



Graphic Notation in Music Therapy: A Discussion of What to Notate in Graphic Notation, and How

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Abstract

This article presents graphic notations of music and related forms of communication in music therapy contexts, created by different authors and practitioners. Their purposes, objects of description, and the elements of graphic language are reflected upon in a comparative discussion. From that it becomes clear that the aspect of overview is a fundamental one, facilitating perception of complex data. This also makes possible to memorise complex data, extending the natural limits of human memory. Discovering hidden aspects in the clinical data, as well as sharing and communicating these aspects are also important concerns. Among the authors discussed, there is a large variety both in goals and methods. Keywords are proposed to circumscribe moments of possible interest connected to graphic notations. I suggest that the discipline of graphic notation can be useful for the grounding of music therapy presentation and research in empirical, clinical-

musical reality, and welcome further discussion and explorative work.

Keywords: graphic notation, musical analysis, music analysis, microanalysis, improvisation

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Introduction

In music therapy practice, improvisation is frequently used. Clients' expression of their emotions and interaction between therapist and client often take place within the medium of music. In order to keep track of what happened in the music throughout several sessions, tools for description are needed. Such tools will also be of use when the music therapist is to report in some detail about the therapy in a multidisciplinary team, as part of clinical assessment, treatment, or during supervision. The same need for descriptive tools also appears in music therapy as an academic research discipline, where cases often undergo detailed analysis.

Music, including music in therapeutic contexts, generally needs description if it is to be studied in depth and findings are to be shared. Our perception of the music may, first of all, be more or less clear. If the music presents 'unknown land' to us, we

might not know fully how to orient ourselves in it, and possessing descriptive tools may help us in this situation. What we think we have heard may be incomplete – listening to a recording may reveal something new, and notations might do a similar job when looking at them twice. Music therapists will often listen for "what it means", that is, making therapeutic interpretations, during clinical music-making, and may miss details or aspects that could be of use later, in case the music itself cannot be recalled. When communicating to others, without having a complete playback of the music in question, description serves to suggest to both the reader and auditorium member what the music was like in order to give a more vivid image of it. Also, it will enable them to verify and critically examine what the empirical data from which conclusions were drawn is. The memory problem has great practical significance: it is impossible to remember clearly many details of music after some time –

they fade away and must be refreshed or recalled. And even if video or audio documentation exists, it could take a long time to go through it. Some composed music has scores, but improvised music has not¹.

As a music therapist, one may write verbal accounts, and indeed, words can serve as an extremely flexible way of notating music. In a previous publication (Bergström-Nielsen 1998b) I presented a scan through music history of how words serve as notation, in part or wholly. One could even imagine keyword systems and memory-stretching techniques, usable also for blind colleagues. On the other hand, pictures allow for overview 'at a glance', while verbal accounts used to describe music, like music itself, are bound to a real-time sequence. Pictures allow for "random access"², like when looking freely around on a map. Through a pictorial representation, details and whole can appear integrated, and a large number of data can also be quickly comprehended by others. This is the overview aspect, meaning that details are easily synthesised into a whole and yet remain available for attention in their individuality.

In the actual process of music therapy, as participant or as a listener who shares time and space with those who play, visual representation is often not relevant. There, listening, action, presence, intuition may be what matters. Then, it is only later, when the music has become something remembered that the nature of its representation becomes an interesting issue, in case you wish to dwell upon what happened for further analysis.

The visual representation is a kind of substitute for the 'real thing'. It serves as a source of information in its place. But it does not just reduce information, it also adds something new. Since the medium is different, we view relevant details and structures in a new light and gain new insights. Like a map of a city or a landscape by the aid of which we do not lose our orientation not being able to remember exactly street angles and directions. Thus, generally speaking, the representation becomes a tool for gathering new knowledge about reality which subsequently feeds back into practice. Through this it is possible for us as music therapists to have access to a mass of empirical data

independent of their direct experience, so as to find a systematic method for studying and evaluating music therapy practice.

Standard music notation can and should indeed be used in some cases. It has been employed with virtuosity by Colin Lee³ (1995, 2003). But not all music therapy could be notated in this way. Sometimes details would be overwhelming. The more complex the music is, with maybe no clearly discernable tempo, rhythm and pitches, the greater the need is for a notation system that captures and shows what the musical elements at work are (for instance, various textures, timbres, densities, irregular figures/motifs, and how form elements relate dynamically or in other ways to each other).

Such a problem was, however, encountered before in the history of music notation, following the advent of new experimental music since 1945. It was addressed by composers and, subsequently, by music educators who created "aural scores"⁴. New experimental music could be conceived according to new ideas of performance practice which did not aim at reproducing a detailed 'text', but instead were meant to stimulate the interpreters' own creative activity. At the same time, the new sounds were often not metrical in their rhythm nor traditionally pitched and so could not be notated traditionally. As a result, new signs and notation means were introduced, some of them being more or less widespread, others to be found just within an individual work.

In traditional music before 1950, how to notate was a matter of course. But with the new and experimental developments, the choice of notation became a matter of choice, or of invention, for the music composers. There is a body of literature on such notation developments (for examples and historical accounts, see Brindle 1986; Gieseler 1975; Karkoschka 1972), stemming from a musicological, as well as from a music conservatory-related context. A strict theoretical analysis of music elements is not an absolute requirement for creating a graphic notation. Yet theoretical thinking on the background of historical experimental and new music concepts is relevant. How can we describe improvised music which may sound very different from classical and popular musics with their well-known forms? My method

¹ Lee (2003) goes beyond the kind of pragmatic arguing for the importance of studying the music itself that I have stated above. He suggests that the meaning of music forms and structures cannot fully be reduced to words or other media, coining the term "Aesthetic Music Therapy". This of course accentuates the necessity of having a clear and full experience of the music.

² This notion is used in computer science and it is present in the common notion of "RAM" – Random Access Memory.

³ This is presented in a number of his writings; see Lee (2003) for a literature list. A particular form of its use is on a basis of MIDI-instruments and computer write out of the notation as described in Lee (1995).

⁴ See Bergström-Nielsen (2002) for further literature lists and comments on the body of notation literature, as well on aural scores.

of parameter analysis is an answer to this (see Bergström-Nielsen 2006).

Till now, notation technique has hardly been the subject at all in music therapy studies. However, as it appears from the above, parallels and inspirations can be found. It should also be noted that in musicology after 1945, tables and other schematic depictions often play an important role in the discipline of music analysis – regardless whether old or new music is analysed. Nowadays in life, we encounter design and layout everywhere – in written advertising, in newspapers and magazines, on the internet etc., which testifies to the power of visual communication to integrate details and to arouse our attention.

So, let's notate! But how? We need to develop notation forms that are adequate – both in relation to the music and music therapy process in question and in relation to the purpose of our analysis of it. In recent years, some new work in the field of graphic notation has been carried out which interestingly throws my own practice at Aalborg University into relief. At Bar-Ilan University in Ramat-Gan, Israel, my method was tested in teaching practice and taken as a starting-point, and Gilboa and Bensimon's own MAP method was developed. Efrat Roginsky studied with Avi Gilboa and developed, together with Gilboa, the DMAP method. Giorgos Tsisiris wrote, as part of his studies at the Nordoff Robbins Music Therapy Centre in London, a microanalytic case study in which the use of a graphic score played an important role to his analysis. These are the main recent studies I know of outside Aalborg. In the following, all those mentioned approaches to music notation will be presented in more detail, starting with the work that has been carried out at Aalborg University, and perspectives of employing different graphic representations shall be discussed.

Graphic notation at Aalborg University

The subject of “graphic notation” has had its place at Aalborg University, Department of Music Therapy, since the very first examination in 1986, and regular teaching began by me in 1987. This discipline is part of a complex curriculum⁵. For many years it was taught separately. In 2007 it became part of “auditive analysis” – a discipline which comprises also various phenomenological and hermeneutical, interpretative methods that employ verbally based analysis, both for description and for conveying the meaning inside

⁵ Further details can be found at the homepage of the Music Therapy Education, Aalborg University: www.musikterapi.aau.dk

the music, what it actually “says”. Presently, eighteen lessons in all are devoted specifically to graphic notation training. The below examples (figures 1 to 7) are directly related to this training activity.

