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SOME OBSERVATIONS ON TECHNOLOGY

Maria Montessori

From an introduction to a publication advocating "mechanical aids" in education in India.

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MECHANICAL AIDS IN EDUCATION

The Maria Montessori Archives resting with Association Montessori Internationale, Amsterdam continue to yield unexpected little treasures. As with any historical archive, the contents of the Maria Montessori Archives are a varied mixture of complete articles and lectures, documents that are incomplete, or an outline of what was later to become a fully fledged lecture to be delivered to students, or the general public. In today's terminology, we also find in her archives "0.1 drafts" of chapters from some of her books. In this fashion, her archives contain many one-page preliminary studies, and scribbled thoughts which she hoped to be working out at a later stage.

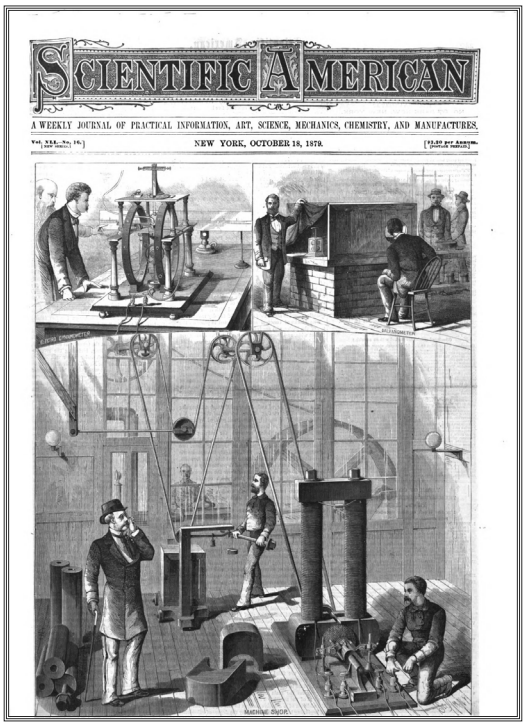
Recently, a small document dealing with thoughts on technology, more particularly the use of mechanical aids, was identified in the archives. It is short and succinct, and intended to serve as an introduction to a title by an unnamed author, who apparently was advocating the use of mechanical aids in education in India, in a bid to reach as many students as possible in that vast country. Probably written during her years in India (1940-1947), Maria Montessori concurs with the approach of the author and thinks that the acquisition of culture can be aided by bringing into the learning environment supportive materials such as illustrations, maps, models, charts, the magic lantern, film, photographs, etc., which are not 'mere means of entertainment but aids to better learning'. In this short introduction, Montessori does add that all of these can only be partial aids.

Although efforts to identify author and title of this book have as yet not rendered any results,[1] we wanted to share Maria Montessori's thoughts with our readership: the question of how Montessori and technology connect returns often in our age of advanced technology.

1 The publication that seems to come closest is a 1947 report published by the Indian Central Bureau of Education, entitled "Progress of Education in India 1937-47—mechanical Aids to Learning (other than Broadcasting)", Publication No. 113. The report also mentions that 'In Madras, Nursery Schools were opened during the period by Municipal Councils and private bodies. The number of Nursery Schools working in various parts of the Province during 1946-47 was 17. The Besant Theosophical School at Adyar has continued its Infants 7 Section, where the Montessori method is followed.'

To our human society, technology is a permanent challenge, and a tempting invitation. Technology is as old as the world, at least one inhabited by human beings, certainly when we lean towards the definition of the word when it was originally used; the Oxford Dictionary gives as its etymology 'from Greek tekhnologia 'systematic treatment', from tekhnè, 'art, craft' + -logia', dating back to the 17th century.

*The development of technology comes from our drive to be forever more effective and efficient—a natural sense of exploration into our environment fed by our boundless curiosity. Maria Montessori understood this human tendency excellently, when she writes '... we have learnt from him certain fundamental principles of psychology. One is that the child must learn by his own individual activity, being given a mental freedom to take what he needs, and not to be questioned in his choice. Our teaching must only answer the mental needs of the child, never dictate them. Just as a small child cannot be still because he is in need of co-ordinating his movements, so the older child, who may seem troublesome in his curiosity over the why, what and wherefore of everything he sees, is building up his mind by this mental activity, and must be given a wide field of culture on which to feed.' (*To Educate the Human Potential, *p. 4/5)*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NEW YORK, OCTOBER 18, 1879.

