Report on Teaching Sensible Science

by Lylli Anthon

This past February marked the beginning of the fourth round of the "Teaching Sensible Science" course. For a week starting on February 18, the Chicago Waldorf School hosted the first of three one-week intensives to explore the richness of the Grades 6–8 Waldorf science curriculum. This course also strives to give teachers a living relationship to the sciences, as its task in this present age of consciousness is to help individuals connect to the world.

The February session—the largest ever cycle of this course—was filled to the brim with 27 earnest participants, mostly from the Midwestern states, but also from schools as far away as San Francisco, New York, and three in Canada. The members of the group were class teachers ranging from Grade 3 to Grade 8, several with many years of experience.

Michael D'Aleo, an engineer and high school science teacher at the Waldorf School of Saratoga Springs, along with the Research Institute, organized this course with the help of the Chicago Waldorf School and a grant secured by AWSNA from the Waldorf Educational Foundation.

Michael took the group through a process which, in the way it presents the sciences and awakens our senses, allows us to know the world directly through our own experience. Habitual thinking can hamper this wakefulness, partly because the Latinization of our language prompts its structure to do our thinking for us. Noun-like qualities have consequently adhered to activities such as visual, acoustic, thermal and other phenomena, removing the possibility of our building a relationship between ourselves and the world we live in. We need to recover a sense-based science that places us within our experiences and builds a connection between the outer world and ourselves. Becoming more conscious of our own process of perception reconnects us to our environment.

If in our mind's eye we track the child back to a time before its birth, we experience the child coming from wholeness and gradually awakening to its separateness from the surrounding world. The child slowly becomes aware "I am I." Being born into the world and becoming self-aware are necessary for the unfolding of what Rudolf Steiner called the consciousness soul. We become aware of the outer and the inner, object and subject—indeed, all aspects of the world that have become separated. Our task in this age is to make them whole again.

This new way of thinking asks us to take the wakefulness we have in the outer world and bring it into ourselves, making our awakened being resonate with what is around us. At that moment we become one with the outer world—we resonate with it in the rhythmic part of our being. What happens within and without thus become resonating harmonics and we are now fully awake and conscious. We become objects to ourselves in the way Steiner described this process to workers at the Goetheanum in a lecture reprinted in Otto Palmer's helpful guide, *Rudolf Steiner on His Book The Philosophy of Freedom.*

The opportunity exists to be fully present in this world, and so doing we can overcome feelings of alienation and separateness. Instead we can reconnect with that same world of wholeness, a world of ideas from which we emerged at birth. In the words of the poet David Whyte, "Put down the weight of your aloneness and ease into the conversation."

The lessons in the science classes are approached in this way: The whole is separated and then through the process described above made whole again. It is not the thoughts that are enlivened by these methods, but the activity of thinking itself.

The development of demonstrations and experiments is like the development of new thinking—we take in an impression of the world, we still ourselves inwardly so that it can resonate as a feeling, and then we take the final step of finding a relationship to it or an affirmation of the whole that is truthful beyond our own selves.

Michael led the course with the help of Gary Banks—an engineer, class teacher and high school science teacher—and Lylli Anthon, a long-time class teacher. Barbara Richardson, a seasoned eurythmist and coordinator of Foundation Studies at the Center for Anthroposophy, took us through exercises in eurythmy as a way of supporting our work and exploring the nature of experience and collaboration. Our mornings were filled with epistemological discussions facilitated by Michael, followed by eurythmy exercises with Barbara. In the afternoons with Gary and Lylli we explored the experiments that form the heart of the physics curriculum. Contributions to the chemistry curriculum were offered in several evening sessions with Gary.

The first step in this approach to science is to facilitate the student's connection to phenomena in the natural world, while holding back the idea or concept we intend the students to grasp. This experience leaves them with questions. We then provide the students with the opportunity to describe what they saw and then to find relationships among the phenomena that could be truthful for others, or relationships that are truthful beyond their own individual experiences.

On our first morning together we were each asked to plunge our hand, up past our wrist, into a bag of ice cubes and then leave it there for two minutes. We later began to share the sensations we felt and any personal experiences we had as our hands remained in the ice. After much discussion we tried to describe the relationship of our hands to the icy medium which was common to all, relationships transcending our own personal ones. We were all able to experience that coldness invaded us as our warm hand became cooler. The changing sensation was the basis of the experience. We spoke at length about living in the sensation and avoiding words like "heat" and "cold," nouns that speak of these sensations as things. We tried to live into the activity and sense it as a change and not as a "thing" that had noun-like attributes.

> The beginning, middle, and end must all be related as elements of an entire movement. If the perception is preceded by the feeling or thinking, then the whole movement dissolves into disharmony. If the perception is not broad enough, then the feeling and thinking has no possibility of experiencing the fullness of this movement. (Michael D'Aleo)

Thus we all strengthened our understanding of why in the science lessons we must strive not to be merely teaching a concept of the physical world to the students, but to aid them in discovering essential aspects of being human. We are helping the students connect to the world.

We also spoke at length about how to present the lessons so the class is able to live into the experience of the phenomena. To achieve this it is important for teachers to perform the experiment for themselves before doing it with their students. When it then comes to the lesson, the less said the better. No introduction of the phenomena should be given beyond creating the conditions for observation—watching, listening, and inner stillness—so that the students are able to figure out as much as possible for themselves. A teacher's warm interest in the phenomena creates a further condition for mindful observation by the students.

During the afternoons we had lots of practice in how to best review the experiments from the previous day. The nightly sleep is an important

element in the cycle of discovery, as is the verbal re-creation of what was done the day before. The review needs to be kept alive as a will activity, so that it becomes a dynamic social element for the class. Michael asked us to craft our lessons in such a way that the students develop inner relationships to the phenomena extending beyond the conditions we have described in each experiment. There was much discussion about the wording used to sum up the experiments, such as relationship, concept, or conclusion. It is our responsibility not to fix concepts, but to plant the seeds for the new thinking.

After one very full week we adjourned—some to stay on for the AWSNA regional teachers conference in Chicago, with Michael as the keynote speaker, others to return home. All were left with a feeling of anticipation for our next session coming up in June—a feeling, as David Whyte puts it, that "everything is waiting for you."