



*E-Journal of the World Academy of Art & Science*

# ERUDITIO

*“A multidisciplinary forum focused on the social consequences and policy implications of all forms of knowledge on a global basis”*

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*Editorial: Individuality*

## *ARTICLES*

Looking for a New Alchemy: from the Lead of Information to the Gold of Knowledge

- *Emil Constantinescu*

A New Model of Education: Development of Individuality through the Freedom of Learning

- *Mirjana Radovic-Markovic*

The Evolution of Cooperation

- *John Scales Avery*

The New Morality

- *Yehudi Menuhin*

## ***Eruditio Vision***

*The vision of the Journal complements and enhances the World Academy's focus on global perspectives in the generation of knowledge from all fields of legitimate inquiry. The Journal also mirrors the World Academy's specific focus and mandate which is to consider the social consequences and policy implications of knowledge in the broadest sense. The vision of the Journal encompasses major challenges facing global society and seeks to examine these issues from an interdisciplinary, multi-method and value guided perspective.*

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## Editorial: Individuality

We are pleased to bring you Part 3 of Issue 1 of *ERUDITIO*, the new electronic journal of the World Academy of Art & Science. We have indicated previously that the first issue of *ERUDITIO* is dedicated to the theme of individuality viewed from a multidisciplinary focus with implications of social consequences and policy possibilities. The papers emerged from a web seminar of the Academy on “Individuality” as well as a conference on “Humanities and the Contemporary World” organized by the Montenegrin Academy of Sciences and Arts in June. Issue 1 will eventually contain approximately sixteen (16) papers, which will be released in four (4) parts. Links are provided so that you may also access the individual papers online.

### Issue 1 – Part 3: Individuality

[Looking for a New Alchemy: from the Lead of Information to the Gold of Knowledge](#)

- by *Emil Constantinescu*

[A New Model of Education: Development of Individuality through the Freedom of Learning](#)

- by *Mirjana Radovic-Markovic*

[The Evolution of Cooperation](#)

- by *John Scales Avery*

[The New Morality](#)

- by *Yehudi Menuhin*

**Emil Constantinescu’s** essay on the search for a new alchemy that can overcome the limits of lead-based information overflow to the creation of an intrinsic golden dimension of knowledge is a profoundly thought-provoking and challenging contribution. This contribution explores the meaning of knowledge, its philosophical implications and the fact that knowledge is a complicated and not easy to understand idea. However, there is an important task that requires a better integration of what we mean by knowledge and its consequences for humanity on a global basis. One of the contemporary challenges is the insistence that higher education, in particular, be connected to the efficient market and the generation of profit. Such a demand seeks to ultimately marginalize the idea of creativity, which is the foundation of theory generation from which practical consequences may be generated. However, there will be no practical applied benefits and profits without the creativity required for theory construction. When you bring the element of creativity, we bring in the humanities, the classics and indeed, the salience of emotional intelligence. Indeed, the great truths from the classics, such as Socrates’ statement that an unexamined life is not worth living for a human being, represent an insight into knowledge and the human element implicated in it. To undercut the humanities is in effect to undermine knowledge, and to undermine knowledge in this sense destroys the narrative imagination of the human being. The author concludes as follows, “I think that an alchemy able to transform the huge quantity of information in true knowledge is, indeed, an essential skill, and even the mother of all science, in the modern world.” The author has given us a brilliant insight into one of the most important precepts that guides the values of the Fellows of the World Academy of Art and Science: the need for a new alchemy of knowledge itself.

**Mirjana Radovic-Markovic** approaches the theme of knowledge in the context of practical educational challenges, which she formulates in five basic questions. One of those questions requires that we explore what should be done to increase freedom in learning and foster individuality. Since she has a background in business education, she is particularly interested in the question of students learning entrepreneurial skills and how this might be applied, in particular, to the education of women. Her paper summarizes a cross-cultural study of these issues in nine (9) countries. In effect, her strategies to improve learning require the development of an entrepreneurial orientation, which is an application of

the notion of creative intelligence but with a specific application and relevance to the status of women. The paper then develops an understanding of how to encourage creativity as an active mode of learning in a new teaching approach. The author then explores the important question of the impact of new technologies on education and whether such technology enhances individual freedom and self-awareness. She sees great potentials in the learning process when the students can access new and diverse forms of information and can combine face-to-face learning with e-learning opportunities. Some of these issues require changes in the role of teacher in a virtual learning environment. The author then addresses the link between education, creativity and entrepreneurship, in particular, as it applies to women. The last part of Professor Radovic-Markovic's paper deals with the cross-cultural empirical findings of a survey relating to these issues. The data suggests the importance of "multi-dimensional relationships between course concepts and community based on entrepreneurial experiences". Creative and interactive education must provide a completely new dimension for gaining knowledge. This mode of learning generates innovative personality development in the individual. The individual in turn creates something unique and transforms it into entrepreneurial behaviour, at least regarding the education of women.

**John Scales Avery** has written a brilliant paper on the evolution of cooperation. The paper starts with the apparent paradox that human beings will generate the most destructive of behaviours out of altruism justified by some symbol of the altruistic. In short, individual crimes for selfish motives are generally insignificant compared to the numbers massacred at the altar of unselfish love. Quoting Koestler, Avery notes that "wars are not personal gain, but out of loyalty and devotion to king, country or cause". He then explores the symbols and conditions, which create in a group a sense of the "we" in which unlimited altruism may be important and the "other" which may be a perceived threat to the "we". He notes that population genetics and group selection may explain the willingness of individuals to sacrifice themselves for their own groups. The question then is, how do we biologically explain the issue of in-group altruism? At the birth of antiquity, altruism was tied to group survival, particularly if there was competition with other groups. Individuals, loyalty and altruism in the group increased the group's chances of survival. In order to distinguish the in-group from the out-group, the distinguishing factors tended to be cultural rather than biological. These included scarification and, as Avery notes, there are endless signs and symbols, which constitute cultural markers for differentiation. Language is of course an important and ubiquitous marker of difference. It establishes the group boundary. Religion is another marker. Avery provides an insight into the cultural factors that make up group identity, which would seem to have important psychosocial implications. However, the important point is that group identity is a cultural/social construction. If this is true, then it has large-scale implications for an organization such as the World Academy of Art and Science. What role can the Academy play in the expansion, culturally speaking, of human group identity to the point that group identity represents global human solidarity? Avery moves from these insights back to science and biology and examines the evolution of cooperation. He finds that there is a wealth of evidence of cooperation at all levels of biological existence. In particular, he uses illustrations between single cell and multi-cellular organisms as examples of cooperation, which have altruistic elements. He notes, additionally, that multi-cellular organisms live in cooperation with animals and humans since bacteria are essential for the digestion of food. Insects, in turn, are essential for plant pollination. The comparison of animal cooperation with humans shows that humans are profoundly impacted by cultural as distinct from genetic evolution. Our changes are not significant in the genetic code, but they are revolutionary in the cultural communications context. Moreover, cooperation is central to the new form of human evolution because cultural advances can be shared universally. These insights lead us to see that humanity is going through a gigantic transformative evolution, which advances cooperation and indeed, makes cooperation a global and cultural necessity. Avery notes that competition has a role in evolution, but cooperation is clearly more important. Cooperation is confronted with cultural regression in the form of genocide and the threat of nuclear extinction. The challenge is to strengthen cultural cooperation on a global basis recognizing that human nature still nurtures a dark side.

The final essay in this part of *ERUDITIO* is a speech made available from one of the most distinguished Fellows of the World Academy of Art and Science. I refer of course to **Yehudi Menuhin**. In reviewing Menuhin's paper, we considered it especially relevant to the theme of individuality in this journal. Menuhin was one of the greatest violinists ever. He was also a great and distinguished intellectual. The central point in the paper is his effort to define morality in the most comprehensive terms possible. For example, he suggests that he "would like to envisage morality as simply the unseen senior partner presiding at every transaction between a human being and his environment, as within a human being, between himself and his person. Morality could be described as that attitude or approach essential to achieve maximum joy, satisfaction, ecstasy, security and health—mental and physical, over the longest possible period for oneself and other creatures." Menuhin draws attention to the drive for development and the role of indigenous Indians in New Mexico to preserve a sacred lake from being contaminated by the forces of development for profit. He sees a profound insight in their idea that private property should be limited: "they believe that land is very much like air and water, that you cannot tie it down, cut it up and apportion it—that it belongs to everybody". With numerous other illustrations, Menuhin makes the case for a new morality, which is a matter of current contemporary salience as well. In some ways, Menuhin was making a plea for a new inclusive paradigm of morality and values, which would be cross-cultural, trans-disciplinary, and global in its importance. This makes the essay worth reprinting in our journal.

**Winston P. Nagan**

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**Editor-in-Chief, *Eruditio***

## Looking for a New Alchemy: From the Lead of Information to the Gold of Knowledge

Emil Constantinescu, Trustee, World Academy of Art and Science;  
President of the Academy of Cultural Diplomacy in Berlin;  
President of Romania 1996-2000

### **Abstract:**

*There is a general agreement about the main characteristic of the contemporary ways of progress. Knowledge is unanimously recognized as its driving force. What is less unanimous is a comprehensive definition of knowledge itself. In many documents, analyses, working papers and so on, the term is considered as universally understood, but in fact, there are many competing significations on the market. Too many of these definitions confound information and knowledge, reducing the realm of knowledge to an accumulation of technical skills.*

*The quantity of contemporary information is so huge that the risks of robotization of the men and women of our world have become obvious. In my view, bare information opens a royal way to massification, whereas knowledge stimulates the harmonious development of responsible individuality. There is no other antidote for de-humanization but an individual capacity for transmutation, as in the old alchemist's retorts, of the lead of information into the gold of knowledge.*

*My contention here is two-fold. I propose, first, that the significance of the term 'knowledge' as a driving force of the contemporary world must be as deep as possible, in the most comprehensive, philosophical meaning of the term. Modern knowledge cannot and should not be reduced to a technical compilation and use of information, but has to be coextensive to the depth and breadth of the human wisdom accumulated through millennia. The second theme stems from the first one, and envisages the realm of modern knowledge as a territory of synergies, where each domain of research functions as a "bouillon de culture", a nourishing medium for the other domains of knowledge: history for the sciences of the Earth as well as geology for history, classics for physics, and ethics for biology – or vice-versa.*

Knowledge is unanimously recognized as the driving force of contemporary societies. Be it the rather stereotyped resolutions formally issued by the European Union, in science-fiction comics or serial films, the future is brighter only if it is more intelligent, better informed, more understanding of the world, or even the worlds, in which humanity evolves. The pursuit of knowledge is as essential for humanity as the pursuit of happiness, and may even be coextensive with that fundamental pursuit. And yet, we may hardly find a comprehensive definition of knowledge; many documents, analyses, working papers and so on consider the term universally understood. In fact, there are many competing significations on the market. Too many of these definitions confound information and knowledge, reducing the realm of knowledge to an accumulation of technical skills and competencies.

One of the great challenges of the contemporary world is the huge quantity of information that we find today in various media, be it traditional – as the books or the printed press

seem to be – or modern, visual or electronic. The necessary skills in the contemporary post-industrial world are more complex than ever. Acquisition of both information and skills is time-consuming, and so, carries with it more than ever the risks of robotization. Here lies, I think, the main question of the difference between information and knowledge. Bare information opens a way to massification, whereas only knowledge stimulates the capacity for critical evaluation and generates the harmonious development of responsible individuality. There is no other antidote for de-humanization but an individual capacity for transmutation, as in the old alchemist's retorts, of the lead of information into the gold of knowledge.

My contention of today is two-fold. I propose, first, that, if we seek a truly better world both for ourselves and for tomorrow, we must bestow the concept of *knowledge* as a driving force of the contemporary world with as deep a sense and as complex a meaning as possible, in the philosophical meaning of the term. The second theme stems from the first one, and envisages the realm of the modern knowledge as a territory of synergies, where each domain of research functions as a bouillon de culture, a nourishing medium for other domains of knowledge: history for the sciences of the Earth, geology for history, classics for physics, and ethics for biology – or vice-versa.

