

# **Using Cognitive Eurhythmics to Enhance Functionality in Alzheimer's Patients: A Six Month Report**

by Eric Barnhill

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## 1. INTRODUCTION

This paper is a documentation of six months of work teaching Eurhythmics to a group of Alzheimer's patients at an Adult Day Services center in Sunnyside, Queens.

The paper divides into two parts: first, broad, overall descriptions of the group, my methods, and the effect of my methods on the group. This is followed by a series of case studies that detail the particular changes, awakenings, and other remarkable events in the timelines of ten individual students, as well as my best account of what in my teaching may have triggered the event. This document is designed to make the experience accessible to audiences with varying degrees of knowledge about Alzheimer's, Eurhythmics, Feldenkrais and other concepts central to the story, and so I spend a fair amount of time giving background on each. Those well-informed about any aspect of this story should feel free to skim the introductory materials and focus on the lessons and their results.

## 2. WHEN AND WHERE

The lessons reported here go from June to December 2003. The location is an Adult Day Services Center in Sunnyside, Queens, devoted to caring for second-stage Alzheimer's patients (this term described in the next section) during the day.

The center is located in one part of a larger complex that functions as a community center in the neighborhood of Sunnyside. Sunnyside is clustered around Queens Boulevard in the range of 40th-50th Streets.

The center is tucked away in the middle of the building, a protected enclave due to the sensitive nature of its clients; the door requires a combination. The space was conceived and designed by an architect whose mother was stricken with Alzheimer's, and in doing research about it, found that little thought had been put into the quality of the living space of Alzheimer's patients and the effect, disorienting or otherwise, that it might have on their quality of life. The space is designed to be comfortable and familiar, with soft wood floors and furniture, and impressionistic landscapes on the walls. I thought the space was successful and conducive to their comfort.

The staff oversees the patients with care, wit and humor. Through the day they are encouraged into projects and activities that demand they be as present and participatory as they can. They are encouraged to laugh, sing, and play. This stands in stark contrast to the descriptions of, for example, the Total Institution described in Oliver Sacks's *Awakenings*, and I consider the backdrop in environment and staff an important part of the success of my classes.

## 3. SECOND-STAGE ALZHEIMER'S, IN DEFINITION

The center was designed to care for people in what is referred to as the second stage of Alzheimer's disease. In the first stage, symptoms of the disease are manifest but the person can still function effectively enough on his or her own. In the second stage, the person still has basic social skills and

presence, but the disease has advanced far enough that the person needs to be cared for to get through daily life. When I first arrived, the center looked like any other senior center to me and the patients behaved as such from a distance. Before I taught my first class, the staff suggested I eat lunch with the group, which I did, and I commend the suggestion, as I quickly learned what made the group distinctive. I introduced myself to the same three people several times, and when I left my seat to go to the kitchen and grab some milk, and promptly returned, the others at the table couldn't hide their troubled looks that showed they were sure they recognized me from somewhere, but weren't sure where. The third stage of Alzheimer's is when the patient is so debilitated that he or she needs total care, and can no longer function in such a center.

#### **4. SECOND-STAGE ALZHEIMER'S, IN MANIFESTATION: "BLACK HOLES" AND "SLIPPERIES"**

In being exposed to a group of Alzheimer's patients, I immediately drew the same conclusion I did when I ventured to the Tourette's Syndrome Convention to try to drum up interest in my ideas there: that these names for Syndromes and Diseases are woefully inadequate umbrella terms for a huge variety of radically different symptoms and manifestations. It emphasized to me the infancy of the studies of these phenomena and encouraged me in thinking that my methods might be able to make a substantial contribution to the ongoing dialogue in the scientific community.

More than the Tourette's patients, however, the Alzheimer's patients at this center cleaved into two broad categories, which I referred to as 'black holes' and 'slipperies'. The 'black holes' were reminiscent of Oliver Sacks' description of 'black hole' Parkinsonism, a Parkinsonism that was so severe that the patient was more or less removed from the surrounding reality, drawn into their own world, in which even space and time seemed to function differently. I found this an apt metaphor for the primary characteristic of many of the students: the fading from engagement with the outer world, a quieting, masking, and withdrawing of their external selves. Many remained capable of sophisticated communication and activity, but such activity started to float out of the natural rhythms of life, communicated only taking abnormal amounts of time and with a rhythm that floated away into entropy. This became the central focus of my work: using Eurhythmics to draw them into acting in rhythm, reacting to outside rhythms, and re-engaging with the world in the rhythms the world requires of its occupants, in order to become a member of our world again and live in it.

The 'slipperies' might be said to have the opposite sort of problem: they were constantly present and engaging and congenial, but retaining nothing. It was in having lunch with slipperies that I had to re-introduce myself every few minutes, responded to each time by kind words about what a nice young man I seemed to be. The slipperies always engaged in and responded to exercises, but, at least initially, never did anything particularly related to what I was asking, though what they did do always presented me with clues about what they were missing.

While the black holes proved the most difficult to deal with at first, I was able to consistently draw them into noticeable and lasting 'awakenings', and see consistent improvement in rhythmic and kinesthetic skills. The 'slipperies', while much more congenial and active on the surface, proved more difficult to impart any lasting information to. Only in the last month of the work did I begin to notice that, underneath all the bubbling, substantial retention was occurring. The black holes interacted little or not at all at first, but their progress was visible and easy to track. Within these categories, some students were quite high functioning and others fairly low functioning.

## 5. ABOUT COGNITIVE EURHYTHMICS, THE FELDENKRAIS METHOD AND THE DALCROZE METHOD

My teaching method, which I call Cognitive Eurhythmics, is derived from two methods in which I have experience as student and teacher: Feldenkrais and Dalcroze. The format of the class is that of Eurhythmics, the modality invented by Dalcroze; but the use of the lessons to achieve, through the study of the student's spontaneous responses, improvement in cognition and functionality, is based on the work of Feldenkrais. I will explain each, briefly, in turn.