Graphic notation can be used in “simple form” or “elaborate form” (as well as in various stages in between)⁶. One could also use drawings as a creative medium within therapy, but this is a different matter not to be elaborated upon here. The simple form is intended just as a sketch, maybe to memorise the music after a music therapy session, maybe to give others a quick idea of what a given music was like. One is to “take a line for a walk” (as the visual artist Paul Klee said) and allow also for some simple figures you might come across easily, while listening only once. The result should reflect the behaviour of the music itself. This objective orientation is important when others are to get an idea of how it sounded. It does not at all rule out, however, expressive qualities. Here is an example of my own (see figure 1). Please read it in two lines from left to right, like a text.

We may work on the visual appearance by dividing it into sections and adding fictitious, metaphorical titles to the sections. Thus, a phenomenological interpretation of semantic content is added to the syntactical description of the sound itself (see figure 2).

The elaborate form requires repeated listenings, and it uses visual symbols which are to be explained in a legend. These are created individually for each piece. Such symbols may arise spontaneously already while doing the simple sketch (see figure 1) – please look at it again and see how small melodic figures manifest themselves both up and downwards in the second section. Note also how different forms of trills appear in the last section. Now look at figure 3, and read the explanations. This chart is my attempt to explain how to proceed with a fictitious example, just out of fantasy, in order to show the principles of making elaborate graphic notations⁷.

⁶ In a forthcoming publication (Bergström-Nielsen in press) I deal with the simple form, commenting on a previous publication of mine (Bergström-Nielsen 1998b). In another publication (Bergström-Nielsen 1999a) I present an example of the elaborated form. Schou (2003) provides further examples, all from a single case. A large number of students' works have been preserved in my archive.

⁷ The “interpretative-hermeneutical” elements mentioned in figure 3 which may be added to an elaborate graphic notation connect graphic notation as a descriptive method to the psychologically oriented parts of therapy theory. Mahns (1998) places it into a comparative perspective, while Langenbach (1998) points out the importance of drawings being an artistic, non-verbal medium that allows a continuation of the creative flow.

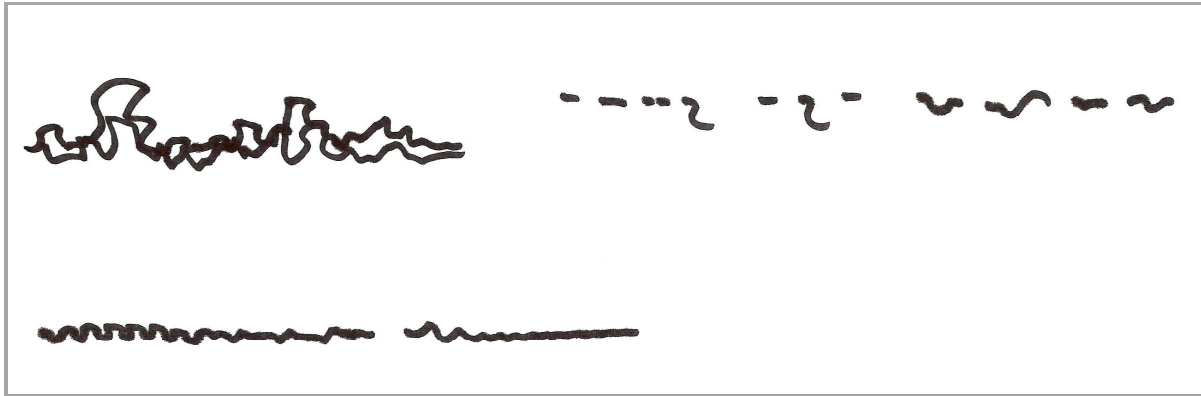


Figure 1: Graphic notation, simple form
(listen to sound example 1: Lauri Nykopp, solo saxophone, from demo tape, 1978)⁸

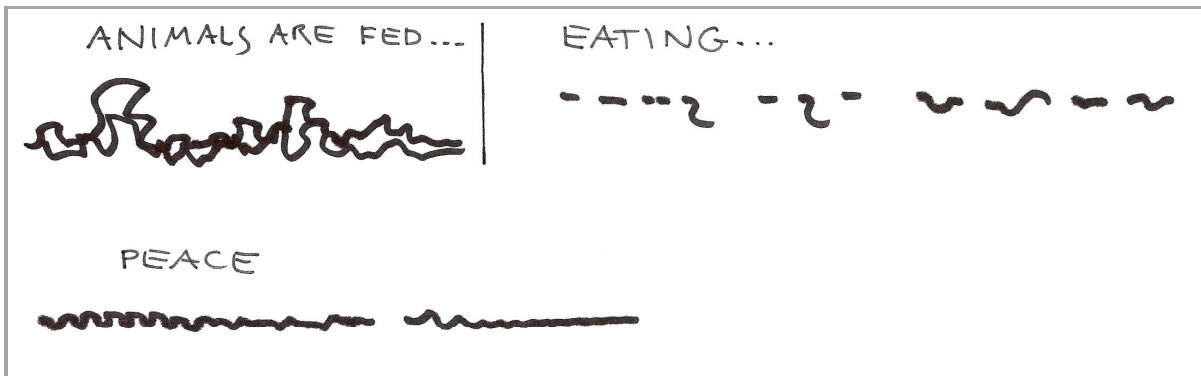




Figure 2: Graphic notation, simple form with sections and titles

⁸ In order to listen the audio excerpts which are referred to throughout this article, please visit the online Appendix of *Approaches*, volume 1, issue 2 (<http://approaches.primarymusic.gr>).

GRAPHIC NOTATION - SIMPLE FORM:

"Take the line for a 'walk' 

-- and allow also some figures besides the strict line ...


GRAPHIC NOTATION - ELABORATE FORM:

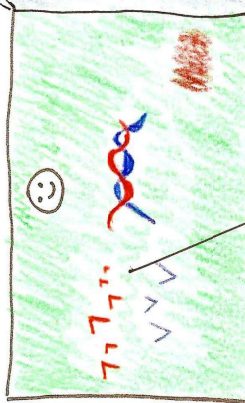
1) Make a sketch (according to "simple form") and divide it into sections. If two people play, try to catch both (if more than two it's ok to treat them as a group).

4) Give each section a title (out of fantasy - maybe a story). Provide your own frames and maybe, sparingly, other expressive visual elements to make clear their salient features and differences between them. Give each section a different background colour.

THERE IS A FIGHT

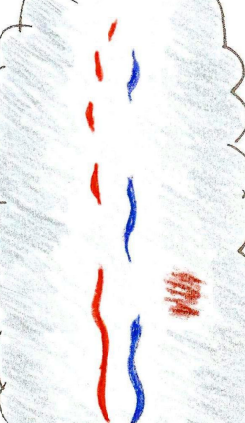
WEATHER BECOMES FOGGY...

DIFFERENT ANIMALS ...



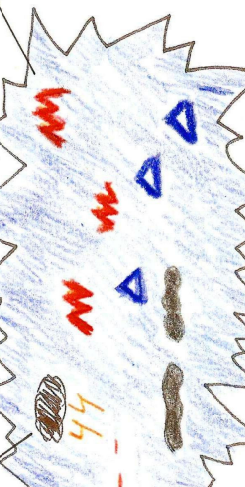
--- = CLIENT
 --- = ...
777 = SHORT PIANO TONES ETC.

WEATHER BECOMES FOGGY...



--- = THERAPIST
 --- = VOICES

THERE IS A FIGHT



In this way, a two-level hierarchical structure and a controlled differentiation is created which makes it easy for the viewers eye to "jump around" and catch both details and their overall context.

3) Re-draw everything. (Advanced version: add a time axis with reasonably reliable divisions).

