

## Mini-“Research” about Sound and Perception

In the first class, April 26/27, 2006. 2.5 hours.

### 1. The Plan

- To make an experiment in Science meeting Dharma and confront the class with the curriculum of the Buddhist Studies as I found it in the book *“The Sound of Two Hands Clapping”* by Georges Dreyfus, UCal Press, 2003.
- Try to find out if it corresponds to the Sera Curriculum and to see at which level of Buddhist studies then monks of the class are.
- Then make groups which individually discuss what is to be found about sound and perception, or light and perception in their texts of studies.

### 2. The Geluk Curriculum

The structure of the Geluk Debating Institutions is, according to Dreyfus:

Preliminary Studies	Central Exoteric Studies	Esoteric (Tantric) Studies
3 years	First phase 6-10 years, Second 4-8 years	1 year
<p><b>Collected Topics</b> for training debate. In the first chapter e.g. relation between the colors. Then the Buddhist conceptual universe.</p> <p><b>Types of Mind</b> Overview of main concepts used in Buddhist epistemology: The nature of knowledge.</p> <p><b>Types of Evidence</b></p>	<p><b>1<sup>st</sup> Phase:</b> 3 texts <i>Ornament of Realization</i> Maitreya <i>Commentary on valid Cognition</i> Dharmakirti: Logic, epistemology, philosophy of language <i>Madhyamaka</i> (the culmination) Candrakirti, Nagarjuna <b>2<sup>nd</sup> Phase:</b> With less intellectual importance <i>Vinaya Sutra</i> Gunaprabha. <i>Treasury of Abidharma</i> Vasubhandu (Discipline-related topics)</p>	<p>Study and training in rituals, offerings, mandala-making, with 3 meditational deities. Main texts: - <i>Root Tantra</i> - <i>Fourfold Commentary</i> - <i>Commentary on the Root Tantra</i></p>

The discussion with about 20 monks of our first class reveals that the curriculum in Sera corresponds quite well to this given here. With some astonishment I realize that many monks of our newest (lowest) class are quite advanced in their studies: Many are in Madhyamaka, some even in Vinaya Sutra. I was a bit misled by thinking that, this being our first class, they would rather be at the beginning of their studies. For them the preliminary studies are a sort of “Kindergarten”, as they called it themselves.

It really seems that many topics relevant to “Science meets Dharma” are learned in the first three years, when some of the students are quite young. The main purpose of at least a part of these studies is probably to provide “fodder” for practising debate.

### 3. My motivation. Observations during discussion

At the beginning I explained why I wished this little research: One student had asked last week, when we treated Newton's First law (with speed, distance, time and a lot of graphing and calculations), how we finally would arrive at an encounter of science and Dharma. I felt some doubt about such a possibility in his question.

Furthermore I had seen how interested they were in the fact that sound propagates with different speeds in different gases and even travels in solids. It was also clear that questions of audibility, of perception aroused a lot of interest. I also expressed my feeling that the encounter between scientific and Buddhist views could not be a one-way communication and that I needed an input from their side - and that it also was their responsibility to make us foreigners acquainted with the Buddhist view.

So I requested them to make four groups of 5-6 students and to discuss together what they had learned or read in their studies about sound and its perception, or, if they'd find nothing about sound, then about vision, colour and perception. The discussion started very slowly – it seemed that they found difficulties in understanding what I wanted to know, but by and by, and with some gentle pushes it finally started. A student made the remark that only one particular student was at the origin of this discussion and that it was not necessarily of common interest. (It is not the first time I heard them expressing that lengthy discussions about Science and Dharma were not what they wished. They usually have many questions concerning purely scientific aspects of a given topic and they seem to fear a long SmD-discussion would curtail the scientific explanations they could otherwise get from the teacher.)

One student suggested we should treat this subject in a debating manner: One defending Buddhist and the other scientific views. A suitable question to be put to debate could, according to one student be “*Can we see sound?*” or “*Can we speak and hear in vacuum?*” The student conceded that to defend the scientific view in a debate he needed some preparation and training.

It sure was difficult for the students to recall what they had learned in the preliminary studies, because quite a long time has elapsed since.

### 4. Results of the group presentations

#### **Group 1      *How do we hear sound?***

There are two ways of hearing: Just hearing (more physical) and conscious hearing. There seem to be four “theories”, levels in hearing.

The process of hearing is based on the existence of very small particles. We have to believe that they exist, although ordinary humans can't see them. Only enlightened ones like Buddha, after long reflection, could see them. This seems to be sufficient to the student representing the group: What is written in the scriptures is truth.