Emile-Jacques Dalcroze was a Swiss pianist and composer of distinction - he worked as accompanist to the titan of the violin, Eugene Ysaye - and a professor at the Geneva Conservatoire, where he was assigned to teach the most hated subjects in conservatory life: harmony, sight-singing, and ear-training. Good fortune, as it turns out, because in applying his innovative and curious mind to these subjects, he transformed not only them, but our understanding of music and its meaning. Most students, he observed, were merely good imitators, copying effectively but not understanding internally, while others possessed the mysterious "musicality": how could he be sure a student was understanding and feeling music, and not merely going through the motions? Gradually through the study of his students, he came to the surprising answer: movement. Good students felt a connection between tonal movement and the movements of their bodies, and the more aspects of the music they felt, the more subtle and complex their spontaneous movement in response to it. This became the foundation of his revolutionary curriculum: having his students move their conception of the music, he discovered he could tell exactly what they did and didn't understand. He found certain trends that obtained through the diverse behaviors: correlation between rhythm and gait, pitch and space, harmony and posture. By giving a student the experience of moving music, by sensing the physical, biological and cognitive factors involved in transforming music into kinesthesia, music connected into all of human life and action, and the epistemological question of music's meaning was transformed.

Dalcroze became an even broader advocate for Eurhythmics, arguing that life itself was tied up with the idea of rhythm. He felt that to understand and gain control of our internal rhythms was to have a deep grasp of our nature as biological, animal, and human beings. He felt that rhythmic movement was the ultimate means to free up authentic self-expression, which was then delivered in the form of improvisation, and believed that those who gained skill in rhythmic movement gained proportionately in their capacity for joy.

Moshe Feldenkrais, the developer of the Feldenkrais method, also had an extraordinary background: a physicist who worked in the lab of Joliot-Curie, Feldenkrais was also the first Westerner to gain a black belt in Judo, studying under Judo's founder Jigoro Kano. Feldenkrais injured his knee in a soccer match, and was told by his doctors he would never walk again. This challenge spurred him on to develop his method, which uses targeted movement experience to enhance the mind's kinesthetic self-image. All our actions are based not on our physical structure or underlying capacity, Feldenkrais argued, but on the limited awareness of our kinesthetic self-image: by clarifying this underlying image of the physical self, Feldenkrais felt, all activity would improve. In the Feldenkrais method this is done through either verbally-guided or hands-on movement experience that requires the student to move in new ways and thus develop neglected aspects of the kinesthetic self-image. In so doing, impossible movements become accessible, difficult movements become easier, and everyday movements gain clarity and efficiency. Feldenkrais not only walked again but near his death at 84, despite his small stature, could still toss people around like they were styrofoam, and bellow to fill a gym (although he was by nature fairly quiet).

Feldenkrais saw greater implications to his method than just better movement. Struck by the fact that movement and the kinesthetic sense were the first aspects of our nervous system to evolve, long before sense organs or consciousness, he felt that movement pervaded all aspects of our psyche in the most fundamental way, and took the radical stance that correction of movements was the best means to any sort of self improvement. Feldenkrais' followers have proved him right: they have been able to use the sophisticated teaching of movement experience to help students surmount a wide array of difficulties, from paralysis to brain damage. Feldenkrais' own book "The Case of Nora" is an extraordinary case study of a woman who suffered a severe stroke, removing her ability to read, speak or even orient herself in a room; she was proclaimed an invalid by the neuroscientists in Zurich. Using his teachings, Feldenkrais gave her all of these abilities back, until she was indistinguishable from the "fully functioning". (Feldenkrais died before writing any more case studies.)

These methods have a great deal in common: both inventors began by harnessing the power of movement to reach certain goals: in the case of Dalcroze, musical understanding, and in the case of Feldenkrais, to regain the ability to walk. Both saw the scope of their activities expand dramatically: Dalcroze saw the mastery of his work as directly connected with the basic human functions of attention, coordination, self-expression, and even joy, while Feldenkrais believed our spontaneous movement was the royal road not only to the unconscious but to our fundamental cognitive functioning.

My work, Cognitive Eurhythmics, is a combination of these two methods. The modality of my classes follows that of Eurhythmics. Lessons are given as a rhythmic movement response to music, training listening, focus, coordination, self-expression, and improvisation. However, using my education in Feldenkrais, I lead the class into movements that I think address areas of cognitive difficulty. Spontaneous movement reveals the blind spots in our self-image, and music is a

spontaneous movement generator; the ensuing movements and music in the lesson are then improvised to bring the students into contact with faltering areas of their awareness.

Please see the section entitled "General Comments on the Curriculum", as well as the case studies, for concrete examples of the curriculum.

Because of the tremendous difficulties faced by the group, the lessons detailed herein are almost preparatory to what an ordinary person might get out of either a Feldenkrais or Dalcroze lesson. Some of the main issues of the Alzheimer's group curriculum – retaining an action without a model to imitate, identifying right from left, even identifying hand from foot, stopping in time, holding attention for more than one beat – would be subsumed into much more complicated and advanced tasks, with typical lay students, right from the beginning. To design the curriculum for this class, I had to go to the most basic stepping-stones in cognition I could think of and design whole games and lessons around them, and then find even more basic stepping-stones where I ran into difficulty. So while I feel the curriculum hews to the principles of the above methods, it should not be viewed as what a reader of this paper might get in even a first lesson, by any means – although the difficulty of these tasks might surprise you.

## 6. A WORD ON RHYTHM

The central teaching tool in these lessons is rhythm, so I want to clarify exactly what I mean by that concept because it is greatly misunderstood. To many people, rhythm is connected with keeping a steady beat. It is important to understand that this is timing, not rhythm, and there is a critical difference. Someone can dance in time to a thudding beat, but be totally arrhythmic in their movement, while a walk can shift speed and style, but proceed with beautiful rhythm. Rhythm starts to emerge when there are multiple facets to a movement, which coordinate into a congruent action. A person's dance is rhythmic when the movements of the legs, hips, hands, ribs, etc., with all their different weights, lengths, and mechanisms, coordinate into a smooth flow, not when they simply "keep the beat". The most rhythmically powerful musicians pull and push the tempo innumerable times in a piece; their performance stands out as rhythmic because the diverse elements of harmony, pitch, tone quality, duration and more interact and coordinate smoothly with each other. I define rhythm as *the congruent flow through time of diverse movements*. Rhythm is thus less about the timing of a movement, and more about the quality of its flow through time. Timing is the beat, but rhythm is what goes on between the beats.