Knowledge cannot and should not be reduced to a technical compilation of information. It has to be coextensive to the depth and breadth of human wisdom accumulated through millennia. The quest for a true understanding of knowledge must go back at least to Plato, who once told that his master's interlocutor asked Socrates, his master: *And what, Socrates, is the food of the soul? Surely, Socrates answered, knowledge is the food of the soul.* Knowledge as the food of the soul must be our theme of reasoning. We must confess that this is a great metaphor, but it is not a definition. In fact, no single definition of knowledge exists, and there are practically as many theories to explain it as there are philosophers or scientists who probe into its depth.

As Bertrand Russell wrote in his "Theory of Knowledge",<sup>1</sup> at first sight it might be thought that knowledge might be defined as belief, which is in agreement with the facts. The trouble is that no one knows what a belief is, no one knows what a fact is, and no one knows what sort of an agreement between them would make a belief true. As Wittgenstein commented on this proposition, so may we: he observed that one can say he believes it, but it isn't so, but not he knows it, but it isn't so.

Following these ideas, we may say that *knowledge* has to be understood as a **cluster concept** that is not adequately captured by any single definition. An interesting view in this respect is that of Karl Popper,<sup>2</sup> who identifies three worlds of knowledge:

*World 1* which is the physical universe. It consists of the actual truth and reality that we try to represent. While we exist in this world, we do not always perceive and represent it correctly.

*World 2* which is the world of our subjective personal perceptions, experiences, and cognition. It is what we think about the world as we try to map, represent, probe into its past and anticipate or formulate hypotheses. Personal knowledge and memory form this world, based on self-regulation, cognition, consciousness, dispositions, and processes.

*World 3* which is the sum of the objective abstract products of the human mind. It consists of such artifacts as books, tools, theories, models, libraries, computers, and networks.

While knowledge may be created and produced by *World 2* activities, its artifacts are stored in *World 3*, for example, the Bible, Plato's *Dialogues*, Maslow's hierarchy of needs, and Gödel's proof of the incompleteness of arithmetic, theories of history and of social structure of the world, and so on.

The main point of this Popperian hierarchy of knowledge consists in the postulate of interdependence, and in the idea that there is a permanent bi-univoc exchange between the three realms of knowledge. *World 1* enables *World 2* to exist, *World 2* tries to control *World 1* through intelligible models, and in this way it produces *World 3*, while *World 3* helps in the recall and the education, development, and learning of *World 2*. *World 3* *World 1* is the inferred logic of *World 3*, which describes and predicts *World 1*. As a consequence, we cannot survive in the physical, objective world either without the scientific knowledge that helps us in our daily life and progress – the sum of which we usually name **civilization** – or without the sum of our subjective perceptions about the world – which we define as **culture**.

Popper held that scientific theory, which is the foundation of any human knowledge, is generated by creative imagination in order to solve problems that have risen in specific historical and cultural settings. This means that, if we choose to amputate culture out of the hypothetical “objective knowledge” realm, we risk losing the very essence of civilization. A common set of cultural facts and information matters not for its own sake, but because a shared intellectual landscape is essential in empowering us to strive to attain the essence of knowledge.

The modern world seldom recognizes that the first and foremost objective of knowledge should be the disinterested dedication to the broadening of human mind. In spite of any theory, and mostly because of the complexity of human knowledge, the social capital invested today in its different components, or as Popper imagined them, the investment in the exploration of these three interrelated worlds, tends to be selective. In our society, the humanities have seemingly lost most of their traditional value as the core of the formation of the human person, and the balance of options inclines drastically towards the applied sciences and technologies. Or, it is obvious that the progress of the applied sciences and techniques depends almost entirely on the progress of the theoretical knowledge of the fundamental sciences, which cannot be quantified but remains essential. On the other hand, it is my thesis here that the general progress of theoretical knowledge cannot flow freely without the nourishing broth of the arts and humanities. One of the main errors in the decisions which shape the evolution of contemporary sciences and technologies is the marginalisation of the humanities in the general realm of the pursuit of knowledge.

The profitability of knowledge seems to be the dominant goal aimed at by the modern quest of a new philosopher's stone. A reader once crudely commented in a public debate about the place of humanities in modern education that, *no poet creates a vaccine or a tangible good that can be produced by a Fortune 500 company*. This kind of misjudgment is flatly contradicted by Einstein, who praised above all *the supreme art of the teacher to awaken joy in creative expression and knowledge*. Or, earlier, by Nietzsche, who wrote once that *our treasure lies in the beehive of our knowledge. We are perpetually...honey gatherers of the mind*.

Although none of these commentators uses the word, the issue they implicitly raise is justification for continuing to invest in the humanities, in spite of their apparent uselessness

in terms of profit. If it is true, then, that the humanities exist for their own good, the modern manager of education and research asks more often than not why we do not let them live from their own products.

In happier times, the luxury of founding arts and humanities found its use either in the perpetual glory of the kings and tyrants, or in the moral education of souls. The Latin poet Horace promised Emperor Augustus to erect an immortal monument, more resistant than bronze, *exegi monumentum aere perennius*, and we must observe, sadly, that even today the dictators spend much more money than the free, democratic world does for the founding of arts and humanities. Truly, they are, of course, crooked and biased by propaganda; but the fact remains that poets were better paid under Communist societies than in liberal societies.

On the other hand, moral education of the young generations has abandoned completely the old idea of the humanities as a repository of ethical models. In his *Defense of Poesy* (1595), Philip Sydney wrote: *Who reads Aeneas carrying old Anchises on his back that wishes not it was his fortune to perform such an excellent act?* What happened to Faust should teach us not to sell our souls, and Kant's categorical imperative forbids us to impose restrictions on others which we would resist if they were imposed on us. Alas, the tragic experiences of the last century teach us that a solid classical education does not guarantee anything less than moral behavior of the human subject. On a more familiar ground, we may see for ourselves in the academic world that people who spend every waking hour with great books and great thoughts are seldom paragons of virtue themselves.

What can you say to the tax-payer who asks, *What good can a program in Italian poetry of the Trecento do for me?* It is possible, but cannot bear proof, that the economy of a country can benefit by reading "Hamlet". A great Romanian mathematician, Grigore Moisil, wrote once that, in his belief, the productivity of a qualified worker will be improved if he is familiar with Shakespeare's work. Hardly proven. We hesitate to argue that a well-versed graduate in the history of Florentine art will be more attractive to employers than an IT specialist – and that, in spite of the fact that some of the most brilliant bankers I have met when in office started in their careers by graduating in Classics. If your criteria are productivity, efficiency, and consumer satisfaction, it seems that the only thing that makes sense is to withdraw all material support from the humanities, and support only programs that produce immediate results the man or woman in the street can understand and appreciate at once.

Of course, the criteria of any respectable scientific and academic community must not be reduced to aiming only for productivity, efficiency and consumer satisfaction. But the interrogation of the ordinary taxpayer cannot be avoided. There are two layers of answer to this interrogation. One may seem too abstract, but cannot be avoided. In the last decades, the scientific study of human intelligence and creativity has proved beyond any doubt that the performance of our brain depends on a complexity of factors: intelligence is but one of them, the necessary condition, as it were, but the sufficient condition resides in what the specialists call the *emotive intelligence*. More precisely, it has been proved that the performance of a person with an Intelligence Quotient – IQ – over 130-140 points depends not essentially on his/her IQ, but on the harmonization between their intelligence and emotions. In this respect, it would be a scientific heresy to eliminate from the educative processes precisely the disciplines which foster and develop the emotive intelligence. The absence of a culture that privileges learning to improve oneself as a human being may not only be a simple error of

judgment, as it carries with it the great risk of amputating the human person of one essential asset. That is why we must proclaim the value of liberal arts education as often as we can, and to help all the decision-makers concerned understand what is being lost when traditions of culture and art, which have been vital for thousands of years disappear from the academic scene.

Why have the great creators of our time turned so regularly to classical myth, literature, art and philosophy for their inspiration, and what has been the impact of this bond on them to the classical past? In André Gide's *Thésée*, written in 1944, Daedalus meets Theseus, who is about to enter the Cretan Labyrinth, and explains the deep sense of the thread of Ariadne: *This thread will be your link with the past. Go back to it. Go back to yourself. For nothing can begin from nothing, and it is from your past, and from what you are at this moment, that what you are going to be must spring.*<sup>3</sup> This thread to the past serves as a catalyst rather than as an inhibitor to our originality, and so leads us not only back but also forward. As the great stoic Seneca<sup>4</sup> wrote, *while we live, while we are among human beings, let us cultivate our humanity.*

Last, but not least, the main goal of the humanities is to create a long-term conception of citizenship for the future. In the recent past, democracy has based its institutions of learning on this ideal, striving to a degree unparalleled in the history of the world, towards the cultivation of the whole human being for the functions of citizenship and life. It is not for today, when democracy has a chance to spread more than ever, to abdicate this goal.

In her famous essay *On Not Knowing Greek*, Virginia Woolf writes: *what draws us back and back to the Greeks is the fact that the stable, the permanent, the original human being is to be found there.*<sup>5</sup> Socrates, in Plato, *Apology 38 A*, says: *If I tell you ...that the unexamined life is not worth living for a human being, you will be even less likely to believe what I am saying. But that's the way it is, gentlemen of Athens, as I claim, though it's not easy to convince you of it.* The question of the relationship of a liberal education to citizenship has a very long history in the philosophical tradition. Since Socrates, it has examined the ideal of an education that liberates the mind from the bondage of habit and custom, producing people who can function with sensitivity and alertness as citizens of the whole world.

The capacity for critical examination of oneself and one's own traditions, the Socratic *examined life*, that questions all beliefs and accepts only those that survive reason's demand for consistency, requires the capacity to test what one reads or says for correctness of fact and for accuracy of judgment. Socrates compared himself to a gadfly that awakens democracy. A gadfly is not comfortable to live with, and testing the stereotypes of your fellow citizens can be risky, as Socrates learned too well. And yet, not only ancient democracies, but also modern ones are prone to hasty decisions, and to the substitution of invective for deliberation. That is why democracy needs citizens who can think for themselves rather than those who simply submit to authority. Scientific education produces sophisticated scientists and technicians, but only the humanities, which may seem incapable of producing anything, are capable of producing gadflies.

Citizens who cultivate their humanity need, further, an ability to see themselves not simply as citizens of some local region or group but also, and above all, as human beings bound to all other human beings by ties of recognition and concern. The idea of the "citizen

of the world”, *kosmopolites*, has two converging roots, that of the ancient, Greco-Roman Stoic philosophy, and that of the universal religions, starting with the Christian one. This idea had a formative influence on Immanuel Kant in the philosophical tradition during the Enlightenment, as well as on the American Founding Fathers. In the present-day multicultural and multinational world, many of our most pressing problems ask for a dialogue. The basic prerequisite is that, in whatever way we order our many loyalties, we should still be sure that we recognize the worth of human life wherever it occurs.

Humanities are the only way for understanding a human being different from oneself, for being an intelligent reader of that person’s story, and to understand the emotions, wishes and desires of other human beings. When we identify with a poet’s feeling, or with a character in a novel, we also judge that story in the light of our own goals and aspirations. This kind of ability can be called *the narrative imagination*. This means the ability to think what might be, maybe not as opposed to, but certainly different from what is, now and here.

Almost all present issues, from business to agriculture, from human rights to the relief of famine, are global, and call on us to trespass narrow loyalties and to consider the reality of distant lives. Cultivating our humanity in a complex world involves understanding the different ways in which different people meet and surpass different circumstances. This requires a great deal of education in the humanities and in social sciences, which are the gateway to the knowledge of distant cultures, of minorities within our own society, of differences of gender – in short, which provide the instruments we can use to know and understand the other. Maybe the best way to explain how the humanities earn their keep is to understand how many wars, at home or abroad, they may have helped to avoid.