#### **Group 2      *Sound and Color***

Consciousness of the ear helps to hear a sound, and we see colours through the consciousness of the eye. There are two ways (two types) of sound: The one outside us and the “sound we have in us”, which is inside us and which has a meaning.

Then it was also said that two different sounds could be distinguished according to the source: Living and non-living.

There are 5 parts of outer consciousness corresponding to the 5 senses.

#### **Group 3      *Sound has body (suk, )***

This input was difficult to understand and it centred around the expression “body”. Sound is another form of imagined body and the question is, what “suk”, which body sound has. There is an external body (form) of sound and an internal one. It seems that the external body can be divided into 5 types (probably according to the 5 senses). Interesting statement: Having body means there is no harm.

### ***Group 4: Sound atoms***

Sound is considered to consist of atoms. This idea comes from very early, non-Buddhist scholars and it seems they already distinguished many different kinds of sound according to the source and depending on whether it had meaning or not.

Thought comes before (meaningful) sound and when sound travels it undergoes a change: The sound when it travels is no more the same as the one it was at the source.

The speaker of this group finally mentioned that more would be discussed about sound in the tantric, esoteric studies.

## **5. Conclusions**

- First I was astonished about the sketchiness of the knowledge the monks had retained from the time of their preliminary studies. I had imagined that due to the intensity of debate more and more precise “informations” would have persisted.
- I came to realize better how important meaning is in the Buddhist view of phenomena and their perception.
- According to the monks the role of consciousness is important and those aspects of sound which touch us as sentient beings and which have an impact on our psychology.
- Once more I realized how deep the Cartesian reductionism, the strict division between object and subject is enrooted in me, being a Western trained in Western physics academia. I tend to reduce sound to its physically describable aspects (pressure, frequencies, Fourier decomposition, etc) and to put aside the much more complex processes of perception and psychic response to sound – although I quite well know what listening to a Mahler symphony or to a melancholic Cohen-song can provoke in my psyche.
- One result of this very short “research” was that I began to search for translations of the texts serving as preparation for debate in the Preliminary Studies. I was happy to find them in the library of the Western monks’ Khangtsen. So I can add some excerpts in the following appendix.
- The role of sound is very important in a monastic environment. From early morning on till late in the night we are bathed in a sea of sound during prayers, debate sessions and, especially, when a humming sound in the air marks the hours when hundreds of monks and children at the secondary school are reciting and memorizing their texts – e.g. their debate-texts about sound.
- The topic will be continued. The interplay of phenomena, perception and consciousness is very interesting in the context of Science meeting Dharma. Another rich field of interaction would be the colors: I could imagine an interesting comparison of Buddhist phenomenology, Newtonian reductionism and Goethe’s “Farbenlehre”.

Heiri Schenkel

## 6. Appendix

*Excerpts taken from “Debate in Tibetan Buddhism” by Daniel E. Perdue, Snow Lion Publication, Ithaca, 1992*

I have mainly chosen those parts which concern sound. We come to realize how different the approach to the world of phenomena is in the Hindu-Buddhist philosophy, compared to our Western reductionism!

p.169

Purbujok Jamba Gyatso (1825-1901) was the tutor of the 13<sup>th</sup> Dalai Lama and he is the author of “*The Introductory Path of Reasoning*” (rigs lam chung ngu), which has seven chapters and is one of the texts for the Introductory Studies. Here I only consider the first chapter, which deals with phenomena or forms. The other six chapters are devoted to reasoning, logic, etc

Chapter 1 “**Colors-White, Red, and So Forth**” (kha dog dkar dmar sogs), which is the essential introductory presentation of forms (gzugs, rupa), or matter (bem po, kantha) -visible forms, sounds, odors, tastes, and tangible objects - in the Collected Topics system.(...)

Sources of the Collected Topics texts are *Treasury of Knowledge* (abhidharmakosha) of Vasubandhu (around 400 A.D. in Nalanda) and Dharmakirti's “*Compendium of Valid Cognition*”, but there must be others also – not to forget “*Sutra*”, which can probably be traced back to Buddha (...)

These debates on colors and so forth, as the first introduction to debate and formalized reasoning, are simple and straightforward. Beyond teaching the form and procedure of the debating process, they offer little content. Still, there is a purpose for beginning the reasoning texts with a presentation of colors and other forms because, using this as a basis, one is able to progress toward higher, more profound topics.

The purpose is to train the potency of the mind so that one will be able to penetrate the difficult topics. At the beginning of the study of reasoning it would be difficult to prove the existence of omniscience or the existence of liberation. For the sake of understanding, one initially settles such topics as impermanent phenomena, non-impermanent phenomena, and objects of comprehension. In order to understand in debate the extension of pervasions [khyab pa che chung] with regard to such topics, it is necessary to first settle this in relation to phenomena that can be seen with the eye-colors and shapes-as well as others such as sounds, odors, tastes, and tangible objects. That is, in relation to the objects of direct perception. From among these, we are most involved with color; thus, the study begins with color. (...)