It's my conclusion that rhythm can thus be looked at as one of the essential properties of life itself, a quality central to life in all its forms and absent from the non-living universe. I say this because of rhythm's teleological nature: in rhythm, the behavior of the parts is being harnessed in the service of a larger order, an order to which any individual part will not tend to in its own nature. When we think of even the simplest life forms, or the origins of life, we think of diverse compounds or organelles coordinating smoothly in the service of a higher order or purpose. This, in its most fundamental sense, is what rhythm is. It is no surprise, then, that acting in rhythm brings us to life.

## 7. GENERAL REMARKS ABOUT THE STUDENTS

When I began I was working with a class size of about 10-12, a number that remained consistent even though there was some turnover of students, and other students would not come to the center for weeks. For the most part my case studies are about those I was able to work with consistently over a period of time numbering at least a few weeks. A few gave me results quickly and left quickly, and so are worth including even though they were around for less long than others. Others started to change but then left before anything too distinctive could happen so they're not included.

When initially working with a Eurhythmics group, the first lesson or two are diagnostic, that is to say, they evaluate the skill level of the basic abilities students need to begin Dalcroze work:

**Attention:** Can the student focus with sufficient clarity and duration to grasp a pattern in rhythm or pitch? Can the student retain the patterns and distinctions, in order to manipulate them or apply them in another setting?

**Sensitivity:** Can the student hear and sense the distinctions needed to perform the exercise? Can s/he sense general gradations of speed, volume, pitch, intensity?

**Coordination:** Can the student produce his/her own gradations and variations necessary to give appropriate response to the subject? Is motor control sufficient for the student to adequately communicate his/her conception?

**Expressivity:** Does the music drive the student to respond expressively? Does the student feel something of significance in the music that s/he is driven to express? Does his/her response have subtlety and life in it?

At the beginning of the classes I would have evaluated them as follows. While these evaluations might seem negative, I thought it best to evaluate the class as I would anyone else, and details of their improvements follow below:

**Attention:** extremely low. When I would model a clapping game, about half the students would respond, but as soon as I took away the model, even if I exhorted them to continue, they would fade out. There was no ability to retain the exercise without simple mimicry. I could not get them to retain simple distinctions of duple, triple, and four beat meters, let alone subdivisions therein. If I started them on a melody they recognized, they would sing it accurately, but float off, unable to stop and resume the melody or repeat fragments.

**Sensitivity:** extremely low. Students would not start or stop on command, but gradually fade in and out of an exercise. In exercises designed to differentiate volume, pitch or quality, the students might imitate a model doing these things, but then revert to a bland, weak clapping as soon as it was gone. Any exercise that was modeled as moving through space

reverted to the simplest possible movement as soon as the model was removed. Singing was rarely in time.

**Coordination:** varied, but usually low, even for the age bracket. A few of the higher functioning students were able to move with varieties of energy and subtlety of distinctions, but most functioned within extremely limited means and showed no distinction between them. For example, some students would only respond by tapping a foot or tapping their armrest, no matter what they were asked to do. Others would follow clapping and stepping patterns but with no energy or diversity of movement. Most have no ability to differentiate left from right, or often even hand and foot.

**Expressivity:** low. Facial expression in most students was heavily masked. Singing was in a monochromatic, spacey tone. Expressivity in movement was flat and purely functional.

After six months I would make the following evaluations:

**Attention:** I no longer have to begin any of the original exercises with any model. I ask if a student will start it up, and when one does, I tell the class to match that student, which they do. Students start and stop on command with astonishing tightness, given the rhythmless nature of much of their behavior. Students instantly differentiate between meters of different beats and hold on to moderately complex patterns of subdivisions within any given measure. They can hold these patterns without any model. The melodies of songs are started, stopped, broken down, and used as general patterns, and the students not only follow, they usually suggest the next step of the exercise so I don't have to.

**Sensitivity:** Without any instruction, students will respond to changes in tempo, pitch, volume, and quality of their own accord as I present them in the music. They can observe suggested movements of their colleagues and imitate them within the broader limits of their functionality.

**Coordination:** Students coordinate well enough to express a variety of moods, colors and expressions. Students can, with varying success, express measures by alternating hand and foot movements. Accuracy in determining right from left and hand from foot is near 90%. Students can identify and maintain patterns that use multiple positions in space. They are also much freer shifting weight and balance.

**Expressivity:** Facial masking is noticeably mitigated in all but two of the students. Students are often quick to offer expressive models and examples for exercises. Students laugh freely at jokes or silliness and when the occasion suggests it, break into applause. They come up with expressive (but naturally simple, by most standards) choreographed accompaniments for words or songs.

## 8. GENERAL REMARKS ON THE CURRICULUM

My curriculum changed and evolved every week, and a good portion of every class was trial and error. However, the following games proved consistently successful and thus formed a sort of "core":

**"Quick Reaction":** A game that requires a time-sensitive response to a simple activity, designed to wake the student up and get them sensitive to the factor of time, which will be necessary for the lesson. "Quick" is of course relative in this case, but a passing game done in time to the piano proved an excellent game. At first students had little idea what to do with the object, gradually figured out to pass it to the next person (rather than throw it at someone random), and eventually could not only do it in time to the beat but at a variety of tempi, which I changed only by changing the music and giving no other indication.

**"Follow":** A game that requires the students to follow a variety of gradations of a particular rhythmic activity. Requires sustained attention, sensitivity to the changes and coordination to render them oneself. Near the beginning of the class I have them follow claps and steps of varying tempo and quality, and stop on command. At first I modeled the claps and steps, and students faded out as soon as the model was gone. Now they start of a variety of claps themselves, follow the other student's model, adjust them when I adjust the music that accompanies them, and stop on a dime.

**Distinction of subdivision:** An important game to measure attention. Students recognize a repeating pattern of two, three, or four beats containing various subdivisions – say, a quarter followed by two eighths. They show their recognition by clapping or speaking for every note of the pattern. A student who wasn't following, in contrast, might merely clap on the beats or clap on all subdivisions, instead of the exact pattern. Then I improvise musical pieces with various subdivisions and see if they can stay with the pattern, even if I change it midstream. While some get lost in the music, others can keep a keen ear to the changing pattern, revealing stable presence.

**Distinction of meter:** The game that may be the most explicit measure of capacity of attention in the world. Students have to hold on to patterns of meter, that is, cycles of two, three, four or more beats, and identify which meter a piece of music is currently in. At first students couldn't follow the changes of meter in a simple exercise of clapping through space while counting the meter. Now the only question is how quickly they catch up when I switch, which is usually quite quickly. They can identify the meter of pieces I play and start counting in it, then continue counting the meter when I stop.