This method contains also some interpretative-hermeneutical elements not mentioned here. They concern preparatory work with different focus of attention and controlling therapist's subjective bias - and an interpretative statement about perceived elements of therapeutic interest.

2) Invent your own suitable, simplified, possibly repeatable symbols, strictly for depicting the musical sounds. If two people play, distinguish between them (colors might help... and do not make a total, score-line separation). Let characteristic kinds of sound have their symbols, including melodic outlines (not all the tones!) and registers (think of co-ordinative system). Let louder be thicker. Provide a list of symbols with explanations.

Figure 3: A short manual for making elaborate graphic notations

There are preparatory exercises for making the elaborate notations. The main ones concern the invention of symbols and the division into sections of a music selection. Many of these have been described in previous publications of mine (Bergström-Nielsen 1992a, 1992b, 1993, 1999b).

In the following, I list two different examples by students of mine, with their legends, which were both created in their written examination in 1995,

following my graphic notation course, as part of the bachelor exam at Aalborg University. Note that there is also a time axis, and try to follow them while listening. Before listening to the sound example and studying each graphic notation (figure 4 and 6), however, I recommend studying the legends of each notation respectively (see figure 5 and 7).

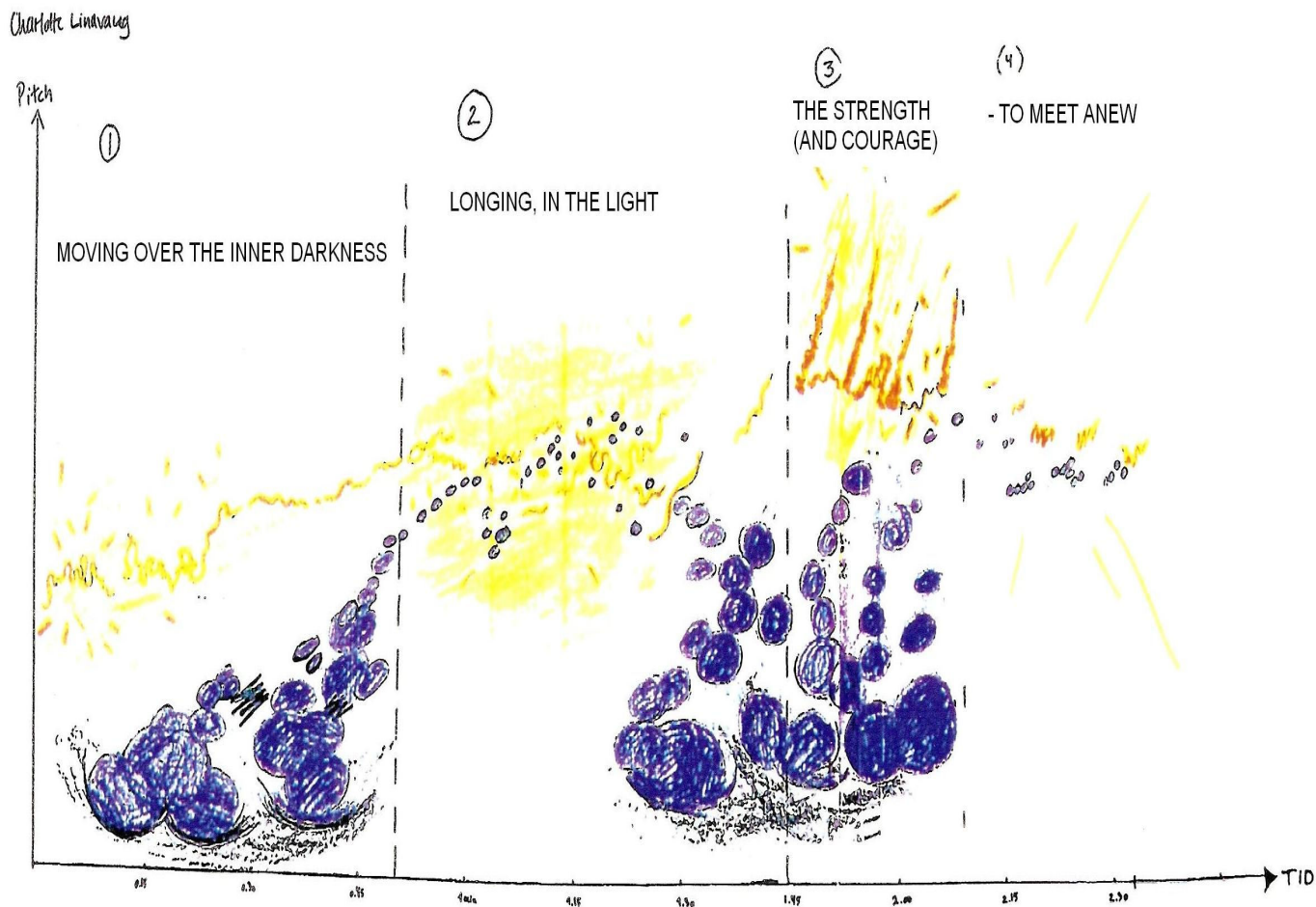


Figure 4: Graphic notation by Charlotte Lindvang
(listen to sound example 2: an excerpt from a music therapy session, 1995)




The original drawing (figure 4) had the size of three A4 pages. Verbal explanations in the legend (see figure 5) add details and more explicit focus to the graphic signatures. Once you have read through the legend, you should have a fairly good overview of what the important elements of the music are, according to the creator of the notation. Implicit in the choice of symbols is an analysis that distinguishes between “melodic and rhythmic movements with echo”, “small rhythmic phrase with only two tones”, “broken chord” and “fast upward running passage” in the playing of the





xylophone. Such an analysis may result in quite different sets of symbols for different pieces.


No details concerning either the client or the working issue of therapy were given. Titles of sections are fictitious, for illustration of how the author perceived it. This may thus be a starting-point for an open exchange of perceptions and ideas between client and therapist, or maybe therapist and supervisor, or within an interdisciplinary team, in which the meaning of the music is examined. The next notation (see figure 6) describes the same music.

EXPLANATION OF SIGNS

PIANO:	: LILAC, ALL THE WAY
XYLOPHONE	: YELLOW, ALL THE WAY

	: MELODIC AND RHYTHMIC MOVEMENTS WITH ECHO
	: DEEP TONES WITH ECHO
	: TAPPING ON THE WOOD OF THE PIANO (ON THE LID)

	: SMALL RHYTHMIC PHRASE WITH ONLY TWO TONES
	: BROKEN CHORD
	: "SCATTERED TONES" (NOT MELODY AND NOT BROKEN CHORD)
	: BROKEN CHORD

	: FAST UPWARD RUNNING PASSAGE (SLIDING UPWARDS, XYLOPHONE)

