

Science and Art A Search for Understanding – By Margaret Appa, UK

As a weaver have you ever experienced the comment that you are ‘talented’, one of those rarefied creative people who have this ability, in your case through fibres and yarns etc, while it seems the rest of humanity does not have this creative capacity?

Have you ever had the situation in your life where, as someone who studied ‘science’, you are seen as being highly intelligent, one of the chosen few who have the ‘intelligence’ to do science?

You might have noted the words talent and intelligence used purposely to highlight how our society sees the difference between those who are perceived as talented and those who are perceived as intelligent, both are placed on pedestals and are seen as unreachable by the ordinary person on the street! However, I do wonder if a science person would be referred to as talented, or the arts person as intelligent!

Why do we see a dichotomy between the arts and sciences? Why is it that our education system still has as its foundation academic learning or vocational learning, with the general understanding that attainment in the academic subjects has greater value than achievement in the vocational ones?

I am a Baha’i so I see everything in this world, interconnected, interdependent each aspect of the world and its peoples closely intertwined. For me this dichotomy, this separation between science and art does not make sense.

The Baha’i writings say:

Regard man as a mine rich in gems of inestimable value. Education can alone cause it to reveal its treasures and enable mankind to benefit therefrom.

Baha’u’llah

Human beings are full of potential, full of capacity, it is education that can draw out our capacities and potential so that they can be used in service to humanity, but these gems do not have labels such as talented, intelligent, vocational or academic, they are just gems and it is education that should be the means to go into the mines, find the unique personal gems, bring them out, cut and polish them to perfection so they can be used in service to mankind.

Here are two more quotes that have inspired me:

... To each created thing, the Ancient Sovereignty hath portioned its own perfection, its particular virtue and special excellence, so that each in its degree may become a symbol denoting the sublimity of the true Educator of humankind, and that each, even as a crystalline mirror, may tell of the grace and splendour of the Sun of Truth.

Baha’u’llah

Encourage the children from their earliest years to master every kind of learning, and make them eager to become skilled in every art—the aim being that the heart of each one may become even as a mirror disclosing the secrets of the universe, penetrating the innermost

reality of all things; and that each may earn world-wide fame in all branches of knowledge, science and the arts.

Baha'u'llah

These concepts, suggested to me a strong connection between art and science, and led me, amongst other experiences in life, to question the perceived dichotomy between science and art that is prevalent in our society. The first question I asked on this journey of exploration was what do these words mean, what are their roots in history?

What does the word art and artist mean?

Art comes from the Latin *ars* which means a skill. An artist is simply a person with a skill. The meaning of skill changes over time as we shall see, but refers to both a skill that produces an object say a painting a brick wall, a tool, a ceramic jug or to an experience or activity such as the art of conversation, consultation, negotiation or the art of poetry.

The historical definitions are more revealing:

early 1200 *"skill as a result of learning or practice," from Old French art (10c.), from Latin artem (nominative ars) "work of art; practical skill; a business, craft,"*

1580's Middle French *artiste* one who cultivates one of the fine arts from Italian *Artista*, from medieval Latin *artista*, from Latin *ars* or *artis* (skill)

1600's used for "one skilled in any art or craft, this included professors, surgeons, craftsmen, cooks etc.

1747 first used to describe "one who practices the arts of design or visual arts"

The word skill derives from the late old English *scele* /knowledge, from old Norse *skil* meaning discernment, knowledge.

Note that it is from the 1700's that the definition becomes what we would recognize the "one who practices the arts of design or visual arts" what we might now refer to as the fine arts. Perhaps, for me, the most fascinating is that the word skill also historically means knowledge or discernment.

What does the word science and scientist mean?

Looking at the dictionary definitions for science Again, whichever root, the word knowledge is the common denominator.

The historical definitions are very revealing too.... I show them here:

mid-14c., *"what is known, knowledge (of something) acquired by study; information;" also "assurance of knowledge, certitude, certainty," from Old French science "knowledge, learning, application; corpus of human knowledge" (12c.), from Latin scientia "knowledge, a knowing; expertness," from sciens (genitive scientis) "intelligent, skilled," present participle of scire "to know," probably originally "to separate one thing from another, to distinguish," related to scindere "to cut, divide,"*

From late 14c. in English as "book-learning," also "a particular branch of knowledge or of learning;" also "skillfulness, cleverness; craftiness." From c. 1400 as "experiential

*knowledge;" also "a skill, handicraft; a trade." From late 14c. as "collective human knowledge" (especially "that gained by systematic observation, experiment, and reasoning). **Modern** (restricted) sense of "body of regular or methodical observations or propositions concerning a particular subject or speculation" is attested from 1725; in 17c.-18c. This concept commonly was called philosophy. Sense of "non-arts studies" is attested from 1670s.*

Note: the word scientist was only coined in the 1800's!