**Orientation:** Games that require quick-reaction responses to commands of "left hand", "right foot", etc. These commands are then set to music, requiring the responses to be not only accurate but placed with precision. The initial success rate was around 10%, with most students either sticking out both limbs or neither, and inability often to distinguish hand

from foot. By the end of six months the success rate was around 90%, which is roughly that of a regular group of adults ("normal" people know their left and right less than they think). We have moved on to work with clock faces. Alzheimer's students are usually befuddled by clock faces and some insist they have never seen one before, doubtless untrue, but a reaction that has interesting neurological implications.

**Dance Steps:** Combining the above materials, I will usually give them dance steps that require a certain amount of cognitive complexity. As long as I am merely speaking the rhythm and modeling the step, the more advanced students stay with the pattern quite well. Once I fire up a musical piece, however, many simply want to dance to the music and lose the motivation to hold the step. I try to hold as many as possible to doing a specific step. Then eventually I give in and have everyone just dance, which usually concludes the class.

This account of the core curriculum is only one dimension of a multi-dimensional story, and I refer you to the section below, as well as the case studies, to see the full implications of these exercises.

## 9. BROADER COGNITIVE IMPLICATIONS OF THE IMPROVEMENTS IN EURHYTHMICS

While these improvements might seem pleasant enough in themselves, and proof that even a second-stage Alzheimer's patient can learn and grow, is there any deeper significance to this improvement in Eurhythmic work? I offer the following suggestions.

**Alzheimer's and Time:** Like many (perhaps all) neurological problems, there are components of Alzheimer's that can be identified and treated as rhythmic problems. In "Awakenings", Oliver Sacks devotes a special appendix to space and time in relation to the disorder of Parkinsonism. Particularly as the Parkinson's patients withdraw into their own worlds, their sense of space and time starts to bend and change. I see this same interaction in those suffering from Alzheimer's. Even the most withdrawn Alzheimer's patients can communicate with articulation and wit, however they must do it out of any normal sense of time. In many circumstances, after a class, at least one of the students wanted to talk to me. To do so, they often sat for an extended length of time getting their thoughts together, then delivered them in a halting, timeless and arrhythmic fashion, with body language that seemed to block out the space of the external world.

Whatever the processes of Alzheimer's may be, it is clear that part of the disorientation, as one would expect in a disease that affects memory so intensively, is temporal. Perhaps the most dramatic effect Eurhythmic has is its impact on sense of time. Every moment of a Eurhythmic lesson demands the student be present in time, that the student coordinate his movements within time and respond to the time of the music, the group, the world. The student is forced to wake up and partake once again in the proper rhythms of life. That, I think, is the most powerful effect of this work on Alzheimer's, and responsible for much of the remarkable behavior in the case studies.

**Alzheimer's and Self-Expression:** The concluding segment of each Eurhythmics game involves the student initiating and improvising with whatever musical element was taught. I believe that the improvisation aspect of Eurhythmics is an effective counter to the tendency of Alzheimer's sufferers to fall into empty mimicry. In work both with this group and other Alzheimer's patients, I often see them fall into stretches of time during our work when they fall into a mimicry that seems devoid of all awareness. Improvisation precludes mimicry and requires creativity. When a student comes up with their own movement to interpret some words, they necessarily step out of mimicry and bring their personality back to the fore.

**Alzheimer's and Attention:** Eurhythmics is one of the great methods for improvement of attention and focus that has come out of the Western world. While the West has traditionally seen attention as something that is available to anyone to turn on or off at will, many traditions of the East have long taken a different stance, viewing attention and presence as skills that must be built up over time like stretching a muscle, that exist in us minimally until they are cultivated with disciplined study, through a variety of methods. In linking music to movement, Eurhythmics requires focus and interaction in not just our mental but also our emotional and movement capacities. For polyrhythms and counterpoint, attention must be split and diffused; for retaining whole melodies and progressions, it must be stretched without breaking.

In leading a group of students from barely being able to retain the difference between 2 and 3 beat measures, to being able to recall subdivision patterns in 4 beat measures and longer, attention is effectively stretched and deepened, one might say to double its previous capacity, except that there is of course no quantitative yardstick for such a phenomenon. I have generated these results in a variety of neurologically disordered patients and the results, even of such a seemingly minor change, can be wondrous.

The results are particularly impressive in what I would call the subset of "slippery" Alzheimer's patients, the ones who are the opposite of withdrawn black holes, who sit and gurgle like fountains, but retain nothing. As will be detailed in their case studies, I have watched as their responses to my lessons have gone from seemingly meaningless, unconnected gestures, to be gradually stretched into recognition of four beat measures, consistent accuracy in orientation exercises, and even recognition of sophisticated changes in my musical accompaniment, interspersed of course with the usual babbling brook. Imagine my surprise when one student, who had never followed a single orientation exercise, responded to my request to see everyone's left hand with the cry "left hand!" and thrusting the hand out. She responded to the rest of the drill equally consistently, within the context of her functionality. With further experiments, her attention had clearly been stretched, at least in this context, from a nullity, to just long enough for her to process a simple request and respond to it coherently.

As the specific responses in the case studies below will show, there are many more effects of the teaching of rhythmic movement than these general trends.

## 10. ABOUT THE MUSIC

The above exposition, like the case studies below, talks much of cognitive functionality and motor coordination and other technical issues. What I must make clear is that the music is the central feature of the curriculum. While the steps of modeling, and verbally interacting with the group are important for setup, it is the goal of the teacher to move as quickly as possible to a situation where the music does all the teaching. The music in a Eurhythmics lesson must always be spontaneously improvised by the teacher (even if the choice, for a given moment, is to use music from the repertory) so that it can be tailored to exactly what is wanted from the students, and act as bridge and guide to the students' learning and development. Words and models are only a crutch to move into the next musical lesson.

The music is what generates true rhythm, not a verbally directed clap or march, however prosodic or enthusiastic the direction. And the most powerful impact of the lesson, no matter how ingenious the concept, only comes when the point of the lesson is successfully communicated purely through the music. Nor does the presence of music alone drive much activity: artistry is necessary. All the most impressive moments I see in the students occur when I am able to deliver artistically, that is to say, I successfully improvise a compelling, rhythmic, powerful music to underscore, support, and carry forward the goals of the game. In that moment, the students are taken past themselves and their previous boundaries, awoken to new possibilities, and whatever their limitations, grow. There is no question to me that without the music, none of the dramatic changes or awakenings would have happened to the students.