Charlotte Lindvang, 1995

Figure 5: Legend for Lindvang’s notation

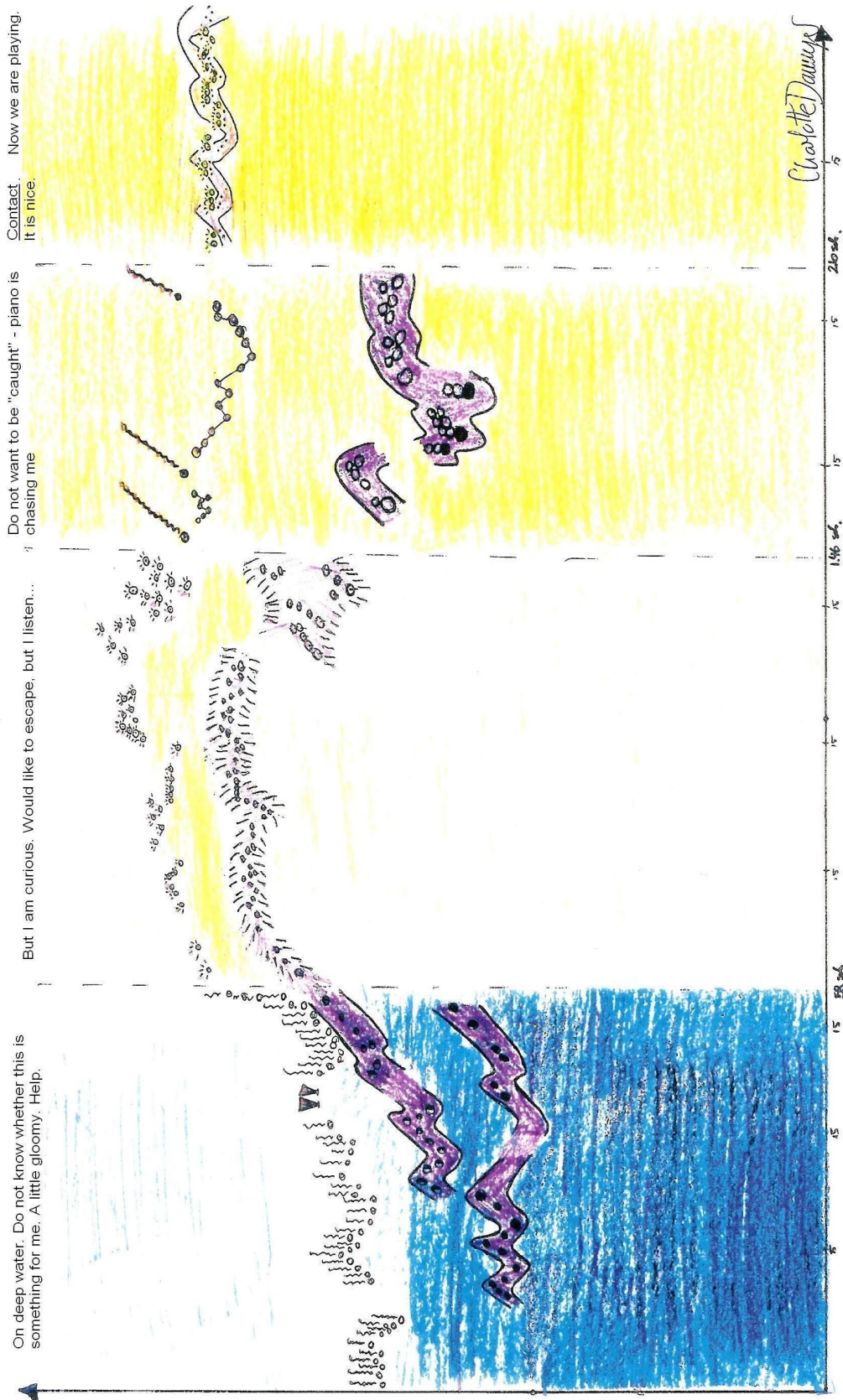


Figure 6: Graphic notation by Charlotte Dammeyer (listen to sound example 2: an excerpt from a music therapy session, 1995)

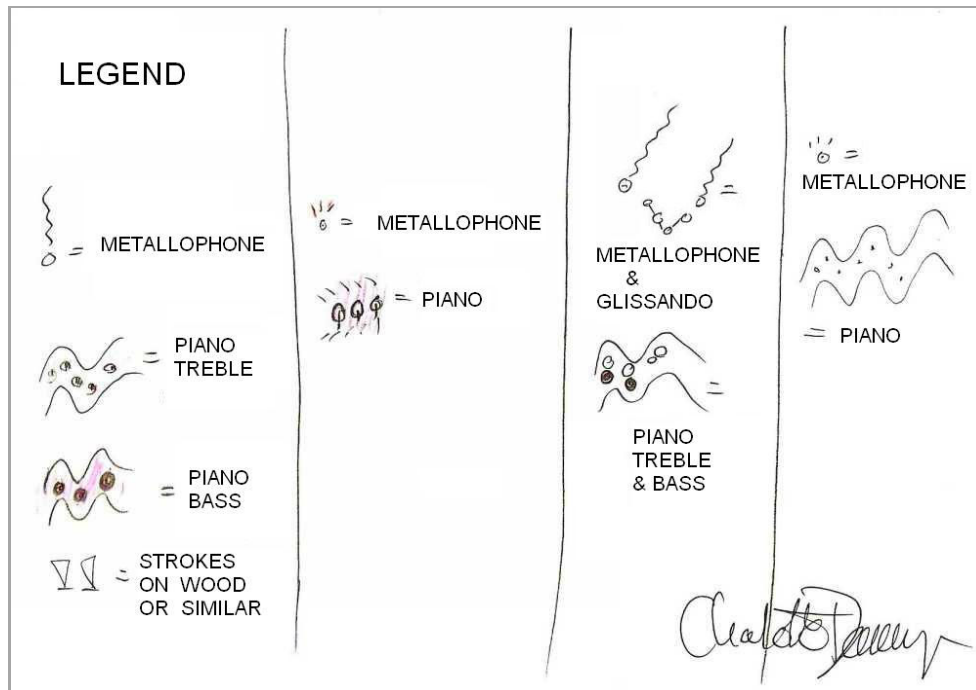


Figure 7: Legend for Dammeyer's notation

This notation (figure 6) had the size of two A4 pages. The two notations (figure 4 and 6) differ in some details, which are to be expected, since our interpretations of music and music-making are subjective creations. This subjectivity, however, should be an informed one, having gone through methodical discipline, employing critical reflection along the way. Intersubjectivity is aimed at through measures of time axis and legend, and through grounding in the descriptive level. It should also have become clear that authors have creative freedom to find their own way to do it.

These two notations both show the importance of parts coming close together and melting together, as it were, at least in the last section. At this place, I would like to make just a few observations: both notations make very clear the difference between deep and high tones on the piano – we are not just dealing with different pitches, but with registers having quite different perceived qualities. Individual pitches are, by the nature of spontaneous drawing, rather circumscribed freely than worked out in detail. The “coming together” or “melting together” in a similar register could loosely correspond to the “sound mass” described by Nunn (1998), rather

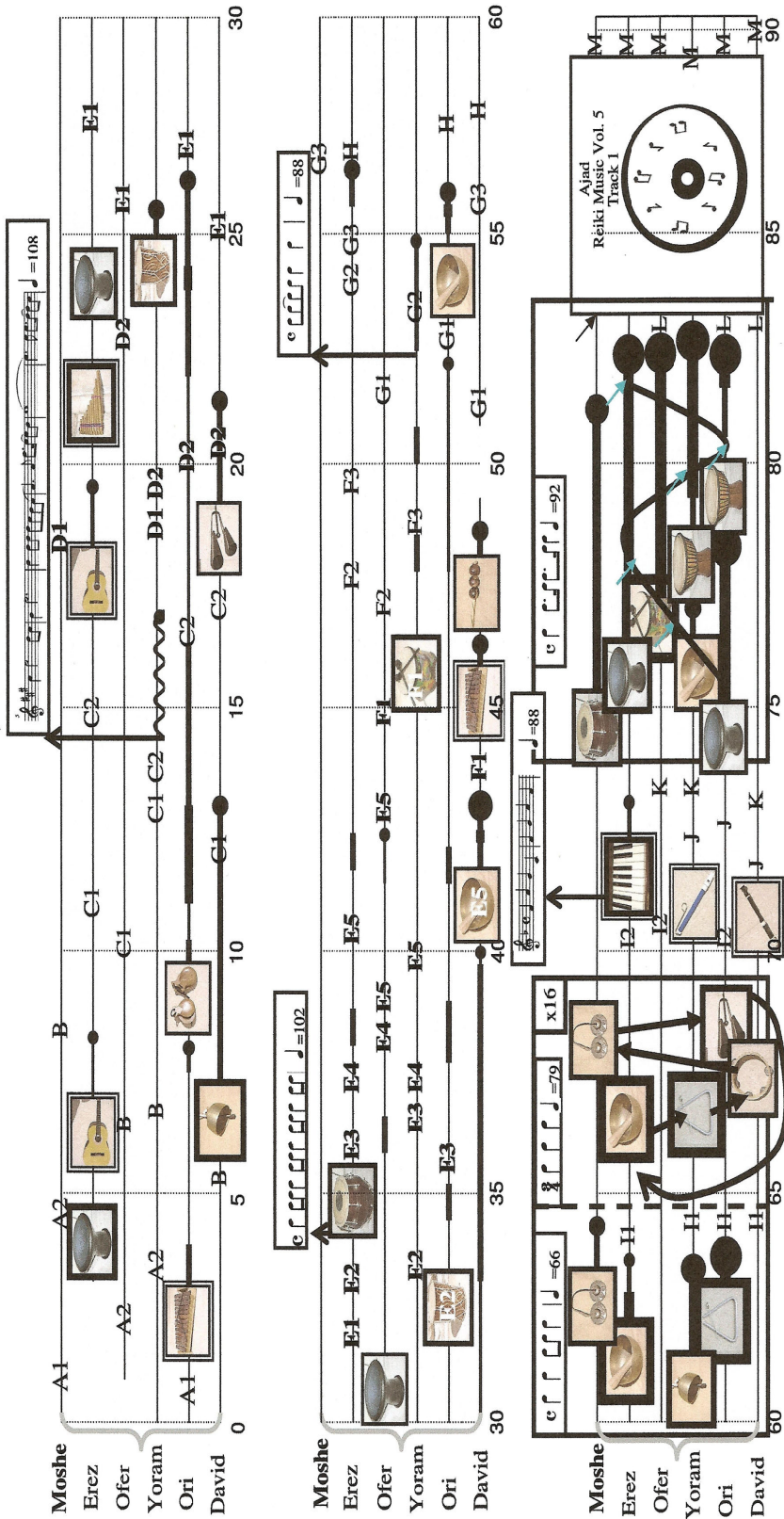
than to traditional categories of melody/accompaniment. One generally useful keyword for an analytical view of improvised music, bridging old and new, could be that of polyphony. Parts have not been arranged beforehand and may have all degrees of independence or the opposite (including dialogue, common pattern-building, and so on).