Page 187:

Underlying this pedagogy is the Buddhist view that sentient beings caught in cyclic existence are constantly involved with forms, being distracted by colors, shapes, and so forth while not mixing their minds with reasoning. Due to this, sentient beings remain confused with respect to the ultimate and conventional natures of phenomena and are powerlessly imprisoned in cyclic existence. Thus, the textbooks on introductory reasoning take forms as the first topic of debate in order to lead trainees to the path of reasoning through first analyzing the familiar. What is familiar is more accessible. An examination of forms requires no special introduction, and so it is an easy and suitable topic with which to begin training young monks, usually between the ages of seven and fifteen.

By training in easier topics, one advances and is eventually able to handle the more difficult. This is the reason why the presentation of white and red colors is given at the beginning. (...).

Vasubandhu:

Forms are the five sense powers, the five Objects, and non-revelatory forms only. The bases of the consciousnesses of these types - The eye [sense] and so forth - are forms.[Visible] forms are of two types or twenty types. Sounds are of eight types. Tastes are of six types. Odors are of four types. Tangible objects are of just eleven.

All forms are impermanent phenomena because they are produced in dependence on causes and conditions and, once produced, disintegrate. As such, forms may be perceived by direct perception. In this system, the various types of forms serve as the fields of activity of the five sense consciousnesses (dbang shes, indriya-jfiana)-eye, ear, nose, tongue, and body consciousnesses. (...)

*Matter* is defined as:

what which is atomically established (rdul du grub pa, anusiddha).

A material phenomenon is generally a collection of many atoms or particles, though a single atom too is matter. Matter is divided into two types: external matter (phyi'i bem po, bahirdhii-kanthii) and internal matter (nang gi bem po, adhyiitmika-kanthii). The division into external and internal varieties can also be made for form. External matter is defined as:

that which is atomically established and is not included within the continuum of a person

External matter consists of visible forms, sounds, odors, tastes, and tangible objects (that one can touch and feel). The definition of *internal matter* is:

that which is atomically established and is included within the continuum of a person

Internal matter is included within the continuum of a person in the sense of being appropriated as the body or form of a person and being a sensate portion of the body. Thus, internal matter includes the fleshy body-though not the hair or nails beyond where they may be felt-as well as the five sense powers: eye sense power, ear sense power, and so forth.

The five sense powers are neither the coarse organs, which are the eyes, ears, nose, tongue, and body, nor are they consciousnesses. They are clear matter located in the coarse organs which cannot be seen by the eye but can be seen by certain clairvoyants. They give their respective consciousnesses dominance or power with respect to certain objects and thus are called "powers" (indriya).

(...)

The second of the five types of external form is sound (sgra, shabda). "Sound, sound-constituent [sgra'i khams, shabdadhatu], and sound-source [sgra'i skye mched, shabda-iiyatana] are synonyms." A sound is defined as: an object of hearing (nyan bya).

The definition of a sound-source is: An object of hearing of an ear consciousness (rna shes kyi nyan bya).

All sounds are included within the *eight types of sound*:

1. pleasant articulate sound caused by elements conjoined with consciousness, e.g., words teaching the doctrine
2. unpleasant articulate sound caused by elements conjoined with consciousness, e.g., the sound of harsh words
3. pleasant inarticulate sound caused by elements conjoined with consciousness, e.g., the sound of snapping fingers
4. unpleasant inarticulate sound caused by elements conjoined with consciousness, e.g., the sound of a fist on impact

5. pleasant articulate sound caused by elements not conjoined with consciousness, e.g., the words of an unembodied emanation (sprul pa'i gang zag) teaching the doctrine or the words of doctrine taught by trees rustled by a Buddha's extraordinary powers
6. unpleasant articulate sound caused by elements not conjoined with consciousness, e.g., the sound of harsh words spoken by an unembodied emanation or words of scolding conveyed by trees rustled by a Buddha's extraordinary powers
7. pleasant inarticulate sound caused by elements not conjoined with consciousness, e.g., the sound of a gong or the sound of a drum.
8. unpleasant inarticulate sound caused by elements not conjoined with consciousness, e.g., the sound of crashing stones, the sound of water, the sound of a house falling down, or the sound of wind

Sounds may be divided simply into the two, sounds caused by elements conjoined with consciousness and sounds caused by elements not conjoined with consciousness. Each of these two may then be divided into articulate and inarticulate types, thereby yielding articulate and inarticulate sounds caused by elements conjoined with consciousness and articulate and inarticulate sounds caused by elements not conjoined with consciousness. These four types of sound may then be divided into pleasant and unpleasant varieties, yielding eight types of sound which together include all sounds.(...)