The impact of targeted movement response to improvised rhythmic music on cognition and functionality: art or science? My experience teaching has convinced me that both elements are needed in high degree for this method, and it must therefore be regarded as some fusion of both.

## 11. STAGES OF "AWAKENING" IN SOME OF THE STUDENTS

The most exciting aspect of the teaching was when students who were functionally little more than withdrawn, inert, masked "black holes" started gradually coming back to life through their responses to the curriculum. These awakenings were consistent among many students, and went through the following steps:

- 1) Withdrawn. The student does not participate or appear to respond to anything in the lessons, and sits like a stone except for episodes of wandering off, or wandering towards me.
- 2) Feeble, slight movement, exactly in time. The stage that indicates the student is clearly reacting on some level. The movements are often almost nonexistent – a rocking, a soundless tap of hands on the lap, a slight, small movement of the foot – but they are right,

exactly in time with the exercise, and change with the tempo of the exercise. This is to me the beacon announcing the student is waking up. From that moment on, I engage the student fully, with the same degree of enthusiasm and directness as any other, more actively functioning student. This immediately begins to generate response of more motion, through more space, with more vigor and variety.

3) Arrhythmic vocal interjection. At some point, the student's participation increases beyond the slight movement and they start participating vocally in the class. However this vocal participation inevitably comes at first as ill-timed, often incomprehensible vocal interjection, sometimes with clear cause, often without. It's often loud, and would be disruptive if I didn't immediately drop everything I was doing to engage it as it is a sure and exciting sign of awakening from an inert state.

4) Effective assimilation into modeled exercises. At this point in the development the student effectively uses, of course within their physical limitations, body and voice to participate in simple exercises, join when they start, stop when they stop, shift when they shift, sing along, and even initiate exercises. The student is a functioning participant in the class.

## 12. A FINAL TREND: STUDENT "SECRETS"

I mention one final phenomenon that ran through many of the students. As their attention, presence, and functionality grew, inevitably they would try to corner me, after or even during the lesson, and announce that they had an important "secret" to tell me. I discouraged this behavior, not just because I wouldn't get anything done if every student collared me to deliver secrets, but also because there was something disturbingly atemporal about this maneuver. The whole approach of delivering the "secret" was to block the two of us out of surrounding space and time and, speaking in halting and arrhythmic language, take a very long time to deliver a statement either mundane or incomprehensible. As an isolated incident I would have merely attributed it to a particular personality, but the amount of students who came running to me after a lesson in which they had reached new levels of participation, announcing that they had "something very important to tell" me, and then appeared to have very little to tell me at all, was high enough that I consider the presentation of a "secret" to be some sort of event tied in with the cognitive development that Eurhythmics has brought to them.

## 13. TEN CASE STUDIES

### 13.1. ELLIE

Ellie was only around for the first couple of months, but stands as the first prominent awakening I had of a student. Ellie was a small, quite old black woman, who I estimated as probably the oldest in the group, and rather frail. For the first three lessons, Ellie, like many in the group at that time, sat like a stone through the whole lesson. Near the end of the fourth

lesson I noticed something. Ellie was moving to the music. I hadn't noticed it until then because the movements were so small and feeble. But she was rocking slightly, and her hands were tapping her lap, and when I was asking for it, her feet tapped slowly and soundlessly on the floor. But what was so incredibly exciting was that she was tapping exactly in time to the music. Not off in her own time, and not merely in the ballpark, but right in time. As I am constantly changing the parameters of the music delivered to keep the students present in time, I checked to see if she followed the changes in time and, after a short adjustment period, she did. I concluded that if she could stay right in time with the music, she was, despite her masked and inert state, present with the group. From that moment on, despite her lack of reaction, I reacted to her just as I reacted to everyone else: I spoke to her just as boisterously, and gave her just as much encouragement during the games as everyone who was participating much more. For the rest of the lesson, the small feeble movements were nevertheless all I got.

When I came in next week, something startling happened. I began with a simple prosody-and-movement warm-up, where we each conducted a different way of saying "good afternoon". Ellie, who had done little more than sit like a stone for a month, suddenly spoke aloud, saying "we like em one at a tiiiiiiiiime..." and started rocking, patting her lap and slowly tapping her feet. Ellie was making a request for the musical exercises we were doing at the end of the last class, when we alternated clapping and stepping to common-time Joplin-type music (the material usually starts from a composer, but turns into improvisations in that style as I tailor the music to generate the spontaneous behavior I think most educational). Naturally I dropped my lesson plan for the day and said "Ellie likes em one at a time! Let's do em one at a time." And I launched into Joplinesque improvisation, which got the whole class, including Ellie, rockin and rollin.

Ellie unfortunately was not in the class for much longer, but her responses continued to be interesting and in the style of an explosive awakening. Near the beginning of the next class, once we got into musical games, Ellie starting talking at full voice, talking and talking and talking. The staff member next to her was trying to listen and engage her, but it was unclear what exactly she was saying. She continued to participate, and her movements grew somewhat in range, scope, quality and specificity. But soon after, she never came back to the program.

### 13.2. MARY J.

Mary J. is one of the finest examples of a student who has shown a full-fledged awakening of sorts during the progression of the classes. When Mary J. first came to the classes, she sat like a stone through its entirety, and this continued for well over two months. There was profound facial masking and no expression or reaction of any kind. Receiving no response of any sort, I did not especially focus on her during the classes, and thought of her as effectively not with us. She is not as old as some and physically seems healthy and strong, though like any severe case of Black Hole-dom she did little.

The first indication that she was with us came out of the blue, during a funny encounter with another very low-functioning student, Thomas. I asked him to join us in the clapping, and in an impressive non-sequitur, he rolled up his pant leg to show me his lower calf. As I was walking back to the center of the group to re-engage the class as a whole, I said “not exactly what I asked for...” which I thought of as a comment to myself that would go over the heads of the class. And so it did – except for Mary J., who let out an unprecedented howl of laughter, though her face continued to show no expression. Mary alone had perceived the incident with Thomas on the other side of the circle, understood it, heard my comment, and gotten a joke that was really a meta-comment on the proceedings. From that moment on, I knew she was there, and as with all the students, as soon as I can tell they're there, I address them in full, and give them just as much time as any other student, regardless of what response I get back.