Montessori was fascinated by the technology of her time, which absolutely delighted her and where she recognised opportunities to unite our world, and saw means by which an interconnected world society could be supportive of others, and thus advance humankind. She enjoyed air travel, the technology of sending telegrams, and receiving them whilst aboard a

steamer at sea, she loved the cinema, she realised very early on the importance of film to document observation in her classrooms. She would develop many colourful charts as additional material, so her students would be able to better concretise her theoretical principles. She felt that the use of additional materials could play an important role in raising the initial interest of children in a certain subject, but they would be no substitute for the learning experience itself.

There is much current research into the use of what today's society regards as technology in the classroom: Answers are being sought as to whether its use should take on a primary or secondary role; we cannot think of a modern world without advanced technology, and many environments in which our children construct themselves have a heavy technology presence. Various studies with interesting outcomes are being conducted, and we need a little more time before we can truly assess all the effects involved. In the meantime let's take our cue from Maria Montessori when she argues that, 'the child learns by means of his own activity and if given an opportunity to learn actively he develops his character and personality too.'

Introduction on the Use of Mechanical Aids

The idea so well expressed by the author of this pamphlet, to promote the acquisition of culture by means of mechanical aids is most opportune at the present moment, when we can almost speak of an emergency here in India. I believe, however, that the introduction of mechanical aids will become a general need in the schools of the future. There is no doubt that the schools applying my method, where the cultural development of the children is highly intensified not on account of any pressure exercised by the teacher, but as a natural consequence of the opportunities given to their individual and social spontaneous activities, will have to avail themselves of these new aids.

As a result of the application of my method, in fact, children of six years of age already know how to read and to write and possess many cultural notions. This is taken into consideration by the author in his project. When, therefore, our children enter what is commonly called the elementary school, where compulsory education comes into force, their intelligence requires a much vaster culture than is ordinarily given in those schools. A teacher trained under the scheme commonly followed in teacher training colleges lacks the preparation that corresponds to these needs. Even if a teacher possessed a higher culture, this would be so only in one or a few subjects in which they had specialized and not in all subjects as required. The teacher with his unavoidable limitations then becomes an obstacle to the full development of the real possibilities of the child's intelligence all along the period of growth ranging from six to twelve years of age.

He would, however, always be capable of orienting himself in means already prepared to deepen and widen cultural instruction. This is the great practical importance of the use of gramophone records, lantern slides, films and wireless with the guide of a kind of syllabus directing their distribution as indicated by the author in his interesting pamphlet.

In my opinion the advantage of mechanical aids of instruction in the schools of the future would be the following: the material, discourses and visual representations could be prepared by fascinating speakers and persons of a culture superior to that of the ordinary teacher. Also the slides and films could be prepared by specialists who would dedicate themselves to the task of rendering clear and interesting to the children the many cultural subjects thus presented. In this way the existing schools could be used without substantial changes and the institution of new training colleges preparing new teachers would not be an indispensable preliminary.

Some new institutions would, however, become necessary centres for the preparation of this new equipment, where a few selected specialists would concentrate on the preparation of these means leading to a higher universal culture. These centres would gradually become the means to unify the cultural development of the children all over the world. They would become a practical realization of the general aspiration to reach a common outlook among men and a centralized and competent means to perfect and direct the culture of the world. They would be institutions in the world of the child comparable to the institutes of scientific research in the world of the adult and, as the latter, they would be not only of national, but of universal advantage.

I would like, however, to point out that these mechanical aids are insufficient to bring about the totality of education. Children do not learn and do not develop their character by merely listening and looking on. Auditory and visual aids therefore, although very important indeed, are only partial aids. The child learns by means of his own activity and if given an opportunity to learn actively he develops his character and personality too. The child perfects himself even more by means of his hand than by means of the senses. He can develop himself and the personal talents of his nature when given the opportunity and guidance to produce and to discover by himself. Modern methods of education, in fact, are not only visual, but above all active.

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