several texts from the philosophers Jean Fisette, Susanne Langer, and Charles Sanders Peirce that are relevant to the concept of the imagination. I have chosen to limit my discussion to the icon and the sign.

A. Research by Jean Fisette[xxxiii] on the Icon and the Imaginary

> "The dislocations between that which is perceived and objective reality are the very basis for that which is imaginary" (Paquin, 1996: 82 in Fisette); "insofar that the notion of the icon inscribes a virtual place in the interior of the sign for that which is not yet realised but which is expected, it creates a place for that which is imaginary" (Fisette, 1999: 47).[xxxiv]

Sound Example N° 8 : *I would like to play you a 40" second example, at 3', from "Tesseract," where, the transparent and fluid qualities of the sounding flow allied to the spatial layout incarnate, for me, an undersea world similar to that conceived by Jules Verne.*

B. The Icon and the Imagination

Fisette considers the icon to be a gauge of the liberty of our imagination:

> "If the sign did not find its roots in this place of the icon, the complexities of reality would already be exhaustively represented and, therefore, contained in diverse systems of signs; in a certain way, all would already be played out in advance, one would fall into a determinism of the most primary nature, there would be no place for emotion and the virtual, rather than to guarantee the liberty of the spirit, [it] would be only a thing from the fair or a play of illusions, which is what denies with force, the discussion of semiotics; it is why semiotics speaks essentially about the advances of the signification as virtualities of meaning" (Fisette, 1999: 54).[xxxv]

C. The Icon: Divulging the Possibilities

> [According to Charles Sanders Peirce] "That which is divulged in regards to the spirit must be logically possible." [Fisette continues] "This is what the icon does and what strictly defines the virtual: *divulging the possibilities.* Langer's text is very close by, because, here again, the music responds [to this need] in a manner that is perfectly accurate in regards to this function of the icon…" [Langer notes that the icon]"… renders *things conceivable* rather than imprisoning them in propositions" (Peirce and Langer in Fisette, 1999: 52).[xxxvi]

Sound Example N° 9 : *I would like to play a 30" example, at 9', from my octophonic elecroacoustic work, "Ether," where, the 'elastic' quality of the initial sounds followed by a multi-pitched drone signify, for me, the visual image of pollen billowing out of a flower.*

D. The Sign and the Unconscious

> […] "in musical listening, the sign seems to lodge on the other side of the dividing line of light: it is, itself, the shadow of something undefined. This is the essential reason for which music would be particularly apt to carry emotion; because emotion is an energy that, coming from the obscure, does not allow itself to be seized or controlled; emotion is born from a drive that one could imagine as a *knot* obstructing the obscure footbridge between the conscience and the world; the stake of the semiotic movement is then to negotiate with this obstruction, to absorb it and to make its material from it and thus be able to liberate the passage and assure one of the possible coherences between what is targeted that rises from the interior and objective reality" (Fisette, 1999: 52).[xxxvii]

E. The Icon

I would like to end my conference by noting the significance, to me, of the icon as conceived by Peirce. An icon, by virtue of its nature, offers extreme flexibility within the scope of meaning. This is because it can be *disassociated* from what it overtly represents. Iconic representation offers another doorway into inwardly turned reflection and, ultimately the imaginary by virtue of the split between what the sounding gesture 'sounds like' in an acousmatic work, and what it signifies however slight the deviation might be. The composer / listener enters the domain of personal reflection and, ultimately, the imaginary through a different door than that which is prepared by non-iconic representation, symbolism, reference, or resemblance. Iconic representation, in the case of my acousmatic works, has to do with the infinite types of relationships between sounds / sound worlds and meanings, in particular, those that 'signify' non-sounding concepts.

Endnotes

[i] The dissertation is in partial fulfilment for the Ph.D. in electroacoustic music composition and research at City University, London, U.K.

[ii] The spatialisation or diffusion of a stereophonic or octophonic acousmatic work in a concert setting requires a minimum of eight loudspeakers.

[iii] My preliminary research is summarised in my paper *"Perception in Electroacoustic Music: A Preliminary Investigation and Expansion of the Reception Behaviours Devised by François Delalande"* (unpublished, 2001).

[iv] Pierre Schaeffer, composer and researcher, wrote the *Traité des objets musicaux* (Schaeffer 1966).

[v] Schaeffer's first and most widely known definition of a sound object " … is what one hears when "reduced listening" is put into practice, which means that causal and associative meanings of a sound are deliberately ignored (Delalande, 1998: 14).

[vi] "The physical signal is either the electrical signal obtained by reading the analogue recording, […] the sound file in the case of digital recording, or the acoustic wave emitted from the loudspeaker" (Delalande, 1998: 15).

[vii] The listening experiment is discussed in detail in my dissertation.

[viii] The listening experiment was conducted in English at City University and at the International School of Brussels, where the general music class comprised a group of students aged eleven to twelve years. The experiment was conducted in French at the Academy of Soignies (Belgium).

[ix] However, the complexity of listening behaviour is beyond the scope of my dissertation.