Soon Mary started showing the familiar movement patterns of the awakening black holes. She began to tap hands and feet very slightly to the music, like Ellie, a feeble and undifferentiated movement, but one that occurred exactly in the proper rhythmic time. Over the weeks this slowly opened up into clapping and small stepping in time until she was participating in nearly all the games, albeit with weak movements. As she participated more, I brought her more into the games, directing more and more comments and jokes in her direction.

One day about three months into the classes, I was doing a foot-hand alternation game. Mary was with a lower-functioning group in the left side of the room. The right side of the room was acing the exercise, while Mary's side was on the whole not doing so well. “I don't know, Mary,” I said to her with a mock frown. “That other side of the class, they've got it! They get an A for the day, or at least an A minus. But this side of the class, not so good. B at the best.” (I think everyone understood this as a joke since I would never do anything like give grades.)

No expression or response from Mary at all for several seconds. I began to worry I'd startled her, and that maybe she hadn't sensed my humor, so I turned back to the room to start a new game. Then, a voice I'd never heard but could identify instantly floated into the air from behind me, unthinkably delayed a full ten seconds or so after my comment, “but I thought we were doing just fine!” I turn around and there is Mary J., with a smile on her face, speaking for the first time in the three months she's been there. I quickly continued the engagement: “Of course you were doing fine! You have to understand, that side contains some seriously high achievers. And I have to grade on a curve. So I have no choice but to give you a B.” Another mock frown. Five second pause. “Well that doesn't seem fair!” she says, and now her smile is big. Somehow, through akinesia, masking, even atemporality, a warm sense of humor was shining through.

Mary J.'s participation continues to skyrocket, and I continue to demand more of her. I've had her start off the entire class with a clapping tempo. I hear her singing along to songs that she knows (the first song that got her singing: “Off we go into the wild blue yonder”). She continues to engage me in dialogue, and she smiles. She dances with the class when I have free dancing for

the last few minutes of the hour. Quite a change, from the woman who sat as a stone for almost three months.

### 13.3. KATHLEEN

Kathleen is one of the most high functioning members of the group. She has no trouble following the complexity of all the exercises we do, though she is not the most physically active and her reflexes are not always so quick. She is capable of responding based merely on my verbal suggestion, when most students need at least one model to get on track. I think Kathleen's main deficiency is in socialization and verbalization. She says tremendously little and that which she does say comes bolting out in quick bursts and not particularly appropriate times. Her voice is croaky and wispy.

However, her response to music is extremely different. She is clearly very attached to music, particularly music that she, an African-American woman I would estimate to be in her late seventies, remembers from her heyday, such as jazz standards. She croons and scats along in a croaky voice to any classic song I can come up with, usually knowing the words. She'll even sing in response to melodies I'm freely improvising, anticipating their direction with musical intelligence. Despite her linguistic limitations, she is among the most active participants in any class due to her enthusiastic response to music.

In particular, she takes the music so close to her heart, that while she does whatever exercise is asked, she will start and end it where she sees musically fit. As soon as I add any musical accompaniment, she begins to sing, loud and clear, her own tune in counterpoint, and stops clapping when her tune is done. This may be before I'm done, in which case she'll just sit there until the end, or it may be several beats after, in which case she will continue clapping until she feels the music should have finished.

Her vocal improvisations will even leak over into exercises in which I am not providing an accompaniment, for example basic clapping drills. Often even the mere clapping drills will inspire her to start singing a tune, and she will finish exactly when that tune is done, which is usually in the most logical of places: for example, if I set up a rhythm, and quit after 12 bars of the cycle, she will often continue until the end of the more symmetrical, 16 bar cycle and then stop.

In situations like this I can take advantage of the fact that all Eurhythmics teachers are required to be capable improvisers at the piano, in order to provide exactly the texture and quality necessary to generate the desired movement in a given exercise. When she begins her improvised tune, I pick it up by ear, set it to music, and have the whole class move to it, which seems to make her more intrigued than anything. Sometimes she adds words or scat to her improvisation, and then I can have the whole class sing "Kathleen, symphony number eighteen", or whatever I happen to call the piece that day.

What is ignominiously called “scat” is in fact an extremely interesting phenomenon in improvisation, musical comprehension and cognition in general. If scating is an available window for communication, as it is for many who are quite disabled, and it was clearly the most “alive” route for communication with Kathleen, the ability to reach such a person is tremendous. Scat could be said to be a form of communication using all the aspects of language that traditional academic linguistics misses out on: the feel, sound, even taste of words, the pacing and rhythm, alteration of pitch and dynamics, in short the life lying behind language. A cognitive psychology or cognitive neuroscience approach to scat would be a tremendously interesting realm to explore.

Other than the increase in musical response and the free-form scat, I have not seen the clear increase in functionality with Kathleen that I have seen in some others, perhaps because she is much higher functioning than many and so the exercises don't challenge her mentally very much. However, Kathleen did provide me with one of my most extraordinary moments. I was working through a register-recognition follow game (hands up high for the high notes, hands down low for the low notes) and as it finished Kathleen turned to me and looked at me with extraordinarily clear eyes, that had a quality I had not seen before. She spoke in a clear, pleasant voice, completely devoid of any croaky wisp, and said “This is very good exercise for us, Eric.” Who knew she even knew my name? But more importantly, I saw suddenly and clearly who Kathleen was. I can even tell you that she was probably a librarian, or similar type, someone who was soft-spoken but backed up by the confidence of a keen and literary intelligence. Her sentence was less distinctive for what the words contained than for the clarity with which it was delivered. And in the ensuing seconds, in which I tried to engage her while she was in that place, without being conspicuous, she was back to old Kathleen.

Oliver Sacks speaks in “Awakenings” about patients of nearly any disorder having “lucid moments”, in which they seem to be suddenly transported back to how they used to be, as if there were some sort of global phase-shift in their functioning. I can certainly not attribute this moment purely to my teaching, especially since I haven't reproduced it. However, such moments remain a testament to how little we know, and the potential of art, movement, and the engagement with the living world to bring such transformations about.