To be an artist before the 17th century referred to a very broad range of skills, (think Leonardo Da Vinci) however, during the 17th century, at the time of the 'enlightenment' or the age of reason when it was thought that '*everything in the universe could be rationally demystified and catalogued*', the meaning became restricted, to a narrower range of skills and closer to what we recognize as the arts today, the fine arts – performance arts, visual arts, writing arts, all those skills not 'science' related.

Similarly, science, before the early 1700's was about knowledge in general, but it came to be understood after this to mean something restricted to a particular subject and only the result of methodical, rigorous, empirical observations. It was about remaking society along 'rational' lines and throwing out the old 'authorities', such as the church.

Education, through the monasteries, focused on classical education, Latin, Greek etc until the 1800's when the formal education system was introduced to provide manpower for industry, agriculture and to fill the positions in the legal system, the political system and all the other layers of expertise required.

The education system was based on the 'industrial model'; the children were placed on the 'conveyor belt' and trundled their way through a curriculum that focused on academic learning. As the children moved from year to year, they were labelled academic non-academic, and by the time they arrived at the point when they had to leave they were packaged and stamped ready for a specific job in life. For those with academic achievements they were destined to be politicians, diplomats, managers, teachers, university professors etc, while the rest were destined to become the shopkeepers, agricultural workers, maids, factory workers, miners etc.

When the education act of 1944 came into being this system was set in stone, built on the premise that the top 20% in the 11+ exam would go to Grammar schools destined for the 'academic' careers, while the rest would be educated at secondary modern or vocational schools and were destined for the trades and the more menial jobs in life. With the premise that whatever job you took on you very probably stayed in for life.

Now, in the 21st century, surely the needs of society are very different, but I would question whether the education system has changed to keep pace. Science is still valued over the Arts. Study science or academic options and you will have a good job in life is the mantra, if you are interested in the arts, get yourself a useful degree first!

Science and art over time have found themselves on opposite sides somehow disconnected. I would like to present a totally different perspective.

Firstly, let's look at the language definitions. Science comes from the root 'knowledge'. Art comes from the root 'skill'.

Ask yourself these questions:

- Is the instinct of a new born baby to want to know about its environment? As the child grows, the child questions everything - demands knowledge.
- Do we all have knowledge as adults? I am not talking here of 'academic learning', I am referring to knowledge that we gain from all areas of living including school education.
- Do we all have skills? Can we get through life without skills?
- Is there then, a strong connection between knowledge and skills?

I would suggest that we use our skills to apply our knowledge. So as a weaver, you need a certain level of knowledge before you can begin to weave, and as you practice your knowledge base increases constantly. You will need knowledge of the materials that can be used for weaving, the techniques that can be used, and very probably you will have a curiosity about the history of weaving. You will also have knowledge of colour and tone and composition, and how the use of these impacts on your own work, you will have a knowledge of looms, how they are made, what type of loom is required for what type of weaving etc.

However, all this knowledge would be useless if you did not have the skill to apply it, to create your design or composition, select the most suitable warp setting, the appropriate material for that warp setting and finally to use the appropriate techniques creatively in order to achieve your goals.

I would propose that we all have knowledge and skills. As humanity, between us we have an infinite variety of levels and areas of learning, we also have a complex and again limitless combination of intelligences, and creative capacities that we can express through numberless materials and media.

Science and art belong to everyone without exception. Knowledge skills, intelligences and creative capacity are our gems.

Look at the following examples, do they make sense?

- The craftsman working in wood has achieved a high level of knowledge ... the science of their craft, but the outcomes are works of art.*
- The teacher learns the theory or science of education but delivery in the classroom is surely an art.*
- The engineer acquires the science of the field but the product of the science is an art.*
- The science of medicine is essential for a doctor but the application of that science in whatever field of practice is an art.*
- An architect acquires the science but the outcomes when built are works of art*
- A parent has no training, they learn their science on the job, but it results in the art of parenting*

- vii. The ceramicist produces works of art but only after many years acquiring the science.*
- viii. The art of music either performed or written only results from learning the science or theory underpinning it.*

So, are the words 'science' and 'art' the problem, or is it how we understand them?

The education system has embedded deeply in our minds that science refers to certain areas of learning while the arts refer to other areas of learning, this is what we have accepted is the meaning. However, if we understand them as knowledge and skills then they are totally connected and an intrinsic fundamental part of being human. There is no dichotomy.

Acknowledging that there are infinite levels and combinations of knowledge, intelligence, creative capacities and the materials to express them all within the human race, means that we can be freed from this narrow understanding and accept that everyone's knowledge and skills (science and art), without exception, make a valuable contribution to this evolving world.