Gilboa and Bensimon's MAP method

Gilboa and Bensimon's study (2007) is a presentation of their graphic method MAP – Music Therapy Analyzing Partitura. Gilboa then proceeded to an empirical test of the efficiency of this method in conveying clinical information to colleagues (see Gilboa 2007). In the first article, the authors stress the endeavour towards standardisation and, consequently, towards depicting “basic elements” which are independent of specific therapeutic notions and directions, such as playing instruments, singing, listening to music or sitting in silence. We can see this being reflected in the notation (figure 8) and its legend (figure 9). Silence, talking, singing and playing – including instrument being put down - are distinguished. Thus, patterns for the individual participant can be

studied horizontally as well as group patterns vertically. In addition to being characterized by a picture, instruments are grouped as either melodic or rhythm instruments. Excerpts of melodies and rhythmic patterns are transcribed along the way and their tempo is measured. Whereas all the previous examples presented in this article were dealing with music only, this one (figure 8) has verbal components as well, the topics of which are indexed with letters followed by numbers. Letters are further part of a two-level hierarchy in which the most important group having to do with the main theme of the session are marked in bold. A special indication peculiar to this or only to some sessions is, however, the turn-taking game marked with arrows in the last score system, section two. The introduction of such special symbols reflects that in addition to standard forms of representation, according to the authors, “different forms should be developed for different contexts” (Gilboa & Bensimon 2007: 40).

In this example (figure 8), formal description rather than phenomenological interpretation prevails. On the level of graphic method, one can note that the present example was created by the computer, while the previous ones were drawn by freehand (figure 4 and 6). Symbols comprise both icons, bearing resemblance to something depicted, and purely index ones that make reference solely through a laid-down rule as explained in the legend (figure 9), such as the letters indexing themes of conversation.



<p>A1-where is everyone? A2-traffic problems B-last session's music C1-the end of school C2-the long vacation</p>	<p>D1-3 sessions to the end D2-life after the treatment E1-did the group succeed? E2-did the instr' help? E3-we hit the drums like hell!!!</p>	<p>E4-better than psychologist E5-feeling better than before? F1-metal instr' remind trauma F2-wooden instr' relax F3-drums express aggression</p>	<p>G1-journey abroad G2-other cultures G3-cost of sports items abroad H-Nike air sneakers I1-let's take turns playing!</p>	<p>J2-it was fun!! J-wind instr'! K-let's play again L-wow! we played strongly!!! M-see you! Goodbye!</p>
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Figure 8: Gilboa and Bensimon MAP notation⁹

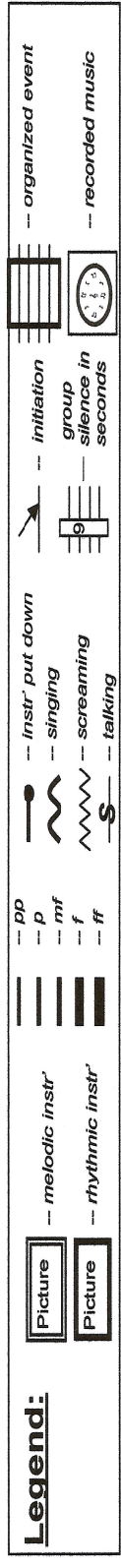


Figure 9: Legend for Gilboa and Bensimon's notation

⁹ This notation (Gilboa & Bensimon 2007) was first published on the journal *Music Therapy Perspectives*, volume 25, issue 1. It is reprinted here with the kind permission of the publisher.

Roginsky and Gilboa’s DMAP method

Efrat Roginsky studied with Avi Gilboa and built her Dyad Music Analyzing Partitura (DMAP) on the basis of Gilboa and Bensimons’ method (2007). Roginsky (2009) uses it to convey the results of her analysis of a mother-infant communication process and the presence

of different types of relationship (see figure 10). The symbols quoted here were meant to be edited into a video documentation. Thus they would complement the video and be immediately visible to those following it.