We also need, in the modern world, the best of our capacity to use and to decipher the true meaning of words. We live almost all our lives, and to a degree unparalleled in the history of the world, in the realm of words, we communicate most often through the use of language, but our communication skills depend heavily on our general knowledge and on our humanistic education. People high in general knowledge tend to be highly open to new experiences and to intellectual engagement. Conversely, people high in openness are motivated to engage in intellectual pursuits that increase their knowledge. Citizens cannot think well on the basis of factual knowledge alone, and they need more than a few hundred words to factually understand themselves and the world. We may think about Orwell’s *Animal Farm* to observe in a glimpse the disastrous effect of an impoverished vocabulary: yet another example of the social utility of literature, arts, and the humanities in general. That is why I think that an alchemy able to transform the huge quantity of information in true knowledge is, indeed, an essential skill, ability, and even the mother of all science in the modern world.

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## **A New Model of Education: Development of Individuality through the Freedom of Learning**

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Full Professor, Institute of Economic Sciences & Faculty of Business  
Administration & Entrepreneurship, Belgrade, Serbia

**Dusan Markovic**, Lecturer, Belgrade Business School, Belgrade, Serbia

### **Abstract:**

*Meeting new challenges calls for new priorities in education. It means an interactive style and education based on individual needs and abilities that should provide a completely new dimension of gaining knowledge and make learning a more convenient process. The course curricula have to be devised in view of the experience acquired from either the entrepreneurial environment or any other environment, depending on the type of the curriculum.*

*It is necessary to stress that there is little documented evidence of what specific factors within the curricula are effective in fostering entrepreneurial abilities in students through education and by raising entrepreneurial intentions after students' graduation. Our research investigates five main questions: (i) What is the meaning of freedom in learning? (ii) What does freedom in learning mean to students? (iii) What should be done to increase freedom in learning and foster individuality? (iv) How can we encourage the entrepreneurial abilities of students through education with focus on women? and (v) In what direction should educational strategies be developed? The research methodology in this research is qualitative in nature. This approach involves carrying out in-depth interviews with respondents from different countries all around the world (respondents were mainly from Serbia, Iran, India, USA, Nigeria, Canada, China, Pakistan, and Philippines).*

*Our research shows that the modern business environment should be accompanied by the change in educational environment. Namely, it is necessary to offer multi-dimensional relationships between course concepts on entrepreneurship and the community based on entrepreneurial experiences. The new educational strategy also needs freedom in learning and teaching and an active mode of learning influences innovative personality development, which creates something unique and turns it into an entrepreneurial activity. Furthermore, the new entrepreneurship educational strategy should provide a more women-centered approach. It is also impossible to achieve all new educational advantages without close relationships between governments, schools and women's organizations. In other words, only their synergies allow the education system to be efficient and can bring prosperity for women.*

### **Introduction**

Freedom is the most important condition in almost any aspect of life. Freedom in itself is a main issue in human affairs. History is full of movements and protests of different people from different walks of life at all social levels, who were looking for freedom in various

aspects of their lives. Learning is amongst those issues which has always been a hot topic in the literature of freedom. As Lankshear argues:

*“Freedom and learning have been linked in educational philosophy and theory within the western tradition since the time of the Greeks, and was especially significant in Anglo-American educational debate throughout much of the twentieth century.”*

Association of American Colleges & Universities (AAC&U) mentions that:

*“The academic freedom implies not just freedom from constraint but also freedom for faculty and students to work within a scholarly community to develop the intellectual and personal qualities required of citizens in a vibrant democracy and participants in a vigorous economy.”*

A good education system gives students the freedom to recognize their capabilities and individual potentials. In this way, as Forte elaborates, in order to give students the freedom to learn, creating a new classroom atmosphere where thinking, questioning and imagining are encouraged and are not hampered is essential. In this context, education should encourage students to work collaboratively and ask questions creatively about ideas and issues across a range of disciplines. As creative thinkers, they try to imagine and explore alternatives, and to think in a different manner. Such an approach is required for a solid academic foundation and for enhancing their intelligence, including “soft skills” such as understanding, empathy and communication skills. The use of different learning materials and various resources allows students with various principal learning styles to understand information in the most effective way. Learning is fostered by multidimensional interactions between students and teachers. To learn on their own, youth need unlimited time to play, explore, become bored, overcome boredom, discover their own interests, and pursue those interests. It helps students develop their analytical and critical reasoning skills with particular emphasis on exploring and evaluating competing claims and different perspectives. Education leads to greater personal freedom through greater competence, if it becomes organized to consider diverse perspectives. However, as Forte argues, a student’s freedom to learn requires the teacher’s freedom to teach, and these are in a close relationship with each other. In this context, current educational systems need to adopt new methods and strategies that are able to support educational goals and ensure the freedom of learning and teaching.

Women’s freedom in learning is also a critical topic to be investigated, especially in the field of entrepreneurship. Although women are improving their status in the educational systems, there are still some nuances in scholars’ approach. For instance, as Radovic-Markovic et al., (2009) mention in their study:

*“The changes in women’s educational and career attainment may have multifaceted characteristics. Women might have increased their enrolment in colleges compared to men, but women may still differ in terms of the types of subjects in which they are enrolled.”*

In this study, we will try to investigate the freedom in learning, individuality and women’s entrepreneurship education, concentrating on the gender differences between the respondents. Therefore, first we will discuss the educational strategies appropriate to increase freedom in

learning. Then, we will elaborate on the impact of new technologies on education, based on its role on freedom and individuality. Afterwards, we will discuss education, creativity and entrepreneurship, and the linkages between them. Finally, the research methodology and the results will be presented and the chapter concludes.

## **Theoretical background**

A new education strategy which encourages interaction between teachers and learners needs different learning styles. Primarily, this means fostering creativity, which requires an active mode of learning, and consequently a new teaching format, where the teacher is a coach. Creative teachers are willing to change and welcome new experiences; they are not afraid to go off the main track or step into the unknown. Namely, the teachers are key figures to implement change, but they need support to understand and accept creativity in their practices. Creative teaching may be defined in two ways: firstly, teaching creatively and secondly, teaching for creativity. Teaching creatively might be described as teachers using approaches to make learning more interesting, engaging, exciting and effective. Teachers have to attract students' interest and attention in a new way, and as a result the development of creative approaches is called for. Simplicio adds that teachers must make an effort to better understand their students and their educational needs. On the other side, learners are empowered to take ownership of their own learning processes, and to feel that they can influence their educational contents. As some authors pointed out, "these aspects point towards a learner-centered pedagogy, where personalisation and individualisation of learning have a growing role, and where pupils have a say in the fashioning of tasks". In addition, some researchers agree that in creativity, there is always some new, critical and useful idea, understanding, information, approach or solution to a challenge that emerges at different (i.e. individual, group, organization, or even social community) levels, which could lead to better innovative performance of learners. Considering the advantages of creativity for different people at different levels, expecting widespread use of creative practices in education is a normal expectation. The creative practices in education should help learners to work on building their knowledge through defining things, which are especially important in their eyes, and in the process, strengthen their sense of self and individuality. They also involve developing students' personal qualities, including a strong sense of responsibility in self and others. In other words, according to some authors, the new education model should be based on the individual's growth and be able to foster individuality, flexibility and personality enabling development toward the following:

- promoting achievement;
- tackling barriers to inclusion;
- creating a learning and teaching environment that is sensitive to individual needs;
- original and creative thinking;
- intelligent decision-making;
- fostering young people's learning experiences through multi-dimensional relationships between course concepts and community;
- support individuals to take ownership of their own learning processes;

- improving students' relationships with teachers, where the teacher is a coach;
- acquisition of knowledge for resolution of problems;
- flexible adaptation to new situations;
- effective cooperation with others;
- learner-centered pedagogy which is focused on individual learners, their experiences, perspectives, backgrounds, talents, interests, capacities and needs with a focus on learning. In this context, new education strategies should encourage interaction between teachers and learners.

To many scholars, educational strategies should provide the learners with a fertile ground to enhance their potentials. In this way, the learner will not be hampered by disturbing and discriminating elements. As Schrank argues:

*“As now defined, academic freedom...ignores the intersubjectivity of all persons in the setting... such an approach conceals the vulnerability of women and other historically excluded groups who are still marginal in the academy, and does not take account of the historic advantages enjoyed by white, heterosexual, able-bodied males... it does not acknowledge power imbalances in relations based on gender, race, sexuality, class, and other dimensions of difference...”*

Educational strategies should be developed in a manner that could prevent any discrimination against women.

### **The impact of new technologies on education: Does technology support freedom and individuality?**

New technologies allow for exploration of new areas of learning and thinking. These could support creative learning and innovative teaching and foster individual potential. Computer-based educational techniques and technologies have been considered as useful means for individualization. The different levels of interaction and collaboration characteristic of new technologies facilitate personalisation of learning paths and customization of educational services. Namely, the development and implementation of student-centric technologies will highlight a need to shift to student-centered pedagogy and the ownership of learning by learners, a quality that is indispensable for fostering creativity. In other words, digital instruments let learners learn at their own pace, teach skills needed in a modern economy and hold the attention of a generation weaned on gadgets. They can also support personal growth and intellectual maturation of both students and teachers. Adding distance courses and programs to existing services will increase the number of alternatives that students can choose from and therefore increase their freedom in learning. Certainly, students can personalize their own education through their choices. If their alternatives can be expanded, then individualization can be increased. This expansion of alternatives depends on the willingness to provide more individualized and student-centered educational services.

New technologies and tools also can enhance communication between students and teachers. As Keamy mentions:

*“They allow each student greater diversity for learning, enhance interactivity*

*between individual students and individual teachers, provide a space for personalized, flexible learning beyond the classroom walls and allow students to live locally whilst learning globally- through the use of external resources accessed via the world wide web."*

A large amount of literature deals with comparison of the modalities of electronic education with oral speech, especially with a direct, face-to-face communication, despite the fact that electronic education displays a large number of properties similar to the real world education. Similar to the face-to-face education, electronic education is interactive in nature. The result is that the behaviour in electronic education takes on the characteristics of both the documents – the written and the informal education. Regardless of the advantage in terms of the speed of exchange of information virtually and to larger distances, electronic education revealed some additional misconceptions, e.g., the tasks will not be solved faster if set electronically, which is not truly the case.

Technological platforms require educational policymakers to devise new approaches for learning methods. These technological platforms provide the learners with lots of opportunities, such as what is learnt through an online learning or a combination of face to face with online learning systems. Moreover, in short range we can expect that the learners could learn with software that is customized based on their kind of intelligence and learning methods. Various online applications could be used to enable teachers to become more and more innovative in their teaching styles, as well as students to develop their analytical and creative skills and to learn and think creatively. According to Liarokapis, the advent of virtual environments in higher education has the potential to bring a significant change in the learning experience of learners. Namely, the online learning environment is quite different from a traditional classroom, in which one has limited interaction and almost unlimited access to learning resources. In other words, online courses require participants to take on new and different teaching/learning behaviors, which are quite different from the old ones. Recent research has compared online learning to face-to-face learning qualifications, explored the effectiveness of online instruments such as discussion boards and chat rooms, addressed evaluating effective online instruction, and assessed the value of online courses in specific fields of study. Draves provides a list of reasons why he believes that the Internet enhances learning, including such advantages as being able to learn at a peak time of the day, learning at your own speed, accessibility to more information, an ability to track personal progress, and the capability to test personal learning efforts. In addition, the e-learning students are in an environment where professors respond to students' needs on demand whenever students could reach them online, and not only in the classroom. Teaching and learning take on a more collaborative sense in an e-learning environment.

We can conclude that with new technologies in hand, the process of learning in the classroom can become significantly richer as students have access to new and different types of information and can combine face to face learning with e-learning opportunities. This combination provides them a lot of opportunities to learn more new things in quite a different environment. Students can do their research projects and control experiments in completely exciting and interactive ways, and can be provided the freedom to communicate their results and conclusions in a variety of media to their teachers, students in their classroom, or students worldwide. Advocates of high-tech classrooms say computers are not intended

to replace teachers. But they do believe in a fundamental change in the teacher's role in the virtual learning environment.