[x] Spectromorphology is a term devised by Denis Smalley to indicate, "the interaction between sound spectra *(spectro-)* and the ways they change and are shaped through time *(morphology-)"* (Smalley, 1997: 107).

[xi] I became more aware of overt and implied spatial parameters in my own compositional work because of having analysed the findings from my experiment. Chapter 6 of my dissertation will investigate how space contributes to Sonic Properties, Structural Attributes, Self Orientation, and Imaginary Realms.

[xii] See Nattiez (1990: 15) for further discussion.

[xiii] *Faire/Entendre* - a technique facilitated by the contiguity of the acousmatic approach, where sound material is apprehended instantaneously. The composer thus shifts (repeatedly) from the act of "making" to that of "listening" by a renewal of the "listening" through the "making" (Schaeffer: 1966, 98-99).

[xiv] Sounding and non-sounding gesture are circumscribed by the intention and resulting physical activity of one human being. It is, nevertheless, possible to interpret energetic expression, which occurs on a cultural or environmental scale, as an expansion of human gesture. Viewed from the other side, human gesture can be understood as a distillation or microcosm of energy expressed in a cultural or environmental proportion.

[xv] *Modèles énergétiques* - 'Energy models' are based on natural models such as friction, rotation, and fluidity. They pertain to a concept developed by Guy Reibel, the fruit of his research on gesture, which he explored in the electroacoustic composition class at the Conservatoire National Supérieur de Musique de Paris. It was expanded by Annette Vande Gorne in the electroacoustic composition class at the Conservatoire Royal de Musique de Bruxelles and the Conservatoire Royal de Musique de Mons (Vande Gorne, 1-12: 2006).

[xvi] Denis Smalley describes source-bonding as "the *natural* tendency to relate sounds to supposed sources and causes…" (Smalley, 1997: 110).

[xvii] Tarab Tulku Rinpoche XI, (1934-2004) was a Tibetan scholar and lama, the eleventh incarnation of the line of Tarab Tulku. Rinpoche pursued his studies at the monastic university of Drépoung in Tibet, where he completed the Lharampa Geshe degree (Ph.D. in Buddhist philosophy and psychology). His work, based on the extraction of universal principles from the Sutras and Tantras, tenets of ancient Indo-Tibetan knowledge, strove to render these concepts accessible for modern society. This part of his research is published, amongst others, in his book *"Einheit in der Vielfalt"* (Unity in Diversity).

[xviii] Permission to use information from the Tarab Institute website, including the image and explanation of the Three Interconnecting Continua by Tarab Tulku Rinpoche, as well as his biographical details, was graciously given by Lene Handberg from the International Tarab Institute.

[xix] Rinpoche developed these concepts in *"Einheit in der Vielfalt."* They were also presented at the 'International Congress of Science and the Humanities UNITY IN DUALITY – TENDREL' in Munich, Germany, in October 2002.

[xx] I am grateful to Pia Keiding for her guidance and inspiration regarding the parallels between Tibetan metaphysics and acousmatic composition.

[xxi] Meta-sounds are forms that are constructed and perceived on an environmental scale.

[xxii] An exhaustive list of sound transformation techniques is beyond the scope of this text. However, techniques that are widely used include filtration, fragmentation, time stretching or time compression, and freeze.

[xxiii] *Crépitement* – A term widely used in the French electroacoustic aesthetic to denote different types of crackling sounds. I prefer this term because it is more inclusive of different types of crackling sounds than its English equivalent.

[xxiv] (wordnet.princeton.edu, 2007).

[xxv] All sounds can be decomposed into a series of harmonics that have a rational or irrational relationship with the fundamental frequency. All musical sounds have a spectral composition where the frequency of each harmonic is a multiple of the fundamental frequency (techno-science.net, 2007).

[xxvi] The Note/Noise Continuum is a concept devised by Denis Smalley (Smalley, 120: 1997).

[xxvii] The concepts of transfer will be developed in my doctoral dissertation.

[xxviii] At this point in my research, I conclude that transfer processes operate independently. However, if the listener engages in different transfer processes for different sounds, either simultaneously or in quick succession, overlap may occur. This indicates that the apprehension of one sound may be subject to more than one transfer method. Additionally, depending on the strength of a transfer process, sounds adjacent to the sound 'acted' on may additionally, be swept into the process of transferral by virtue of their contiguity.

[xxix] *Percussion/résonance* – an energy model that becomes tangible through the "forcible striking of one especially solid, [often metallic,] body against another" (Oxford, 1996: 741). The resulting sound contains an echo, the continuation of the sound that is reinforced or prolonged by reflection or synchronous vibration (Oxford, 1996: 864).

[xxx] 'Écoute reduite' (reduced listening) is a Schaefferian concept frequently used in acousmatic composition whereby a sound is listened to repeatedly so that it may be qualified solely by its morphological characteristics.

[xxxi] Meanings accrued are based on my esthesic awareness which is imbued with my poietic knowledge.

[xxxii] I am currently developing the concept of the Double Continuum for my dissertation.

[xxxiii] Permission to employ quotations from the article *"Parler du virtuel - La musique comme cas exemplaire de l'icône,"* was graciously given by the author, Jean Fisette.