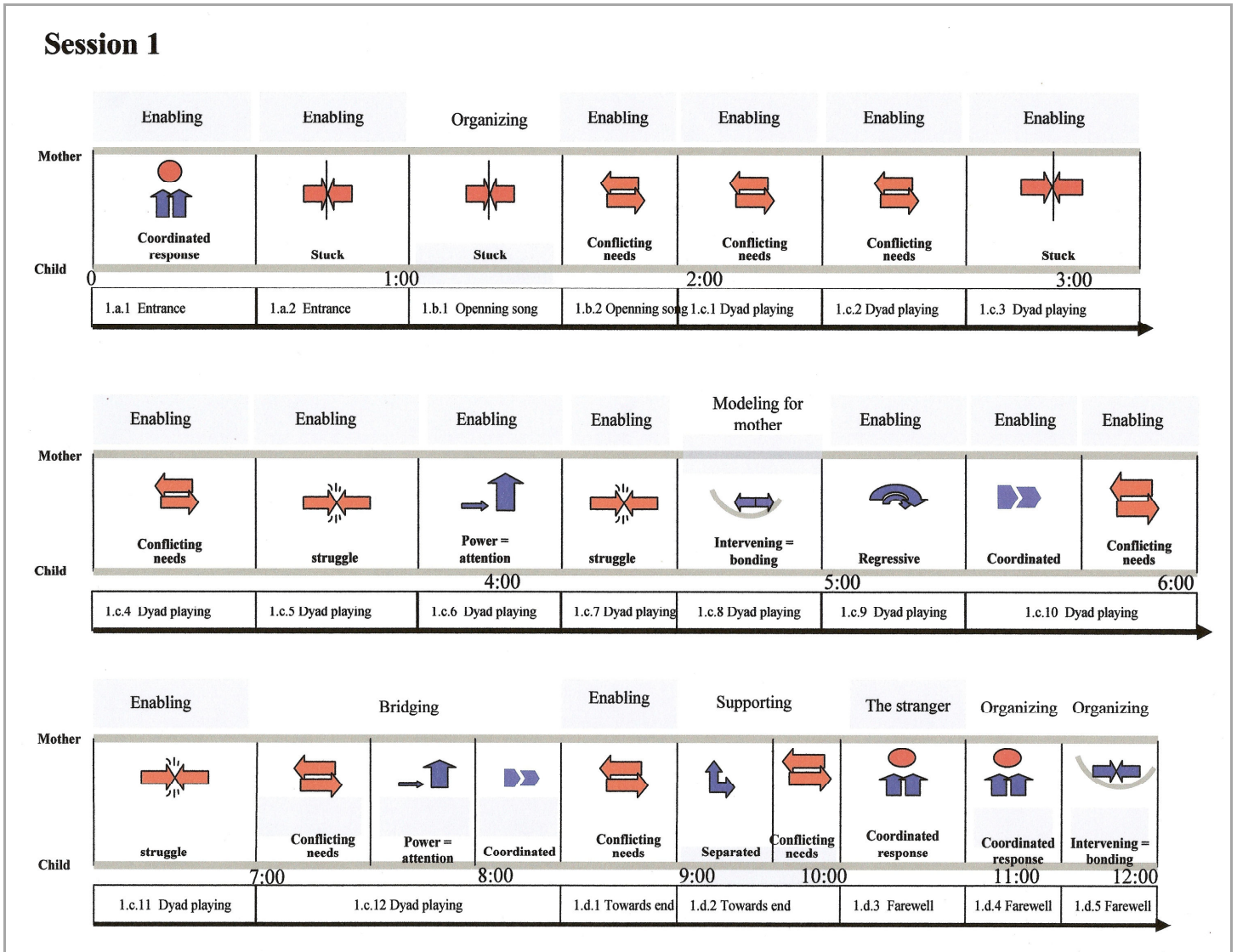


Figure 10: Roginsky and Gilboa DMAP notation

Visual symbols for dyadic relationships are explained every time they occur so that a legend is not needed for frequent consultation. However, they fall into a pair of categories. The red symbols have to do with lack of contact, the blue ones imply interaction of some kind.

Roginsky developed a number of further symbols not used in the cited notation example (see figure 11).















Mutual play R	Creative R	Intimate R	Joyful R	Evolving R
				
Age-related R	Coordinated R	Holding R	Differentiative R	Maternal holding R
				
Power = attention	Manipulative R			
				
Lack of empathy				
				

Figure 11: Legend for Roginsky and Gilboa's notation

The graphic language moves here within strict limits, that of arrow shapes and very few additions. Symbols are easy for the eye to grasp, because of their simplicity, but there is yet a vast variation. They belong to the category of pictograms, which are symbols that are also encountered in the public sphere, conveying messages for the traffic, and other orientation aids.

Tsirir's analysis of musical activity

The notation in figure 12 serves the analysis in a microanalytic music therapy case study (Tsirir in press). This is a case study of a five year old boy with autism who had individual music therapy sessions. The main theme of this microanalytic case study is 'freeing' and focuses on working through resistance and rigidity towards achieving greater

outer and inner mobility (Nordoff & Robbins 2007). This notation was created as a result of several analytical steps. As a background, spectrums of outer mobility (both on music and movement level) were formulated. The data obtained through microanalysis of a short video extract (1 minute and 30 seconds) and the notated details in the graphic notation were segmented and underwent further development in a thorough verbal description according to the afore-mentioned spectrums of outer mobility. In this context, various "pivotal moments" were also identified as part of the microanalysis.

As it can be seen in the graphic notation and its legend (figure 12 and 13), there are both iconic symbols of body movement and conventional music notation symbols, as well as a few expansions of them.

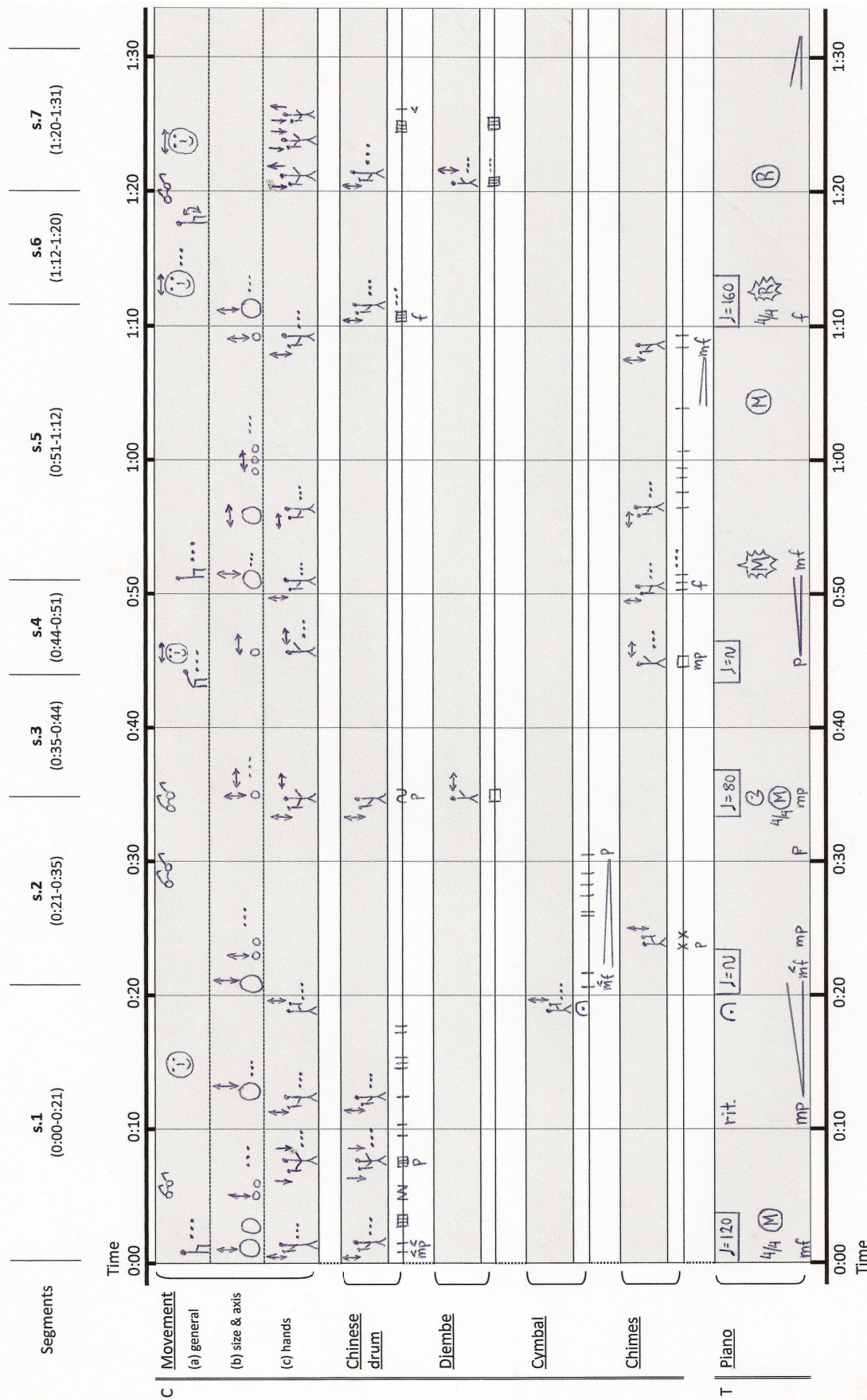


Figure 12: Tsiris graphic notation



























Explanation of sings (graphic notation)			
Music signs		Movement signs	
Dynamics	p, mp, mf, f, <, >		
	conventional notation	left hand	right hand
Time / Rhythm	 tempo-driven		
	 conventional notation	together	alternatively
Ways of beating	 basic beat		
	 melodic rhythm	small	big
	 single side-beat		
	 touch with hand	vertical	horizontal
Piano	 diatonic melodic theme		
	 atonal melody	left-right movement in tempo	
	 piano melody doubled with voice		
	 atonal rhythmic accompaniment		
 diatonic rhythmic accompaniment	upright	lean forward	rocking in tempo
		Beater	
		Smile	
		Eye-contact	
		Goes on in a similar way	...
		Segments	s.1, s.2..., s.7

Figure 13: Legend for Tsiris's notation

Comparative discussion

All the works discussed above, whether originating from the Aalborg University context, from Gilboa and Bensimon, from Gilboa and Roginsky, or from Tsiris, are graphic notations, but they certainly reflect different approaches. I have already stated various observations with the descriptions so far, but in order to approach a clearer and more systematic understanding of the possibilities of graphic notation, a comparative discussion is

undertaken as follows. In this discussion, therapeutic contexts and purposes are considered, as well as also technical aspects of notating – in other words, the ‘practicalities’ of notating.