## **Linking education, creativity and entrepreneurship**

Entrepreneur is a change agent of his/her society, who generates employment opportunities for others and him/herself. Therefore, it is necessary to pay attention to improving skills of entrepreneurs and their education, which should increase their competencies. Considering the importance of education for entrepreneurs, recently, it is evident that entrepreneurship is one of the fastest growing sciences in today's undergraduate curricula in the United States and worldwide. In the past 3 decades, formal programs (majors, minors and certificates) in entrepreneurship have more than quadrupled, from 104 in 1975 to more than 500 in 2006. The development of courses in entrepreneurship has been exponential.

The concept of creativity is one that is often discussed in conjunction with entrepreneurship because creative thinking is an essential element in the formulation of business ideas and is necessary at every stage of business development and execution. Talking about creativity brings different definitions to our minds. But, usually creativity has been defined as "the production of novel ideas that are useful and appropriate to the situation". It means escaping from existing perceptions and concepts to open up new ways of looking at and doing things. Recent literature suggests that creative individuals are more likely to engage in entrepreneurial behavior. To highlight the importance of creativity, Schumpeter's idea of "creative destruction" is a good sample to be discussed.

In existing literature, creativity has also been regarded as a form of knowledge creation and how it can benefit learning opportunities. Moreover, creativity and innovation have close links with knowledge and learning. Hence, creative education involves a balance between teaching knowledge and skills, and encouraging innovation (NACCCE report 1999). To many scholars, creativity is considered as the main success factor of well-known entrepreneurs all around the world.

Creativity has long been thought to be characteristic of highly gifted and noble people; however, such an argument has been proved to be a wrong attitude. A number of researchers consider creativity as a component of innovation which is the basic aspect of entrepreneurship. Although every individual has certain creative abilities, the extent to which these potentials will be developed largely depends on how much these abilities are encouraged and well treated. It is in this view that education plays a crucial role and significantly determines whether its outcome will be "passive imitators" or "active, creative contributors".

In traditional learning systems, students are passive participants at all the educational levels. Their personal creativeness is not encouraged, nor are they challenged to think critically and originally. On completing the process of formal education, they are capable of more or less successfully reproducing the information they learned in the course of their schooling; however, they don't learn to implement the acquired knowledge in practice and use this knowledge as a basis for creating new ideas and making business decisions autonomously. The knowledge students acquire in the course of their education process has frequently turned out not to be really applicable or be rather inadequate to meet the modern requirements of the business environment.

“Learning by doing” is a non-traditional approach in which students are actively engaged in experiences that will reinforce lessons and teach skills that will have a lasting impact and, thus, help them become better learners. In this context, multiple perspectives take the educational experience beyond the classroom to cultivate real-world applications and to elaborate the matter in question. Service learning, community-based learning, community action research, internships, study abroad, and similar experiences all provide opportunities for authentic learning that engage students in using their critical skills to understand and to better the world. For instance, acquiring entrepreneurial knowledge not only helps students identify entrepreneurship activities, but also stimulates them to run their own businesses and to be more adaptable to the fast changing entrepreneurial environment. According to Ashmore, students start to understand that although a business may be successful today by performing a given set of tasks, tomorrow a quite different set of tasks or skills may be required. Therefore, the modern business environment should be accompanied by a change in educational environment. Consequently, it is necessary that permanent adjustments between these two environments should be made that will be beneficial for both individuals and the society.

Education has also been noted as one means to infuse women more concretely into the entrepreneurial experience. A recent study found that education plays different roles in countries’ economic development at different stages. For example, in a developed country, the level of education was found to be one of the significant variables affecting the performance of female enterprises. Considering the importance of education for women as entrepreneurs, it has recently become evident that the new Age is looking for new forms of education, such as creative education. Creative education and training should help women to raise their creativity, logical thinking and entrepreneurial activity.

Namely, entrepreneurship emerges from an individual’s creative spirit into long-term business ownership, job creation, and economic security. Women bring commitment and integrity because they care about economic empowerment, entrepreneurial development and innovation. The special understanding of innovation within that framework, and the role that women play in creating and commercializing that innovation are necessary. In addition, women’s participation in the human capital-generating activity, which was of historically lesser degree before, is now increasingly essential to innovation entrepreneurship, that being education in science, technology, mathematics, and engineering, which likely obscures the need to study female entrepreneurship in this context. Whatever the causes, the study and, ultimately, the improved engagement and success of women in innovation industries, including through entrepreneurship, are urgent needs in both domestic and international economic, legal, societal, and development contexts.

Due to different approaches to female entrepreneurship, it can be suggested here that this field of research is considered to be very broad. Some of the theories outlined in this research can be linked to the study of this phenomenon, such as gender theories, managerial theories, public policy, etc. In our opinion, all of these approaches should be as integrated as possible in order to provide a complete understanding of female entrepreneurship. In addition, a shift in thoughts and research in the field of female entrepreneurship is also necessary. It should follow the changes in the roles and tasks of women as entrepreneurs as the main conductors of these activities, influenced by new flows of economic operation in the age of globalization.

Namely, the recognition of the capacity of women entrepreneurs in our global community is no longer a matter of debate, but is a realisation that female entrepreneurship is now one of the major factors contributing to the development of many countries.

## Methodology

The research methodology for our research is qualitative in nature. This approach involves carrying out in-depth interviews with respondents from different countries all around the world. Also, we designed an online questionnaire that helped respondents answer the research questions in a better manner. Respondents varied by gender, occupation and country. Our research investigates five main questions as follows:

1. What is the meaning of freedom in learning?
2. What does freedom in learning mean to you?
3. What should be done to increase freedom in learning and foster individuality?
4. How can we encourage the entrepreneurial abilities of students through education with focus on women?
5. In what direction the educational strategies should be developed?

In order to collect the required data, a number of questionnaires were sent online to the respondents and they filled out the questionnaires and sent them back to us. It should be noted that the respondents were from different countries, but mainly from Serbia, Iran, India, USA, Nigeria, Canada, China, Pakistan, and Philippines.

## Research findings

The research findings are presented according to the aforementioned research questions. The general information of the respondents is as follows:

*Table 1 General information of respondents*

<b>Gender</b>	Male	Female
<b>Number (Percent (%))</b>	52 (55%)	43 (45%)
<b>Occupation</b>	Teacher/Lecturer	Student
<b>Number (Percent (%))</b>	43 (45%)	52 (55%)

Here we present the research findings based on the conducted survey. The bar charts showing the differences in responses between male and female respondents are presented in the Appendix section.

Table 2 Nationality of Respondents

Country	Number
Iran	20
Serbia	18
India	15
USA	15
Nigeria	8
Canada	5
China	3
Pakistan	3
Philippines	3
Malaysia	2
Denmark	1
South Africa	1
New Zealand	1
<b>Total</b>	<b>95</b>

**Question One:** What is the meaning of freedom in learning?

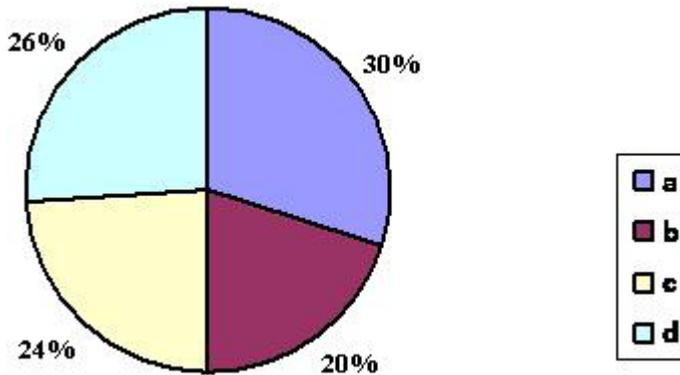
With the first question, we were looking to elaborate the meaning of freedom in learning. Based on the qualitative stage of the research, the following choices were proposed:

- Each student must be involved in deciding which skills to develop.
- Students are free to express their opinion even if it is wrong.
- Students can recognize their individual potentials.
- Flexibility in learning, taking into account the time and place of learning.

The occurrence of answers is shown in the following pie chart. As shown in Figure 1, almost all choices have the same occurrence. But, choice one is to some extent (30%) the most preferred.

The bar chart (see Appendix) does not show any significant difference between the responses of male and female respondents. As you could see in the bar chart, the order of the selected choices and their proportion is the same. Therefore, freedom in learning to male and female group respondents has the same manner of occurrence distribution.

Figure 1 Responses to the question on the meaning of freedom in learning



**Question Two:** What does freedom in learning mean to you?

With this question, we were asking the meaning of freedom in learning from the standpoint of respondents. The responses were different, but we categorized the answers in the following categories. It should be noted that some of the main samples from each category are included.

**a. Freedom in choosing the course and the course content:**

Adopt programs to suit individual interest and needs; option can be provided by others but choice should be according to students' talent; creating an educational atmosphere wherein students are able to choose and develop skills that are in line with their innate ability and background; to be the motivating and responsible agent of his/her own learning process; It means being allowed to observe and participate in decisions, design and functionality of an educational system that encourages specific goals.

**b. Freedom in learning without religious, political, or any other kind of constraints:**

Freedom from political and religious interference; learning without interference of external environmental force; it is an interaction between the teacher and the students which must reflect freedom and not rigidity.

**c. Freedom for expressing ideas and opinions:**

Students and teachers should be involved in creating a flexible environment by sharing new information and developing skills; students are free to express their opinion and discuss a lot of topics, ask questions and make close connections with professors and other students; students are free to express their opinion even if it is wrong; the ability to demonstrate unrestrained rights about what affects students' future either within the classroom or outside.

**d. Learn and expose anything which relates to skills, potentials and creativity:**

Learning beyond the syllabus; to find something in the hope of learning new, interesting and useful information.

**e. Freedom to learn the truth:**

To be free to ask questions and discuss them without obstacles; opportunity to express one's own opinion and to develop original thinking.

**f. Flexibility in learning, taking into account the environment (time and place) of learning:**

To have space and opportunities to grow as teachers and learners through an intensified use of learning management systems; the educational environment needs to build a solid platform for the individual on completion of their education to help them use the knowledge and skills obtained during the course of their studies.

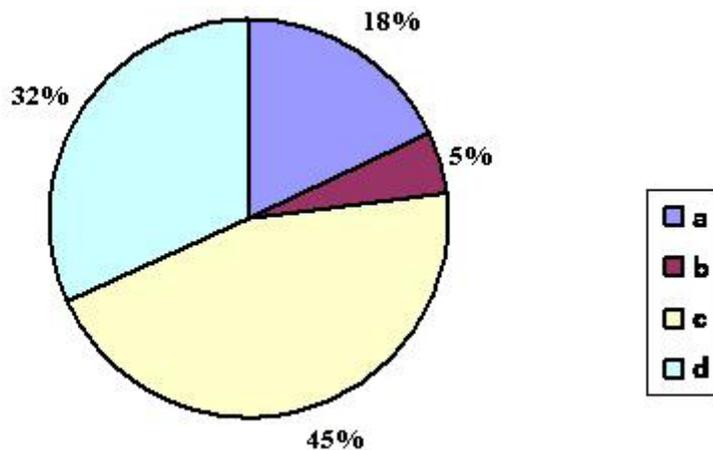
**Question Three:** What should be done to increase freedom in learning and foster individuality?

With the third question we were looking for the most effective and efficient solutions to increase freedom in learning and foster individuality. Based on the qualitative phase, the following choices were given to the respondents for the third question.

- To obtain better learning environments for students
- To obtain freedom in teaching
- Fostering young people's learning freedom through multi-dimensional relationships between course concepts and community
- Supporting individuals to take ownership of their own learning processes

The following chart shows the occurrence of each choice. As it is shown in Figure 2 the most preferred choice was C (45%), i.e. fostering young people's learning freedom through multidimensional relationships between course concepts and community. Choice D was the second preference of the surveyed population (32%). It was about supporting individuals to take ownership of their own learning processes. One of our most exciting findings is that these choices were the ones mentioned in question two, as the respondents' perception of freedom in learning.

Figure 2 What should be done to increase freedom in learning and foster individuality?



The bar charts (see Appendix) do not show any significant difference between the ideas of male and female respondents regarding the actions to be done to increase freedom in learning and foster individuality. The occurrence distribution of both groups is almost the same.