[xxxiv] Original text:

> "Les décalages entre le perçu et le réel objectif sont à la base même de l'imaginaire" (Paquin, 1996: 82); "et effectivement, dans la mesure où la notion d'*icône* inscrit, à l'intérieur du signe, une place au virtuel, à ce qui n'est pas encore réalisé mais qui est attendu, elle ménage une place pour *l'imaginaire"* (Fisette, 1999: 47).

[xxxv] Original text:

"Si le signe ne trouvait pas sa racine dans ce lieu de l'icône, les complexités du réel seraient déjà exhaustivement représentées et donc contenues dans divers systèmes de signes; d'une certaine façon, tout serait déjà joué d'avance, on tomberait dans le déterminisme le plus primaire, il n'y aurait plus de place à l'émotion et le virtuel, plutôt que de garantir le liberté de l'esprit, ne serait qu'un truc de foire ou un jeu d'illusions, ce que vient nier avec force le discours de la sémiotique; c'est pourquoi, la sémiotique parle essentiellement des avancées de la signification comme de virtualités de sens" (Fisette, 1999: 54).

[xxxvi] Original text:

"Poursuivons la citation de Peirce: "ce qui est affiché au regard de l'esprit doit être logiquement possible"; c'est là ce que fait l'icône et qui définit strictement le virtuel: *afficher des possibilités*. Le texte de Langer est très proche car, encore ici, la musique répond d'une façon parfaitement juste à cette fonction de l'icône: "rendre les *choses concevables* plutôt que de les enfermer dans des propositions" (Fisette, 1999: 52).

[xxxvii] Original text:

"…dans l'écoute musicale, le signe semble loger de l'autre côté de la ligne de partage de lumière: il est lui-même l'ombre de quelque chose d'indéfini. C'est la raison essentielle pour laquelle la musique serait particulièrement apte à porter l'émotion; car l'émotion est une charge qui, provenant de l'obscur, ne se laisse pas saisir, ni contrôler; l'émotion naît d'une pulsion que l'on pourrait imaginer comme un *noeud* obstruant l'obscure passerelle entre la conscience et le monde; alors, l'enjeu du mouvement sémiosique, c'est de négocier avec cette obstruction, de l'absorber et d'en faire sa matière puis d'arriver ainsi à libérer le passage et à assurer une des cohérences possibles entre une visée qui surgit de l'intérieur et le réel objectif "(Fisette, 1999: 52).

Bibliography:

1. Anderson, E. (2001) Perception in Electroacoustic Music: A Preliminary Investigation and Expansion of the Reception Behaviours devised by François Delalande *(unpublished)* pp. 1 -53.
2. Cumming, N. (2000) *The Sonic Self: Musical Subjectivity and Signification*, Indiana, Indiana University Press.
3. Delalande, F. (1998) Music Analysis and Reception Behaviours: *Sommeil* by Pierre Henry, *Journal of New Music Research*, 27 (1-2), pp. 13 - 66.
4. Fisette, J. (1999) Parler du virtuel - La musique comme cas exemplaire de l'icône, *Protée,* 26-3, pp 45 - 54.
5. Johnson, R.A. (1993) *Owning Your Own Shadow : Understanding the Dark Side of the Psyche*, New York, HarperCollins.
6. Keiding, P. (2002-2007). Personal Communication
7. Kramer, J. (1988) *The Time of Music*, New York, Schirmer Books.
8. Langer, S. (1942) *Philosophy in a New Key,* Cambridge, Harvard University Press.
9. Nattiez, J.-J. (1990) *Music and Discourse : Toward a Semiology of Music*, translated by Carolyn Abbate, Princeton: Princeton University Press.
10. *Oxford Compact English Dictionary* (1996), Oxford, Oxford University Press.
11. Schaeffer, P. (1966) *Traité des Objets Musicaux*, Paris, Editions du Seuil.
12. Sheldrake, R. (2005) Energy, *Glossary* [Online] Available: http://www.sheldrake.org/glossary.
13. Smalley, D. (1997). Spectromorphology: explaining sound-shapes, *Organised Sound* 2(2), pp. 107 - 26.
14. Smalley, D. (1999-2007). Personal Communication
15. *Wordnet.princeton.edu* (2007) "Sound spectrum" [Online] Available: http://www.wordnet.princeton.edu/perl/webwn [7 March 2007]
16. *Techno-Science* (2007) "Spectre Sonore". [Online] Available: http://www.techno-science.net/?onglet=glossaire&definition=1278 [23 February 2007]
17. Tarab Institute (2007) [Online] Available: http://www.tarab-institute.org/pdf/press-intro.pdf.
18. Vande Gorne, A. (1999). Definition of Acousmatic Music, *(unpublished) Electroacoustic Music Concert Program*, p. 6.
19. Vande Gorne, A. (2006). Séquences Jeux et Énergie – *Electroacoustic Composition Class notes: 'Techniques d'Ecriture', (unpublished)* pp. 1 – 12.
20. Young, J. (1996). Imagining the Source : The Interplay of Realism and Abstraction in Electroacoustic Music, *Contemporary Music Review*, pp. 73 – 93.