In the following table, some important characteristics of the different notation examples described in this article have been summarised and compared, both regarding the practical context and the graphic language (see table 1).

Categories Example(s)	<i>Category A</i> Therapeutic or other context	<i>Category B</i> Purpose of graphic notation	<i>Category C</i> What is described	<i>Category D</i> Graphic language: main elements	<i>Category E</i> Graphic language: way of production
Aalborg University context	a) concert music b) analytical music therapy with an adult	Overview and communication in the context of supervision, interdisciplinary teams, research, also for therapists’ own reflection.	Music (descriptively and phenomenologically)	Symbols created for the individual selection of music. Symbols are used in a free, expressive way, together with frames and colours. Sections have verbal titles. Parts are arranged in a score.	Freehand drawing
Gilboa & Bensimon	Music therapy with a group of adults	Overview and communication in analysis and research.	Music and verbal communication (descriptively)	Symbols from a vocabulary aiming at standardised, general description of music therapy sessions, photo icons of instruments, short quotes of standard music notation, letters referring to conversation themes. Parts are arranged in a score	Computer based (mixed vocabulary of graphic and font elements)
Roginsky & Gilboa	Mother-infant communication	Adding analytical comments to a video. Pointing out categories of relationship according to analysis.	Outcome of interaction analysis	Simple, pictogram-like. Symbols depict forms of interaction using pairs of arrows in different ways. Red and blue indicate main categories.	Computer based (almost exclusively font and standard “autofigures” elements)
Tsiris	Individual music therapy with a five year old boy with autism	Microanalysis, communication in analysis and research	Music, physical activity (descriptively)	Symbols are largely iconic. Three different dimensions of body movement (“general”, “size and axis” and “hands”), different instruments including the therapists’ accompaniment are depicted in a score.	Freehand drawn symbols within a computer printed frame.

Table 1: Basic comparison of the described graphic notations

Table 1 summarises characteristics of the various notation systems in the following basic categories:

Category A

Contexts of therapeutic interest comprise therapy settings ranging from therapist-client dyad to group, with participants from infant to adult age¹⁰.

¹⁰ The concert music example was included for the sake of demonstration – similar sketches could have been made of music therapy (see also Bergstrøm-Nielsen 1998a).

Category B

As for the *purpose* of notations, overview is a primary concern in most cases. One could argue that for Tsiris (in press), the aspect of recording the data precisely takes priority over making the presentation easy to read. But, in any case, the simultaneous score arrangement permits an immediate perception of how individual events appear in time. The aspect of sharing can also be important, as it could take place in supervision, in general exchange between colleagues, in multidisciplinary teams, at conference presentations

and in publishing written works. However, sharing does not seem to be the main one for Tsiris (in press), the notation being primarily for the researcher's analysing process. To be sure, there is still such an aspect in documenting this stage, allowing the reader to go back and review the data, but it does not seem to be the most important one. Memorising is mentioned in one case: the Aalborg University context.

The benefits of overview have to do with the limitations and shortcomings of human memory. When notations are overlooked "at a glance", contents seem to be brought directly into a special kind of retention. Compare for example the immediate feeling of having all the experience "still around you" when coming home from a journey, with the unavoidable loss of details and different ways to retrieve some of the information later. My references for the memory concepts here are mainly Noll (1977) and Sarath (1996) who employ such notions to illuminate improvised music practice. Visual designs thus serve as important aids to cognition, which may result in both greater efficiency of processing the given data further, as well as in improved communicability. Being able to bring to attention, present, analyse and synthesise large amounts of music data serves the empirical grounding of music therapy studies.

Category C

What is described in the studies is not just sounding music. Other elements from the therapy situation exemplified here were verbal communication and physical behaviour of different kinds.

In describing and representing elements of the therapy situation, authors show different orientations towards their empirical realities. Through repeated watching of video segments, Tsiris (in press) gathers together a large amount of exact observations of fast occurrences, so that patterns which were not so obvious when witnessing the events in real time may become clearer, like when looking into a microscope. Gilboa and Bensimon (2007: 41-42), on the other hand, employ, in their own words, a "wide-angle lens"¹¹. Their way of observing music activity also emphasises objectivity, while the selection of what can be considered main issues of conversation relies to a somewhat higher degree on

¹¹ The fact that music may be analysed from both macro- and micro-perspectives may shed some critical light on the current terminology of "microanalysis", which seems to have been taken directly over from psychology. Analysing the music itself is not necessarily "micro", so why not simply speak of "musical analysis" when the micro level is not of special interest?

interpretation. The Aalborg University context makes reference to objective data such as instruments played, the location of events in time, and musical descriptions¹², while also providing a phenomenologically based interpretation which manifests itself in segmentation, titles and expressive design.

Roginsky's (2009) graphic representation conveys segmentation and characterisations of segments, which is to be presented along with the 'raw' empirical video documentation.

Category D

Graphic languages and designs have been created by the authors anew in interaction with the specific materials they worked with. Symbols may be iconic (bearing resemblance to what is depicted) or purely index-like (like the letters indexing conversation themes in Gilboa's notation). The symbols employed by the Aalborg University context incorporate expressive elements, elsewhere a more formal approach prevails. These are two different distinctions, since expressive symbols are not necessarily iconic of anything concrete, and vice versa. Gilboa and Bensimon (2007) raise the question of whether standardisation of design and symbols is desirable, in the interest of facilitating exchange of information between therapists. However, they also concede that given the variety of possible therapy contexts, special symbols may be invented for each case and supplements made to the general overview. Moreover, in analogy with photography, they state that "a good photographer knows that no single lens can serve effectively for all pictures" (Gilboa & Bensimon 2007: 40), meaning that different time scales must be available for music therapy analysis. In Gilboa (2007) the interest in communicability was further pursued by carrying out a test of the MAP method which measured "comprehension" and "analytical potential", compared to a verbal account, and the comments from test persons were discussed.

Category E

Ways of production include both freehand and computer based versions¹³. Computer production could, in a very convenient case, be based on standard fonts and graphics provided with standard

¹² Categories such as "small rhythmic passage with only two tones" and "broken chord" (see figure 5) may be said to have a tendency towards the objective and verifiable, however mediated through musical analysis.

¹³ They may of course be freely combined. Personally, I frequently use scanning and computer editing as a supplement to freehand drawing.

programmes, but what we have seen so far implied substantial development work. All except the “fast sketch” approach by the Aalborg University context have been laborious to produce, taking several hours of work, not just for developing their symbols and design, but also for each case to be analysed¹⁴. Could automated computer analysis yield an answer, or some of the answer, to this problem? One possible useful tool to consider may be the MIA software¹⁵ which transforms the waveform known from wave editors into simplified, smoothed envelopes. Other possible forms to consider include spectrograms (commonly used in wave editor software) and still others¹⁶ (for some illustrations of these, please see the appendix of this article).