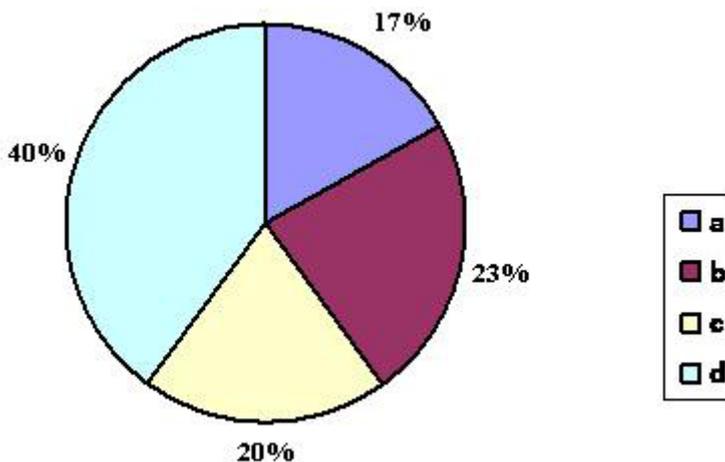
**Question Four:** How can we encourage the entrepreneurial abilities of students through education with focus on women?

In this question, we were searching for the best choice to encourage the entrepreneurial abilities of students through education. The following choices were designed according to the qualitative phase:

- a. Fostering creativity through education.
- b. Offering students the tools to think originally, develop and test their business ideas.
- c. Fostering innovative personality development that creates something unique and turning it into entrepreneurial activity.
- d. Offering multi-dimensional relationships between course concepts and community-based entrepreneurship experiences.

The frequencies of each choice are shown in the following pie chart. Figure 3 shows that choice D (40%) was the most preferred action to encourage the entrepreneurial abilities of students through education. Then, offering multidimensional relationships between course concepts and community-based entrepreneurship experiences were highly preferred. Moreover, choice B and C, respectively 23% and 20%, were almost equal in the eyes of our respondents.

*Figure 3 How can we encourage the entrepreneurial abilities of students through education with focus on women?*



Based on the bar chart (see Appendix), there is a difference in opinion between the male and female respondents. While female respondents believe that fostering innovative persona-

lity development of individuals who create something unique and turn it into entrepreneurial activity is one of the most effective ways to encourage the entrepreneurial abilities of students, male respondents believe it to be the less preferred choice. But, the most preferred choice for both male and female respondents was to offer multi-dimensional relationships between course concepts and community-based entrepreneurship experiences. As you might see in the bar charts in the Appendix section, the order of male and female respondents' answers is as follows: D, B, A, C, and D, C, B, A.

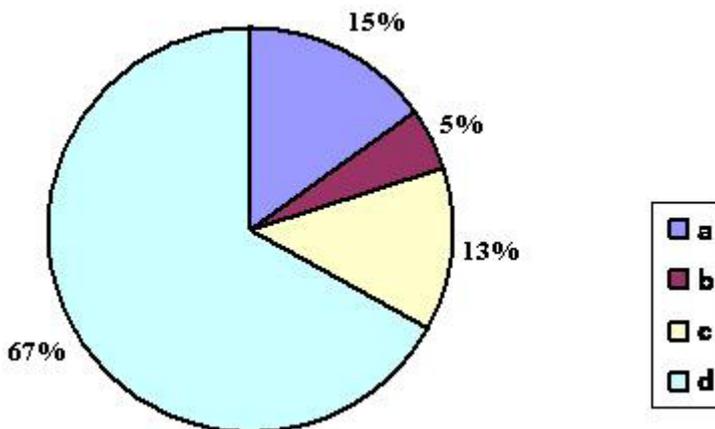
**Question Five:** In what direction should the educational strategies be developed?

With the last question, we were looking to find the most appropriate direction for the educational strategies to be developed in order to reach the mentioned goals that were the subject of the other questions related to increasing freedom in learning and fostering individuality, and encouraging the entrepreneurial abilities of students. Therefore, the following choices were provided based on the in-depth interviews:

- a. To be more oriented towards the individual needs of students
- b. To increase an individual's level of independence and freedom
- c. To increase creative abilities and original thinking
- d. All of the above

The occurrence of each choice is shown in the pie chart below. Figure 4 reveals the preference of all three choices simultaneously to direct the development of educational strategies (67%).

*Figure 4 In what direction should the educational strategies be developed?*



According to the bar chart (see Appendix), the most preferred choice for both male and female respondents was D. But the most exciting point is that male respondents considered choice A (i.e. to be more oriented towards the individual needs of students) in the second place and with a considerable percentage (i.e. 21% of male respondents). This claim also

could be supported by the male respondents' ideas in question two, as most of the male respondents were looking at the "freedom in learning" concept as to have freedom in choosing the course and the course content, while female respondents were mostly arguing about the freedom in expressing ideas and opinions, and freedom in learning without religious, political, or any other kind of constraints.

## Conclusion

Our research shows that creative education based on freedom of learning and teaching helps to foster creativity and original thinking. Accordingly, the existing education system and educational programs for women's entrepreneurship should be redefined. They have to obtain multi-dimensional relationships between course concepts and community based on entrepreneurship experiences. Consequently, the creative and interactive education should provide a completely new dimension of gaining knowledge. This active mode of learning provides innovative personality development in the individual who creates something unique and turns it into entrepreneurial activity.

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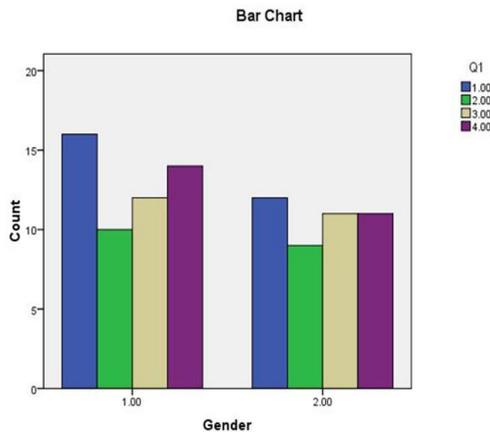
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**Appendix**

**Annex 1 Distribution of the answers based on the respondents' gender.**

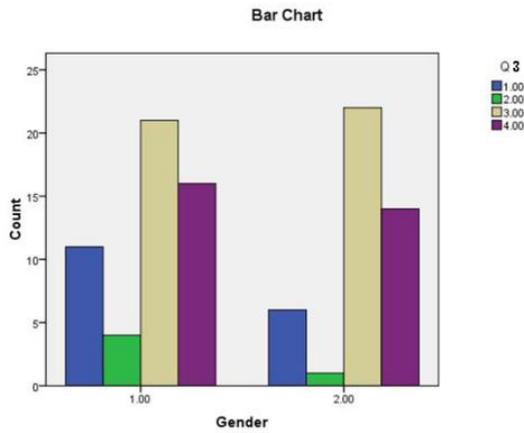
1. **Question One:** What is the meaning of freedom in learning?

Gender Q1 Cross-tabulation						
Count						
		Male: 1		Female: 2		
		1.00	2.00	3.00	4.00	Total
Gender	Male	16	10	12	14	52
	Female	12	9	11	11	43
<b>Total</b>		<b>28</b>	<b>19</b>	<b>23</b>	<b>25</b>	<b>95</b>



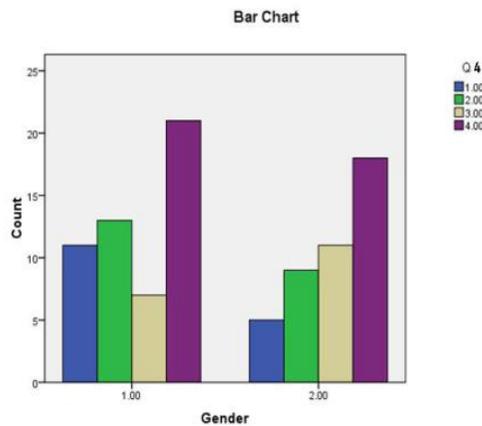
2. **Question Three:** What should be done to increase freedom in learning and foster individuality?

Gender Q3 Cross-tabulation						
Count						
		Male: 1		Female: 2		
		1.00	2.00	3.00	4.00	Total
Gender	Male	11	4	21	16	52
	Female	6	1	22	14	43
<b>Total</b>		<b>17</b>	<b>5</b>	<b>43</b>	<b>30</b>	<b>95</b>



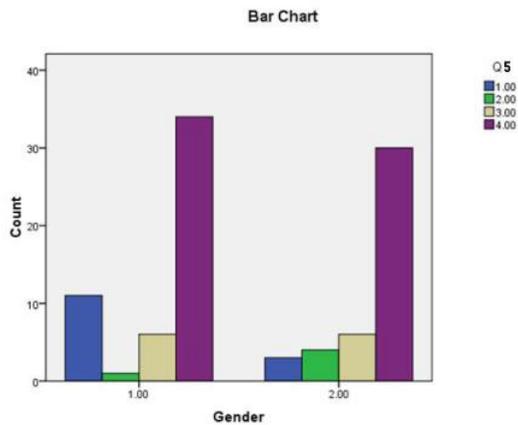
3. **Question Four:** How can we encourage the entrepreneurial abilities of students through education with focus on women?

Gender Q4 Cross-tabulation						
Count						
		Male: 1	Female: 2			
		1.00	2.00	3.00	4.00	Total
Gender	Male	11	13	7	21	52
	Female	5	9	11	18	43
<b>Total</b>		<b>16</b>	<b>22</b>	<b>18</b>	<b>39</b>	<b>95</b>



4. **Question Five:** In what direction should the educational strategies be developed?

Gender Q5 Cross-tabulation						
Count						
		Male: 1		Female: 2		
		1.00	2.00	3.00	4.00	Total
Gender	Male	11	1	6	34	52
	Female	3	4	6	30	43
<b>Total</b>		<b>14</b>	<b>5</b>	<b>12</b>	<b>64</b>	<b>95</b>



## The Evolution of Cooperation

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### **Abstract:**

*The success of humans as a species is due to our genius for cooperation. Cultural evolution, a new form of evolution, in which information is passed between generations in the form of linguistic symbols rather than genetically, has been the key to human success. Cultural evolution depends on the sharing of knowledge, and humans have developed remarkable linguistic and cooperative abilities.*

*At the same time, human nature also has a darker side inherited from our ancestors who were hunter-gatherers living in small genetically homogeneous tribes competing for territory on the grasslands of Africa. The pattern of intra-tribal altruism and inter-tribal aggression, which humans have inherited from their remote ancestors, has been explained by the theories of population genetics and group selection put forward in the 1930s by R.A. Fisher and J.B.S Haldane, and discussed more recently by W.D. Hamilton and E.O. Wilson. In this picture, the tribe itself, rather than the individual, is the unit on which evolutionary forces acted.*

*This essay will try to show that symbiosis and cooperation have been responsible for all of the great upward steps in evolution, including the development of the first prokaryotes, the first eukaryotes, the first multi-cellular organisms, and the first cooperative groups of multi-cellular organisms. The views of T.H. Huxley, who stressed competition as an evolutionary force, will be contrasted with the ideas of Charles Darwin himself, Peter Kropotkin and Lynn Margulis and others, who fully understood the importance of symbiosis and cooperation in evolution.*

### **The Explosion of Human Knowledge**

Cultural evolution depends on the non-genetic storage, transmission, diffusion and utilization of information. The development of human speech, the invention of writing, the development of paper and printing, and finally in modern times, mass media, computers and the Internet – all these have been crucial steps in society's explosive accumulation of information and knowledge. Human cultural evolution proceeds at a constantly-accelerating speed, so great in fact that it threatens to shake society to pieces.

Every species changes gradually through genetic evolution; but with humans, cultural evolution has rushed ahead with such a speed that it has completely outstripped the slow rate of genetic change. Genetically, we are quite similar to our neolithic ancestors, but their world has been replaced by a world of quantum theory, relativity, supercomputers, antibiotics, genetic engineering and space telescopes; unfortunately, by a world of nuclear weapons and nerve gas too.

Because of the slowness of genetic evolution in comparison to the rapid and constantly-accelerating rate of cultural change, our bodies and emotions (as Malthus put it, the “passions of mankind”) are not completely adapted to our new way of life. They still reflect the way of life of our hunter-gatherer ancestors.