#### 13.4. ANGELA

Angela was characterized at the beginning of her work less with a complete withdrawal, or an extreme slipperiness, but more just a general confusion. She looked around at the world, and engaged with it, but seemed to understand it little. The first several lessons, Angela watched and enjoyed, and tried to follow the instructions, but did not get very far

Since then Angela has become one of the most capable and enthusiastic of the students – except when she falls back into space for a while – and her progress did not occur in any rapid jump, but has been steadily and consistently impressive. She above almost all other students now

grasps the goals of the improvisational games, and is always ready to offer creative solutions. In games that require more complex coordinations, such as alteration of hands and feet in measured time, Angela is among the most capable and high-functioning, even though her social demeanor would not suggest that she was one of the most high-functioning students. She's become someone I can always rely on for a correct example.

What seems to characterize all of Angela's movements and actions is determination. There is something about how she claps and steps that shows how fiercely committed she is to getting it right. As much as she smiles and laughs with the class, I think she takes her conquering of the apparently frivolous exercises quite seriously. I think this explains in part her continuing progress.

A few weeks after I began to see Angela's transformation from non-functioning to top of the class, she waved at me in between exercises and said, "Eric! I am getting better! I am getting better!" Indeed she was improving, in a life that was almost certainly slipping away from her in so many ways. And this awareness of the internal positive change, I think, led to the determination.

Angela was one of the many patients that had "secrets" to tell me, as noted above. One was something about bringing me something from her native country. That one I didn't particularly understand. But one day in December she said, "you brought me back twenty years today." That I understood.

### 13.5. HENRY

Henry is a tall and powerful elderly black man, and fairly low functioning as far as the students go. He has a deformed face, which looks to me like it was reconstructed as best as possible after being smashed in an accident, before the advances of modern plastic surgery. Given his robust frame and head accident, it's possible he has Pick's disease, closely associated with head trauma. His drawl has a southern twang that suggests he probably lived in the south before the Civil Rights movement. I can only assume Henry has not had an easy life.

And yet it is through the twists and turns of a person's life that we can find the material that will reach them the strongest. Henry was for months totally non-responsive unless he was hearing swinging jazz, blues or ragtime, music he probably grew up with and moved to in the past.

Henry's path of awakening was unusual and very funny in some ways. As I said, for well over a month he simply sat in his chair, although he didn't seem particularly bothered by the experience. But then, and only during moments in the class when the jazz or ragtime got really hot, he would start to mumble arrhythmically, a gibberish that seemed to be fighting to get out some words. I always gave him time to speak and tried to comprehend, but failed for a few more classes. Finally it became clearer what he was saying: he was trying to correct how I was teaching the class to move to the music!

Henry had one and only one thing to tell me for weeks: something about putting the foot here and then the hand here and this was one and this two and so on. He seemed irritated by the various movement games I came up with, and clearly felt that this was his music and he was in a position of authority to tell me how people should be moving to it. And actually, if I could have understood him, I would have done exactly what he asked, because I was wildly curious to know what it was and what it would have taught me about him, but I couldn't understand. So, this became the game we would play every class. When the music got swinging, Henry would start to talk, and tell me how we should move to it. And once or twice a class I would acknowledge it and say, with arms crossed and a mock serious voice, "Henry, are you trying to tell me how to run my class?" Which of course he was, and everyone laughed. "Henry, you can offer me all the suggestions you want after class. But for now we do it my way." Henry was undeterred, and continued to mumble during hot music and otherwise do nothing. And his behavior plateaued in this fashion for some weeks. There was one exception, where I said "show me, Henry!" and he actually got up and started dancing. I accompanied him, and the other students, who were accustomed to seeing Henry do almost nothing, stared with jaws agape. It was fantastic, but he seemed a little embarrassed by the whole thing, and has never gotten up again.

Little by little, Henry's threshold of activity began to increase. He began to bob and tap to any music that was really swinging (though he sat there, utterly unimpressed, when I played anything classical, waltzy, or otherwise non-jazz) and eventually started even moving with a certain degree of specificity, extending a right arm, or shoulder or elbow or foot when that was the game. He did less arrhythmic speaking during the music, and started to pipe up during the unaccompanied games. Finally one day, during a clapping drill, Henry mumbled, and mumbled louder, and finally the words rang out clear as a bell: "Can we have some MUSIC PLEASE???" The class roared with laughter. So naturally I dropped everything I was doing and started playing some hot jazz for Henry. When I was done I said "What do you think, Henry?" And he gave a small, approving nod. And this is the game we play now: every so often he interrupts the class, demands some music, I appease him, he nods in approval, and eases back into his chair. And he participates in most of the games now, too.

### 13.6. MAURA

Maura is another, more "slippery" student. She is always present and always giving verbal feedback, but this feedback also reveals that she retains little. However she is a little higher functioning than the other slippery students and has a good dose of determination.

She is a good example of a student that is helped by the exercises for meter and subdivision, which require her to stretch her attention from the near-nullity it is now to something that holds for a second or two. Any act that can be done very quickly, she can grasp, imitate, and hold on to: but any activity requiring more than a beat or two she is easily lost. During four-beat exercises, especially those that also contain subdivision or complex coordination, I can see her working with incredibly intense focus and determination to hold onto the pattern and achieve

the goal of the game. She always appreciates when I come offer to work with her personally during the game, and her determination doubles. Particularly when she is next to another high-functioning student to keep her anchored, Maura continues to progress steadily at retaining more and more complicated rhythmic fare. Adding only a second or two to someone's potential attention span can give them a great increase in everyday functionality, and I am confident Maura can develop that over time.

### 13.7. PAULINE

Pauline is a small and slight elderly woman. Pauline is an interesting case because her problem seems nearly entirely temporal. Any time she is engaged one-on-one during the class, and given enough time, she absorbs the lesson and works through a game requiring any type of rhythmic movement, provided it doesn't stretch over too much time. But she must sit and absorb to gain this: anything delivered in rhythmic time, or on the flow of the class, misses her completely, at least at first. Once enough time is taken with her to get her on track, she improves dramatically throughout the hour, so that by the end she moves and claps on par with everyone; but when the next class begins, she is back in her "time hole". Pauline's improvement seems to move in a different rhythm than others, improving much in one class and then slipping back for the next class.

Pauline is also one full of "secrets" and when allowed to speak out of time, does so very articulately; but I don't indulge her much because in letting her go out of time I reinforce exactly what she needs to change. Her mind is still active and competent, it just can't act in rhythmic time well enough.