All sounds are caused by the four elements of earth, water, fire, and wind. Sounds themselves are non-elemental in the sense that they are not any of the four elements, but they are caused by or arisen from the elements. Elements may be conjoined with consciousness or not. For instance, a person's tongue is conjoined with consciousness because it is a form held within one's continuum. The sound of a person's voice is a sound conjoined with consciousness, if the person is speaking directly and the voice is not being relayed by some other medium. However, if a voice is conveyed indirectly as when amplified or transmitted by a telephone, the sound one hears is not conjoined with consciousness. In the case of a person's speaking directly, as in a room, the sound is caused by elements conjoined with consciousness because of arising in dependence upon the vocal chords, tongue, palate, the upward moving wind enabling speech, and so forth. In the case of a person's voice conveyed on the telephone or in a recording, the sound heard is caused by elements not conjoined with consciousness because it is voice reproduction accomplished by electricity, wires, transmitters, speakers, and so forth. Of course, the person's voice is caused by the vocal chords and so forth, but what is actually heard on the telephone is produced by inanimate matter. A more obvious example of a sound caused by elements not conjoined with consciousness is the sound of a waterfall.

Sounds are also divided into articulate and inarticulate types. Articulate sounds indicate meaning to sentient beings and inarticulate sounds do not. "Sound which indicates meaning to a sentient being [sems can la stan pa'i sgra] and expressive sound [brjod byed Icyi sgra] are mutually inclusive.

An example is the expression "Sound is impermanent". This is revelatory sound, for it reveals meaning to sentient beings. Articulate and inarticulate sounds are of both types, those caused by elements conjoined with consciousness and those caused by elements not conjoined with consciousness.

Articulate sounds caused by elements not conjoined with consciousness are, for instance, "the words of doctrine taught by trees rustled by a Buddha's extraordinary powers". It is said that in certain Pure Lands the residents hear the teaching of Buddha's doctrine even from the movement of tree leaves: Such sound is articulate in that it indicates meaning to sentient beings, but it is caused by elements not conjoined with consciousness because it is produced from the rustling of trees.

In the Pure Land of the Buddha Amitabha the waters moving in the rivers produce pleasant sounds.

The sound which issues from these great rivers is as pleasant as that of a musical instrument, ... which, skilfully played, emits a heavenly music. It is deep, commanding, distinct, clear, pleasant to the ear, touching the heart, delightful, sweet, pleasant, and one never tires of hearing it.

Music is inarticulate sound as is the sound of water because it does not reveal meaning.

These four types of sound, articulate and inarticulate sounds caused by elements conjoined with consciousness and articulate and inarticulate sounds caused by elements not conjoined with consciousness, are further divided into pleasant and unpleasant types. Sounds are pleasant if they appeal to the listener and are attractive. Unpleasant sounds do not appeal to the listener and are unattractive. (See the list of 8 types of sound given above).

Sound is the second of the five external sources; therefore, it is matter, atomically established. This assessment of sound does not accord with the physicist's view of sound as itself non-material though depending on matter, such as air or water, as a medium to relay audible vibrations. Indeed, even within this Buddhist presentation, sound is not materially established in precisely the same way that some other material phenomena are. In the system of the Proponents of Satra Following Reasoning, material particles are compositions of at least eight potencies: the four elements of earth, water, fire, and wind together with visible form, odor, taste, and tangibility arisen from the elements. If sound is present, in addition to these eight which exist in all material phenomena there is a ninth potency of sound.<sup>1</sup> Thus, sound is materially established but not in the same sense that other forms are. Also, sound has an extremely short duration. It does not exist continuously as a potency of atoms as does visibility, for forms do not constantly hum or produce a sound whereas a color may remain as a potency in form for a long period.

---

<sup>1</sup> Gen-diin-drup-ba's Commentary on (Vasubandhu's) "Treasury of Knowledge", 97.4-9, explains that, in the Desire Realm, an atom located in a place where a sense power and sound are not present is composed of eight particle substances. However, if it is located in a place where a body sense power is present, there are nine (the ninth being the body sense power); if in addition to that the atom is in a place where the eye, ear, nose, or tongue sense power is located, then there are ten particle substances (the tenth being the potency of that sense power); and if it is in a place where there is also sound, there are eleven (the eleventh being sound). Thus, if an atom is in a place where there are none of the sense powers and sound is present, then sound is the ninth particle substance.