Within rapidly-moving cultural evolution, we can observe that technical change now moves with such astonishing rapidity that neither social institutions, nor political structures, nor education, nor public opinion can keep pace. The lightning-like pace of technical progress has made many of our ideas and institutions obsolete. For example, the absolutely sovereign nation-state and the institution of war have both become dangerous anachronisms in an era of instantaneous communication, global interdependence and all-destroying weapons.

In many respects, human cultural evolution can be regarded as an enormous success. However, at the start of the 21st century, most thoughtful observers agree that civilization is entering a period of crisis. As all curves move exponentially upward – population, production, consumption, rates of scientific discovery, and so on – one can observe signs of increasing environmental stress, while the continued existence and spread of nuclear weapons threaten civilization with destruction. Thus, while the explosive growth of knowledge has brought many benefits, the problem of achieving a stable, peaceful and sustainable world remains serious, challenging and unsolved.

## **Tribal Emotions and Nationalism**

In discussing conflicts, we must be very careful to distinguish between two distinct types of aggression exhibited by both humans and animals. The first is intra-group aggression, which is often seen in rank-determining struggles, for example, when two wolves fight for pack leadership, or when males fight for the privilege of mating with females. Another completely different type of aggression is seen when a group is threatened by outsiders. Most animals, including humans, then exhibit a communal defense response – self-sacrificing and heroic combat against whatever is perceived to be an external threat. It is this second type of aggression that makes war possible.

Arthur Koestler has described inter-group aggression in an essay entitled “The Urge to Self-Destruction”, where he writes:

“Even a cursory glance at history should convince one that individual crimes, committed for selfish motives, play a quite insignificant role in the human tragedy compared with the numbers massacred in unselfish love of one’s tribe, nation, dynasty, church or ideology... Wars are not fought for personal gain, but out of loyalty and devotion to king, country or cause...”

“We have seen on the screen the radiant love of the Führer on the faces of the Hitler Youth... They are transfixed with love, like monks in ecstasy on religious paintings. The sound of the nation’s anthem, the sight of its proud flag, make you feel part of a wonderfully loving community. The fanatic is prepared to lay down his life for the object of his worship, as the lover is prepared to die for his idol. He is, alas, also prepared to kill anybody who represents a supposed threat to the idol.”

Members of tribe-like groups are bound together by strong bonds of altruism and loyalty. Echoes of these bonds can be seen in present-day family groups, in team sports, in the fellowship of religious congregations, and in the bonds that link soldiers to their army comrades and to their nation.

Warfare involves not only a high degree of aggression, but also an extremely high degree of altruism. Soldiers kill, but they also sacrifice their own lives. Thus, patriotism and duty are as essential to war as the willingness to kill.

Tribalism involves passionate attachment to one's own group, self-sacrifice for the sake of the group, willingness both to die and to kill if necessary to defend the group from its enemies, and belief that in case of a conflict, one's own group is always in the right. Unfortunately these emotions make war possible; and today a Third World War might lead to the destruction of civilization.

### **The Mystery of Self-Sacrifice in War**

At first sight, the willingness of humans to die defending their social groups seems hard to explain from the standpoint of Darwinian natural selection. After the heroic death of such a human, he or she will be unable to produce more children, or to care for those already born. Therefore, one might at first suppose that natural selection would work strongly to eliminate the trait of self-sacrifice from human nature. However, the theory of population genetics and group selection can explain both the willingness of humans to sacrifice themselves for their own group, and also the terrible aggression that they sometimes exhibit towards competing groups. It can explain both intra-group altruism and inter-group aggression.

### **Fischer, Haldane, Hamilton and Wilson**

The idea of group selection in evolution was proposed in the 1930s by J.B.S. Haldane and R.A. Fischer, and more recently it has been discussed by W.D. Hamilton and E.O. Wilson.

If we examine altruism and aggression in humans, we notice that members of our species exhibit great altruism towards their own children. Kindness towards close relatives is also characteristic of human behavior, and the closer the biological relationship is between two humans, the greater is the altruism they tend to show towards each other. This profile of altruism is easy to explain on the basis of Darwinian natural selection since two closely related individuals share many genes and, if they cooperate, the genes will be more effectively propagated.

To explain the communal defense mechanism from an evolutionary point of view, – the willingness of humans to kill and be killed in defense of their communities – we have only to imagine that our ancestors lived in small tribes and that marriage was likely to take place within a tribe rather than across tribal boundaries. Under these circumstances, each tribe would tend to consist of genetically similar individuals. The tribe itself, rather than the individual, would be the unit on which the evolutionary forces of natural selection would act.

According to the group selection model, a tribe whose members showed altruism towards each other would be more likely to survive than a tribe whose members cooperated less

effectively. Since several tribes might be in competition for the same territory, successful aggression against a neighboring group could increase the chances for survival of one's own tribe. Thus, on the basis of the group selection model, one would expect humans to be kind and cooperative towards members of their own group, but at the same time to sometimes exhibit aggression towards members of other groups, especially in conflicts over territory. One would also expect intergroup conflicts to be most severe in cases where the boundaries between groups are sharpest – where marriage is forbidden across the boundaries.

## **Language, Religion and Tribal Markings**

In biology, a species is defined as a group of mutually fertile organisms. Thus, all humans form a single species, since mixed marriages between all known races will produce children, and subsequent generations in mixed marriages are also fertile. However, although there is never a biological barrier to marriages across ethnic and racial boundaries, there are often very severe cultural barriers.

Irenäus Eibl-Eibesfeldt, a student of Konrad Lorenz, introduced the word “pseudospeciation” to denote cases where cultural barriers between two groups of humans are so strongly marked that marriages across the boundary are difficult and infrequent.

In such cases, he pointed out, the two groups function as though they were separate species, although from a biological standpoint this is nonsense. When two such groups are competing for the same land, the same water, the same resources, and the same jobs, the conflicts between them can become very bitter indeed. Each group regards the other as being “not truly human”.

In his book “The Biology of War and Peace”, Eibl-Eibesfeldt discusses the “tribal markings” used by groups of humans to underline their own identity and to clearly mark the boundary between themselves and other groups. One of the illustrations in his book shows the marks left by ritual scarification on the faces of the members of certain African tribes. These scars would be hard to counterfeit, and they help to establish and strengthen tribal identity. Seeing a photograph of the marks left by ritual scarification on the faces of African tribesmen, it is impossible not to be reminded of the dueling scars that Prussian army officers once used to distinguish their caste from outsiders.

Surveying the human scene, one can find endless examples of signs that mark the bearer as a member of a particular group – signs that can be thought of as “tribal markings”: tattoos; piercing; bones through the nose or ears; elongated necks or ears; filed teeth; Chinese binding of feet; circumcision, both male and female; unique hair styles; decorations of the tongue, nose, or naval; peculiarities of dress, kilts, tartans, school ties, veils, chadors, and headdresses; caste markings in India; use or nonuse of perfumes; codes of honor and value systems; traditions of hospitality and manners; peculiarities of diet (certain foods forbidden, others preferred); giving traditional names to children; knowledge of dances and songs; knowledge of recipes; knowledge of common stories, literature, myths, poetry or common history; festivals, ceremonies, and rituals; burial customs, treatment of the dead and ancestor worship; methods of building and decorating homes; games and sports peculiar to a culture; relationship to animals, knowledge of horses and ability to ride; non-rational systems of belief.

Even a baseball hat worn backwards or the professed ability to enjoy atonal music can mark a person as a member of a special “tribe”.

By far, the most important mark of ethnic identity is language, and within a particular language, dialect and accent. If the only purpose of language were communication, it would be logical for the people of a small country like Denmark to stop speaking Danish and go over to a more universally-understood international language such as English. However, language has another function in addition to communication: it is also a mark of identity. It establishes the boundary of the group.

After language, the most important “tribal marking” is religion. It seems probable that in the early history of our hunter-gatherer ancestors, religion evolved as a mechanism for perpetuating tribal traditions and culture. Like language, and like the innate facial expressions studied by Darwin, religion is a universal characteristic of all human societies. All known races and cultures practice some sort of religion. Thus, a tendency to be religious seems to be built into human nature.

## **Formation of Group Identity**

Although humans originally lived in small, genetically homogeneous tribes, the social and political groups of the modern world are much larger, and are often multiracial and multiethnic.

There are a number of large countries that are remarkable for their diversity, for example, Brazil, Argentina and the United States. Nevertheless, it has been possible to establish social cohesion and group identity within each of these enormous nations. India and China too, are mosaics of diverse peoples, but nevertheless, they function as coherent societies. Thus, we see that group identity is a social construction, in which artificial “tribal markings” define the boundaries of the group.

As an example of the use of tribal markings to establish social cohesion over a large group of genetically dissimilar humans, one can think of the role of baseball and football in the United States. Affection for these sports and knowledge of their intricacies establish social bonds that transcend racial and religious barriers.

One gains hope for the future by observing how it has been possible to produce both internal peace and social cohesion over very large areas of the globe – areas that contain extremely diverse populations. The difference between making large, ethnically diverse countries function as coherent sociopolitical units and making the entire world function as a unit is not very great.

Since group identity is a social construction, it is not an impossible goal to think of enlarging the already-large groups of the modern world to include all of humanity.

## **The Social Insects**

The social insects, ants, bees, wasps and termites, exhibit nearly perfect altruism towards members of their own group. This extreme form of altruism towards near relations (kin altruism) is closely connected with the peculiar method of reproduction of the social insects.

The workers are sterile or nearly sterile, while the queen is the only reproductive female. The result of this special method of reproduction is that very nearly perfect altruism is possible within a hive or nest, since genetic changes favoring antisocial behavior would be detrimental to the hive or nest as a whole. The hive or nest can, in some sense, be regarded as a superorganism, with the individuals cooperating totally in much the same way that cells cooperate within a multicellular organism. The social insects exhibit aggression towards members of their own species from other hives or nests, and can be said to engage in wars. Interestingly, a similar method of reproduction, associated with extreme intra-group altruism, has evolved among mammals, but is represented by only two species: the naked mole rat and Damaraland mole rat.

### **From Thomas Huxley to Lynn Margulis and Symbiosis**

Charles Darwin (1809-1882) was acutely aware of close and mutually beneficial relationships between organisms. For example, in his work on the fertilization of flowers, he studied the ways in which insects and plants can become exquisitely adapted to each other's needs.

On the other hand, Thomas Henry Huxley (1825-1895), although he was a strong supporter of Darwin, saw competition as the main mechanism of evolution. In his essay "Struggle for Existence and its bearing upon Man", Huxley wrote: "From the point of view of the moralist, the animal world is about on the same level as a gladiators' show. The creatures are fairly well treated and set to fight; hereby the strongest, the swiftest, and the cunningest live to fight another day. The spectator has no need to turn his thumbs down, as no quarter is granted."

Prince Peter Kropotkin (1842-1921) argued strongly against Huxley's point of view in his book "Mutual Aid; A Factor of Evolution". "If we ask Nature," Kropotkin wrote, "who are the fittest: those who are continually at war with each other, or those who support one another?' we at once see that those animals that acquire habits of mutual aid are undoubtedly the fittest. They have more chances to survive, and they attain, in their respective classes, the highest development of intelligence and bodily organization."

Today, the insights of modern biology show that although competition plays an important role, most of the great upward steps in evolution have involved cooperation. The biologist Lynn Margulis (1938-2011) has been one of the pioneers of the modern viewpoint which recognizes symbiosis as a central mechanism in evolution.

### **One-Celled Organisms seen as Examples of Cooperation**

The first small bacterial cells (prokaryotic cells) can be thought of as cooperative communities in which autocatalytic molecules thrived better together than they had previously done separately.

The next great upward step in evolution, the development of large and complex (eukaryotic) cells, also involved cooperation: many of their components, for example, mitochondria (small granular structures that are needed for respiration) and chloroplasts (the photosynthetic units of higher plants) are believed to have begun their existence as free-living prokaryotic cells. They now have become components of complex cells, cooperating biochemically with the other subcellular structures. Both mitochondria and chloroplasts possess their own DNA,

which shows that they were once free-living bacteria-like organisms, but they have survived better in a cooperative relationship.