### 13.8. DANICA

Danica was one of the two most "slippery" patients: she was always present on the surface, moving, talking, responding with laughter and movement, but with virtually no awareness or retention. Danica repeats out loud most things I say. In response I have nicknamed her "my assistant". If I look at or talk to Danica for enough seconds at any time she invariably spouts, "I love you!" regardless of any context.

As I mentioned earlier, I found the slippery patients the least fruitful at first, while the withdrawn patients went through dramatic awakenings and alterations in behavior. But, much was going on under the surface of the slippery patients and Danica, after almost six months, began to show more and more striking results.

My first connection with her was when she grasped the "stop" command in follow exercises. "Clap, clap, clap...and stop!" I commonly emphasize follow-stop at the beginning of a class to get the group reacting in time. The command to stop is accompanied by a gesture. As detailed earlier, at first the group would not at all stop on command but just sort of fade out. Gradually this got better. After several weeks of group improvement, Danica finally grasped the "stop"

part of the exercise and was thrilled to no end. Every time I said “stop!” I could count on Danica not only stopping accurately, but echoing me with a “stop!” of her own. Soon, after any dramatic gesture or change in my voice, I can count on Danica to say “stop!”, hoping she got it right, though she usually isn't. But when I do say stop, she's on top of it.

Danica has a clear tell when she is absorbing material: her face loses its perpetual vacant smile and her brow furrows. The stop was sort of our first contact, and after that she began to absorb more and more of the material. Her lefts and rights are not always accurate, but they often are and she responds clearly to my request, even if she is not oriented enough to get it right. Most impressively, she now accurately retains four-beat measure patterns with subdivisions. Her brow furrows and her vision tunnels, but she holds on to a four beat pattern. Little by little I sense the curriculum stretching Danica's ability to focus and be attentive and retain, and I am curious for further results. Watching someone so detached from reality suddenly and vigorously absorbed in the moment is a special experience.

### 13.9. MARY T.M.

Mary is the most slippery of the patients at the center. She is constantly talking, moving and bobbing, but her words are gibberish and she absorbs little to nothing. The only other comments I got from her seemed random: “my brother lives in my house” was a common one. Asking Mary a question often got a similarly random-seeming response, although her responses proved more useful and less random than they seemed as the classes went along.

Mary is one of the lowest functioning performers in the class and I noticed no significant change from her for many months. And then one day, we were doing a right hand left hand drill, and as I was going around to room to observe each student, I stopped in front of her and said “right hand”, and to my surprise she said “right hand!” and popped her right hand out. “Left hand,” I said, and she repeated “left hand!” and thrust out her left hand. It was my first experience of getting through to her after over four months of having her in nearly every class. Previously, she would bob and move joyfully to the exercise, but do no movement that seemed to have any connection to the exercise.

After that I started listening more closely to Mary's gibberish, which sometimes contained “coded” responses to what was happening. Once during the follow drill, I did a dramatic change in tempo in the middle of the improvised music to catch the students off guard and make them follow a different tempo. Mary was mumbling something to herself I couldn't catch, but as soon as I made the musical change, she said declamatorily, “there it is!” I turned and stopped, and said in rhythm, “noticed that change, did you?” And she smiled and said only more gibberish.

Other comments of hers have I think given me valuable insights into the inner world of her particular state of Alzheimer's. “Left foot!” I was once telling the class, and Mary thrust out her right. “Mary, which is your right foot?” I said, Which is a common question I present if someone makes a mistake – after all, there is nothing learned in just correcting someone, but if

they discover they're using the wrong foot, an improvement in orientation takes place instantaneously. "They're both the same," she said, "foot and foot!" This was a remarkable comment: for all I knew, the inability of Alzheimer's patients to choose a hand or foot could just as easily be akinesia, a lack of awareness of the limb, or a hazy sense of external space. But this comment reveals that her kinesia of both limbs was clear, her sense of both feet in space was clear, and the differentiating mechanism was somehow turned off. I look forward to more insights such as this from this student as she continues to open up. (She correctly identified her left foot effortlessly last week, although progress is to say the least sporadic.)

### 13.10. THOMAS

Finally there is Thomas, a.k.a. "The Last Holdout". Even when every other student had been brought to a good degree of participation, Thomas sat and never moved. A quite old, robust Irishman, Thomas sat there with one knee crossed over the other and both hands on the knees, and for five months, the man never even wiggled a finger, except to occasionally wander off, presumably to the bathroom. He was awake and between classes would talk to me and others, and he would say hello cheerily to me when I arrived. But, something about the rhythm games made him simply sit and do nothing. His air was more that he simply didn't feel like taking part: that extraordinary intersection of our will and our neurology where our dysfunction realizes itself as inclination.

"Thomas," I would tell him as I went around the circle observing a game, "you are the last holdout! Everyone else is having a party, and you sit like a stone! Someday, I hope you will come boogie with us!" Off into space he stared.

And then one day, after five months, just like everyone else in the class, the old Irishman began to awaken. We were doing an exercise of alternating hand and foot, clapping and stepping, which the class finds terribly difficult. To aid I have them link it to language in several different ways. In the case of this game, the class said "BOOM!" when they step and "clap" when they clap (we've since mostly moved past this game). I went around asking each student to say "BOOM" and stomp. "Say Boom, Thomas!" I urged, expecting nothing. A pause, a quivering of the mouth, and "BOOM!" he said brightly. Applause – Thomas had finally acted. I received nothing more for a few sessions, but little by little, if I urged him, he participated more and more.

These days, some months later, Thomas still requires cajoling or he will sit in his own world. However, once he begins to get involved in an exercise, he participates fully with the rest. He claps to the rhythm if it's not too fast, he holds up the correct body part, he throws the ball accurately across the room.

As of the latest update to this document, approximately one year after beginning work with this class, I can look around and not see a single "black hole" left. If only for a fleeting time a couple of days a week, rhythm brings them back to the world.

## 14. BIOGRAPHY OF THE AUTHOR

Eric Barnhill is an international award-winning, Juilliard-trained concert pianist who is also active as composer, improviser and music director for numerous New York film, dance and theater projects. He is trained in the Feldenkrais and Dalcroze methods of somatic education and has won attention in the scientific community for his application of Eurhythmics work to groups with motor, learning, and neurological disorders. You can read more about him at [www.ericbarnhill.com](http://www.ericbarnhill.com), and about his Music Embodied and Cognitive Eurhythmics curricula at [www.musicembodied.com](http://www.musicembodied.com).