Benefits and limitations of the different approaches

The different approaches have their own *benefits and limitations, viewed as models for possible similar endeavours*. That of the Aalborg school is adaptable to different clinical contexts and practical conditions, as it appears to me. A limitation exists in the fact that each notation, at least in the elaborated form, must be studied individually with its own legend. Therefore, it could be well-suited to contexts in which individual sessions are looked upon, such as in supervision and in discussions of specific clients during interdisciplinary meetings. The Gilboa and Bensimon (2007) approach, on the other hand, makes it possible to overview many sessions, whether with the same clients participating or others. It is, however, not

concerned with interpretation of musical contents, such as moods, emotions, and psychic processes, although keywords are given concerning verbal elements of the therapy. This speaks for its use in research where many sessions are analysed or for use together with further mapping of details. Examples published so far employ, as was quoted from the authors above, a “wideangle” view. Roginsky and Gilboa’s pictogram design conveys messages instantly to the reader. It is well suited for summary purposes and for pointing out, as it was intended for the video medium. However, it can hardly stand alone, it must be preceded by analysis and more explanation. Finally, the approach of Tsiris (in press) presents a systematic scan through many dimensions of behaviour and shows how much, and what, is going on during music-making within short spans of time. This analytic stance works well to expand the immediate perception and to take attention to details which may be important, although they might not have been perceived clearly before. It therefore appears to be a “microscope”, well-suited for research in which a deeper understanding of specific passages is crucial, be it in order to assess more accurately what the clients’ resources are, as here, or in order to illuminate other issues of clinical or theoretical interest.

The following table attempts to extract keywords and potential moments of interest from the reflections made above (see table 2).

Contexts	Purposes	What is described	Graphic language: main elements	Graphic language: way of production
Differing kinds of activity, age and number of participants	Overview Scrutinising empirical reality in order to describe hidden aspects Sharing Memorising	Music Verbal communication Non-verbal/physical activity	Different symbols and design Formal/expressive character The question, to which degree standardisation is desirable	Freehand/computer (fonts/graphics standard/newly created) Fast/slow The question, whether automated computer analysis could assist notation, and how

Table 2: Possible moments of interest connected to graphic notations

¹⁴ Gilboa and Bensimon (2007: 40) discuss this and view software development as a way to reduce time expenditure.

¹⁵ Available from www.miamusicmap.com

¹⁶ Software which can construct “rhythmograms” and “chromagrams”, as presented in Jensen (2007), is still under development.

Conclusion

In the graphic notations of music from therapy sessions reviewed here, there is a wide variety of approaches and systems used. They all differ in contexts, purposes, and graphic language as reflected in the comparative discussion above. This strongly seems to reflect the variety of music therapy activities and the different nature of questions that therapists and researchers may wish to clarify. Despite this variety, those who employ graphic notations appear, generally, to have a strong interest in *overview* in common. There are also some possible interests in *mapping hidden dimensions* of empirical reality and of *communicating* to others. Graphic notations facilitate thus both *the analysis, synthesis and presentation of empirical, clinical data* in processes accompanying clinical work, as well as in research processes, and the *communicability of results*. One could ask, critically, whether graphic notations, when presented to an audience or to a reader before the music is heard, might also block the direct listening experience. Or, when made after a session, could they filter out some aspects of the experience in favour of others? These are general problems of a written culture, also known from the study of classical music. We are, however, very far from being at such a point at the present state, and moreover, visualisations tend to be more ambiguous than words and to stay within a non-verbal realm.

When so widely differing approaches are found in such a relatively small selection of studies presented in this article, one could hardly expect possible uses and forms to be exhausted. Also, a number of questions could be raised about fields to develop further, as for example: How can computer visualisation be used? How can the macro- and micro-oriented approaches presented here be further developed? Could we learn more from contemporary composers and selected contemporary music description systems about how to notate clinical improvisations?

There is still much discovery awaiting us in this field. We could inspire each other by exchanging experiences of how quickly-made sketches could enhance our own daily conduct of clinical activity, exchange different personal views of how to make the notations, and when; report about which presentations work or not at interdisciplinary meetings – in short, how graphic notations interact with other activities.

Appendix

Figure 14 shows some automated computer visualisations of sound example 2 which was previously depicted graphically in Figure 4 and Figure 6. More particularly, it shows from top to bottom: standard waveform (from Wavepad software), chart according to “Moving Average method” (value 300), chart according to “Peak Envelope method” (value 350) (both MIA software), spectrogram (Nero software).

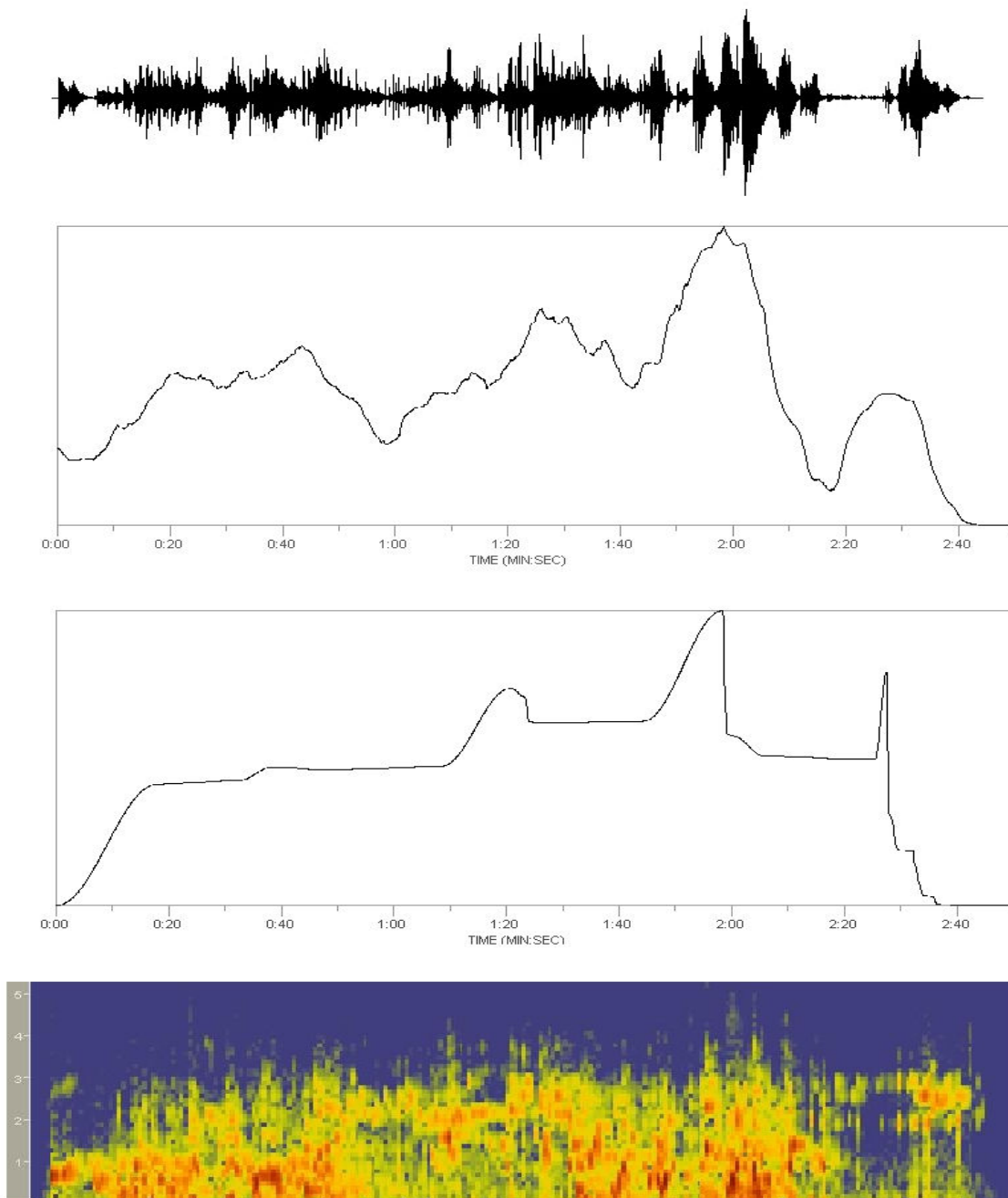


Figure 14: Some automated computer visualisations of sound example 2

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