## **Cooperation between Cells: Multicellular Organisms**

Multicellular organisms evolved from cooperative communities of eukaryotic cells. Some insights into how this happened can be gained from examples which are just on the borderline between the multicellular organisms and single-celled ones. The cooperative behavior of a genus of unicellular eukaryotes called slime molds is particularly interesting because it gives us a glimpse of how multicellular organisms may have originated. The name of the slime molds is misleading, since they are not fungi, but are similar to amoebae.

Under ordinary circumstances, the individual cells wander about independently searching for food, which they draw into their interiors and digest. However, when food is scarce, they send out a chemical signal of distress. (Researchers have analyzed the molecule which expresses slime mold unhappiness, and they have found it to be cyclic adenosine monophosphate.) At this signal, the cells congregate and the mass of cells begins to crawl, leaving a slimy trail. As it crawls, the community of cells gradually develops into a tall stalk, surmounted by a sphere – the “fruiting body”. Inside the sphere, spores are produced by a sexual process. If a small animal, for example, a mouse, passes by, the spores may adhere to its coat; in this way, they may be transported to another part of the forest where food is more plentiful.

Slime molds represent a sort of missing link between unicellular and multicellular organisms. Normally the cells behave as individualists, wandering about independently, but when challenged by a shortage of food, the slime mold cells join together into an entity which closely resembles a multicellular organism.

The cells even seem to exhibit altruism, since those forming the stalk have little chance of survival, and yet they are willing to perform their duty, holding up the sphere at the top so that the spores will survive and carry the genes of the community into the future.

Multicellular organisms often live in a symbiotic relationship with other species. For example, in both animals and humans, bacteria are essential for the digestion of food. Fungi on the roots of plants aid their absorption of water and nutrients. Communities of bacteria and other organisms living in the soil are essential for the recycling of nutrients. Insects are essential to many plants for pollination.

## **Cooperation in Groups of Animals and Human Groups**

The social behavior of groups of animals, flocks of birds and communities of social insects involves cooperation as well as rudimentary forms of language. Various forms of language, including chemical signals, postures and vocal signals, are important tools for orchestrating cooperative behavior.

The highly developed language of humans made possible an entirely new form of evolution. In cultural evolution (as opposed to genetic evolution), information is passed between generations not in the form of a genetic code, but in the form of linguistic symbols. With the invention of writing, and later the invention of printing, the speed of human cultural

evolution greatly increased. Cooperation is central to this new form of evolution. Cultural advances can be shared by all humans.

### **Trading in Primitive Societies**

Although primitive societies engaged in frequent wars, they also cooperated through trade. Peter Watson, an English historian of ideas, believes that long-distance trade took place 150,000 years ago. There is evidence that extensive trade in obsidian and flint took place during the Stone Age. Evidence for wide ranging prehistoric obsidian and flint trading networks has been found in North America. Ancient burial sites in Southeast Asia show that there too, prehistoric trading took place across very large distances. Analysis of jade jewelry from the Philippines, Thailand, Malaysia and Viet Nam shows that the jade originated in Taiwan.

The invention of writing was prompted by the necessities of trade. In prehistoric Mesopotamia, clay tokens marked with simple symbols were used for accounting as early as 8,000 BC. Often these tokens were kept in clay jars, and symbols on the outside of the jars indicated the contents. About 3,500 BC, the use of such tokens and markings led to the development of pictographic writing in Mesopotamia, and this was soon followed by the cuneiform script, still using soft clay as a medium. The clay tablets were later dried and baked to ensure permanency. The invention of writing led to a great acceleration of human cultural evolution. Since ideas could now be exchanged and preserved with great ease through writing, new advances in technique could be shared by an ever larger cooperating community of humans. Our species became more and more successful as its genius for cooperation developed.

### **Gracilization and Decreasing Sexual Dimorphism**

Early ancestors of modern humans had a relatively heavy (robust) bone structure in relation to their height. This robust bone structure seems to have been favored by frequent combat. During their evolution, modern humans became less robust and more gracile. In other words, their skeletons became lighter in relation to their height. Simultaneously, the height and weight of males became less different from the height and weight of females. These trends are generally interpreted as indicating that combat became less important as present-day humans evolved.

### **Ethics and Growth of the Social Unit**

Early religions tended to be centered on particular tribes, and the ethics associated with them were usually tribal in nature. However, the more cosmopolitan societies that began to form after the Neolithic agricultural revolution required a more universal code of ethics. It is interesting to notice that many of the great ethical teachers of human history, for example, Moses, Socrates, Plato, Aristotle, Lao Tzu, Confucius, Buddha, and Jesus, lived at a time when the change to larger social units was taking place. Tribalism was no longer appropriate. A wider ethic was needed.

Today, the size of the social unit is again being enlarged, this time enlarged to include the entire world. Narrow loyalties have become inappropriate and there is an urgent need for

a new ethic – a global ethic. Loyalty to one's nation needs to be supplemented by a higher loyalty to humanity as a whole.

## **Interdependence in Modern Human Society**

All of the great upward steps in the evolution of life on earth have involved cooperation: prokaryotes, the first living cells, can be thought of as cooperative communities of auto-catalysts; large, complex eukaryote cells are now believed to have evolved as cooperative communities of prokaryotes; multicellular organisms are cooperative communities of eukaryotes; multicellular organisms cooperate to form societies; and different species cooperate to form ecosystems. Indeed, James Lovelock has pointed out that the earth as a whole is a complex interacting system that can be regarded as a huge organism.

The enormous success of humans as a species is due to their genius for cooperation. The success of humans is a success of cultural evolution, a new form of evolution in which information is passed between generations, not in the form of DNA sequences but in the form of speech, writing, printing and finally electronic signals. Cultural evolution is built on cooperation, and has reached great heights of success as the cooperating community has become larger and larger, ultimately including the entire world.

Without large-scale cooperation, modern science would never have evolved. It developed as a consequence of the invention of printing, which allowed painfully gained detailed knowledge to be widely shared. Science derives its great power from concentration. Attention and resources are brought to bear on a limited problem until all aspects of it are understood. It would make no sense to proceed in this way if knowledge were not permanent, and if the results of scientific research were not widely shared. But, today, the printed word and the electronic word spread the results of research freely to the entire world. The whole human community is the repository of shared knowledge.

The achievements of modern society are achievements of cooperation. We can fly, but no one builds an airplane alone. We can cure diseases, but only through the cooperative efforts of researchers, doctors and medicinal firms. We can photograph and understand distant galaxies, but the ability to do so is built on the efforts of many cooperating individuals.

An isolated sponge cell can survive, but an isolated human could hardly do so. Like an isolated bee, a human would quickly die without the support of the community. The comfort and well-being that we experience depends on far-away friendly hands and minds, since trade is global, and the exchange of ideas is also global.

Finally, we should be conscious of our cooperative relationships with other species. We cannot live without the bacteria that help us to digest our food. We cannot live without the complex communities of organisms in the soil that convert dead plant matter into fertile topsoil. We cannot live without plants at the base of the food chain, but plants require pollination, and pollination frequently requires insects. An intricate cooperative network of inter-species relationships is necessary for human life, and indeed necessary for all life. Competition plays a role in evolution, but the role of cooperation is greater.

## **Two Sides of Human Nature**

Looking at human nature, both from the standpoint of evolution and from that of everyday experience, we see the two faces of Janus: one face shines radiantly; the other is dark and menacing. Two souls occupy the human breast, one warm and friendly, the other, murderous. Humans have developed a genius for cooperation, the basis for culture and civilization; but they are also capable of genocide; they were capable of massacres during the Crusades, capable of genocidal wars against the Amerinds, capable of the Holocaust, of Hiroshima, of the killing-fields of Cambodia, of Rwanda, and of Darfur.

As an example of the two sides of human nature, we can think of Scandinavia. The Vikings were once feared throughout Europe. The Book of Common Prayer in England contains the phrase “Protect us from the fury of the Northmen!” Today the same people are so peaceful and law-abiding that they can be taken as an example for how we would like a future world to look. Human nature has the possibility for both kinds of behavior depending on the circumstances. This being so, there are strong reasons to enlist the help of education and religion to make the bright side of human nature win over the dark side. Today, the mass media are an important component of education, and thus the mass media have a great responsibility for encouraging the cooperative and constructive side of human nature rather than the dark and destructive side.

## **Suggestions for Further Reading**

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## The New Morality

**Yehudi Menuhin**

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### ***Editorial Remark:***

*YEHUDI MENUHIN was a Fellow of the World Academy of Art and Science, who apart from his work as an artist, was deeply and actively concerned with problems of education and human welfare. For his philosophical works on music and his influence on music teaching, he held honorary degrees in Music and Law from various Universities and was awarded honorary distinctions in many countries. In the following article, he presents his view on the subject as an artist and educationist. His article is an abridged version of his Chuter Ede lecture, delivered on March 30, 1965, at Hamilton House, London.*

As by definition, the Chuter Ede lecturers are drawn from outside the ranks of educationalists per se, so do I propose to consider the art of education in its widest implications, implications of knowledge and superstition, of fact, fancy and reason, as of God and morality.

It took a long time for man to relate facts to each other; facts were isolated phenomena explained only by the most daring feats of fantasy; each man was isolated to his God and it was only common fantasy which joined people and not common knowledge. Today, along with common knowledge and I should add common doubt, which have both cast a pall on fantasy, we need to build a common morality as well as to release myriad new worlds of fantasy. For liberating fancy, imagination, dreams, abandon — these are man's lifeline to the infinite and man's greatest privilege. Born to seek light, unlike the tireless black ant, he is also as the peacock to the sun; fancy was man's reason before his reason built himself a prison. It is a very old habit born of our senses and our intellect, the legitimate offspring of both. Thus in the past facts did not explain themselves — fancy came to the rescue, and reason served fancy. Even today when a fact is supposed to be a fact, it is still meaningless except for what we can bring to it.

At one time every fact had to be interpreted as an isolated phenomenon and any hypothesis, however childish or wild, was apparently better than none. But at least, we as human beings were involved with body and soul, committed in life and death; we interpreted and we assumed, quite understandably, that the piece was composed for us, and in a sense perhaps it was... Now one fact is explained by another, and this other by a third, and so on, but we are left out of it. The facts, as it were, speak for themselves and except for revealing the fact in the words and the numeral, we are ourselves no more or less than any lump of clay; or then, as any comparison goes, why not than any lyrebird, dolphin, or for that matter any illiterate but heartrending tenor, proverbially mindless?

The great question is: Are we no more than clay plus intellect? What lies in between? What about that fancy which clothed the most trivial fact in the most richly ornamented and embroidered cloak? What went into that cloak? Fear and sorrow, yes, but also joy, hope and pride and all the ecstasies of the infinite; of infinite love, infinite space and time, infinite

beauty, and in absolute contrast, infinite pain, torture and anguish. For life is born of the infinite and yearns for it at every turn.

Morality and faith too are born of the infinite. Man does himself a great injustice when he lives only in terms of measurable — for the measurable will never yield the infinite and it is, therefore, partly untrue. Here is where imagination and fancy, art and morality come in. These come into play automatically with and in proportion to the time-space factor and infinity. Morality exists as soon as we feel for others, every kind of others, and so soon as we think of our future and the future of mankind. Morality can be built back into reality, not as a superstition, but as the inevitable attitude to life when seen in a certain perspective. What is this perspective? Science has explained so many of our phenomena — that, for instance, the fear of castigation by some Deity in the form of disease, earthquake etc. no longer holds water. We can indeed live a “godless life” within a very narrow compound: within these limits we can do that with impunity and a clear conscience, but it still remains a prison compound. Infinity is present at all times and it can be proved only in the more subtle ways; just as science today has discovered that infinity must enter into reckoning, so do these subtleties enter into the infinity within ourselves, into that depth of perception, into the intensity and quality of sensation, into the breadth of our horizon, of our vision. Whoever doubts that we are driven by the infinite should contemplate the sheer dimensions of power dreams, of pyramids and palaces which at their mightiest were never big enough for their makers. We must rather build in depth and in time what we seek to achieve in the immediate present in matter: actually, this means working even harder than we are.

Today, unfortunately, eternity is no longer represented: the mysteries of death as the subtleties of life are to a large measure ignored.

I would like to envisage morality as simply the unseen senior partner presiding at every transaction between a human being and his environment, as within a human being, between himself and his person. Morality could be described as that attitude or approach essential to achieve maximum joy, satisfaction, ecstasy, security and health—mental and physical, over the longest possible period for oneself and other creatures.

Man has always known that the reality in terms of the evidence of his senses was only half the story and that however enjoyable or painful this half was, the evidence was untrustworthy. He has always allowed for this second half, the so-called superfluous, and clothed it in ritual, symbol and all the colourful trappings of his imagination. This second half of our life — invisible, inaudible, intangible — is still with us. That fact has remained. Ever since thousands of years ago, perhaps even before man rode a horse, when he lived under the stars in a clear warm climate, by sheer dint of reasoning he was able to discover that the earth was round, and since then we have learned — and, alas, also forgotten—more and more facts not immediately apparent. This learning process grows in direct proportion to our humility, to our capacity for objectively subtracting ourselves as individual little vicars of God on earth, in direct proportion to the breadth of the concept wherein we figure as only one part, however essential and eternal, of the evolving whole. The success, the diversity, the survival strength of a civilisation has always been in proportion to its fund of knowledge, its wide distribution among its people, as well as to the physical and mental health of its people and their willingness to sacrifice themselves individually and collectively for a great object.

In those terms our learning, therefore, leaves much to be desired. We have, as it were, lost one compass; it was found wanting, as all first compasses must eventually be. It has been repeatedly redesigned to guide us in widening dimensions and we have not yet distributed the new models. We will not even begin to achieve the new morality which is required today unless we respect the milestones and the repositories of the morality and of the wisdom of the past. Furthermore, some of these ancient and inspiring institutions are yet capable of new vigour and leadership witness the inspired call of the late Pope. We should, therefore, favour the inductive processes of learning, the inductive processes of education, rather than drill only the end-products and facts into the classroom.

Thus to sharpen the mind and stimulate the processes of logical thought you might ask the child “If you were a shepherd, awake most nights gazing at the horizon and the stars, how many observations, and which ones would you have to make before being convinced the earth was round and that it spun?” Merely to stimulate fancy, a different question might be posed as “Given certain conditions of environment, what kind of social order, what kind of religion, what purpose of life would you imagine would take form?” Then the child’s answer could be compared with the actual description of a particular civilisation representing such conditions.

Once a belief is held as of a particular kind of God, it takes a very long time to die and usually its death carries its civilisation with it, together often with much that is useful and beautiful. I remember how moved I was to hear when I last was in New Mexico about the sacred Lake of the Red Indians, to which they make an annual pilgrimage and which they would never consider desecrating in any way whatsoever, and the tremendous fight that they had, and still have to put up to protect that lake against the real estate prospectors who, of course, saw it as an ideal place for hot-dogs and stands and camps. Although I hold no brief for their cruelty, I respect and admire the Red Indian’s inscrutable pride. They cannot understand the concept of private property that we have; they believe that land is very much like air and water, that you cannot tie it down, cut it up and apportion it — that it belongs to everybody.

Today our lives are as much as ever determined by the impalpable, as for instance radiation of many kinds, chemical food additives, while in the meanwhile our finest senses are being ever more blunted. We almost refuse to accept the testimony of our own taste and smell and thus we further coarsen our five senses. Is it not another duty of the new education to re-awaken lost subtleties of apprehension, for I am convinced that we have hidden natural gifts and capacities which correspond to and anticipate every new realm rediscovered, as it were, by science?

I believe we are on the threshold of a subtler age. Ours has been a rather coarse history all in all — from the Testament eye-for-an-eye to the darkest ages of “applied” Christianity. Today we have the means of making living sense of aesthetics and of morality, of God and of Faith. I would say that Faith is as essential to ensure continuity and to overcome setbacks and disappointments, as credit is in a capitalist economy. In a capitalist economy we have to assume that every customer entering the store can, in fact, pay for what he buys; for the good of the system, this act of faith is essential. Therefore, for practical purposes and failing any previous knowledge of the customer, and very often in spite of such knowledge, every

person must a priori be credited with good intentions, even though every person may fail by the same token. Obviously, where basic incompatibility with society exists, separation of the individual from the group is indicated, but we must never give up the battle for the health of body and soul, any more than the Early Christians gave up the battle for men's souls.

The teacher's responsibilities are, therefore, enormous. They go from the earliest origins of life to the projection of the future and they must, of course, take in the present and living reality and not as some textbook pattern. We must, therefore, teach not only isolated or comparative facts, but critical capacity to make wide choice. We cannot build the new world alone, for that we depend on succeeding generations, but at least to them must we transmit reliable materials and good tools, not merely facts.

Children who have shown a special inclination for a particular field must be given the opportunity of creating their own world and their own climate. This is unfortunately no longer possible in a world where both the home and the streets have become inimical to a child's climate the apartments are too cramped, the parents too busy, the streets polluted. In fact, allow me to make a plea for the inclusion in every apartment house of rooms where children can play, where they can make music, where they can practise the trombone and the violin, where they can use mud and clay, where they can get together, and also where their parents can get together. This is essential today because the ordinary apartment represents only off-time to parents; it is when they have stopped working that they go back to their apartments and children return when they have finished school-hours.

It is a curious fact that the emancipation of women has meant so far that we have fewer teachers and nurses, rather than more; fewer mothers and grandmothers than before, as they turn their backs determinedly on everything which remotely smacks of "Kinder, Kirche und Küche", and they become astronauts and secretaries, foremen and, to my delight, ministers. But without these small islands of intimacy, or privacy, of the fanciful children's world, our schools and our apartment blocks are simply huge, faceless factories out of which no individual can emerge, only the mass, blind and brutal. Children, for instance, love cuddling together in mystery and twilight; children love other living things as dogs, butterflies, trees, lawns and flowers. Where do they find these in our glass boxes, in our asphalt playing grounds? Are these asphalted so that they may be turned into paying car parks?

The child will not have its birthright until it enjoys more space, more scope, more privilege than the motor car. In fact, although always grateful for help, I look upon the tie-up of industry and education with some miss-giving because it is dangerous unless it is balanced with the building of independent minds and with the cultivation of crafts.

In music we can follow the same development as in all other forms of culture, i.e. from the God-given to the man-made; pre-theme, when music was symbol and ritual in the service of God, the individual almost nonexistent in terms of his own life theme, and then theme music, when pure music became an end in itself and wrapped itself around its own theme. Today there are more and more themes. We live in a world which finds itself between the God-given theme and its own theme, as it were, and every man, woman and child, every group must evolve its own theme and build — it's rather corny — a symphony on it. For myself, I don't think symphony is always the best form! A centralised authority supplying one theme is today inconceivable, for as soon as a man-made theme is available, different

men can make it. Even Utopia has different faces some have their Heaven inhabited by angels and others by various other creatures, but on earth the only things, sadly, that can still unite us at present would seem to be fear, hate, ignorance, war and, finally, sorrow, grief and guilt.

We return to the need for a new morality as the one binding thought among a mankind as variegated as each imagination can possibly make it. Morality, therefore, must exist as a climate; it cannot be legislated.

Therefore, when we speak of real life, i.e. where ability and achievement are measured in actual pain or progress, we must allow the schools to encourage individual inclinations which are at odds with the main streams of national life. I mean, for instance, that where ability and achievement usually carry financial tags, we must all the more encourage achievement and knowledge, service, beauty, craft and sport, which draw upon other well-springs.

An overwhelmingly military nation would, for instance, apply the one criterion of automatic integration, absolute reliability and subservience to rank in preference to any other value. As we have seen in the case of Germany, this one-sided excess can prove a nation's downfall.

We realise today that however essential one or two specifications may be in times of crisis, no civilisation can survive without all, each and every tribute. I fear, for instance, that commerce and money, as basically democratic and unprejudiced as their exercise is in an industrial, mass-produced, mass-credit society, are hardly in themselves sufficient to offer a reliable indication of every value. Knowledge of history, artistic excellence, readiness to sacrifice, aesthetic judgments, inspirational goals, as well as the gipsy, the tramp, the poet, the dreamer — these are all multi-shaped pegs that will not all grind down to regulation holes.

The young delinquent too escapes the criteria of commercial and financial value. There is incidentally a good deal of blindness, self-delusion and unconscious hypocrisy in the adult attitude to these “delinquents”. They are, in fact, precocious adults. For the first time on such a vast scale has adulthood been available in terms of freedom of choice, time money, energy, example and stimulus; adulthood with all its privileges and none of its penalties, adulthood without responsibility and, therefore, requiring only daring, but no courage — never has such adulthood been available to so young a section of the community.

Their behaviour is entirely patterned on the principles and simplified choice the adult world offers them—at home, at school, on the street, on the screen, in the newspapers, and unfortunately in the current events of the world at large. The choices appear to be only relative to each other, not to a third larger purpose which I am trying to define in this lecture. The choices are on the one hand a “good” life offered them—drab, monotonous, unadventurous, stretching ahead indefinitely with nothing new, not even sex to lure them on; a life of facts, some dry as dust, others sordid and cynical—a “good” life without vision, guaranteed unto death (what a pretence! — We know that where there is no vision, a people perish) ; a life they are expected to accept passively and docilely and, on the other hand the “bad” life in which the initiative, the planning, the decisions rest with them. Although far from behaving with originality, they are surely only imitating the chief forms of adventure, excitement, violence and destruction, in a search for release and ecstasy, provided by their elder's fictitious models as exposed on the screen, the printed page, coloured advertisements and in the predatory design of their fast motorcars.

If we cannot provide a wholesome environment for infants, children and adolescents within the stream of our daily adult lives, we owe it to them, or at least to the most promising, talented and best of them, if we cannot afford to do better, to take these out of the stream into special, quiet lakes where they can develop beyond such corrupting influences in the time-honoured English way.

But even more important is the quality of adults, the teachers serving such groups of children, for they must be of the brightest quality. It is nonsense to assert in one breath the need for a higher general average of education, which it is officially admitted cannot be accomplished without depriving the better schools of their teachers, and in the next breath to demand more scientists, more astronomers, more of the first-class in every walk of life. I am afraid that, by the sheer force of mathematics, and until we can train many more teachers of the very highest calibre and imagination, we are committed to unequal education. A simultaneous two-pronged drive is the only answer — the highest standards must be defended, even improved, undiluted as much as possible, and the lowest standards raised, broadened and improved as much as possible.

Although I realise that the demands of industry and commerce are justified, I fear somewhat when I see how heavily indebted our culture and our values are both to new wealth and new government. For instance, when we reiterate every day the overwhelming importance of a nation's economy, its industrial capacity, financial credit, technical standards, nuclear knowledge and so on, do we really mean to imply that a country's moral and physical health, its attitude to family, other people, sickness, famine, death and birth are either of negligible importance, or utterly dependent upon the aforementioned items, and do we mean that without these items we ourselves, or the inhabitants of any country, would automatically revert to cannibalism and savagery, filth and desperation? When I look upon the Hindu civilisation, I for one refuse to believe this, but it is nonetheless important to be reasonably sure. I know that humility (e.g. the conviction that we are but one little link in the chain of life), and such terms as knowledge, beauty, love of one's fellow men, the need to act upon faith, reference for a Higher Power, the will to fight and sacrifice for one's loves, virtue and honour, all sound corny and old-fashioned, but they sound hollow only because they have so often been misused and because they carry hypocritical, dark overtones. Yet in a world bereft of all those things we produce today, it would become of supreme importance to know who would be trustworthy, who would nurse the sick and teach the young... wife, mother, husband, father and friend, all somewhat dusty appellations, these would come back into their own.

We need all these people desperately, all these wives and mothers and teachers, but it is most particularly the less gifted children, those who otherwise would adhere to the nameless mass who, even more than the gifted, need social opportunities, practical experience and service, craftwork and games. They must have their senses stimulated: our senses were given us to guide us, to delight and to warn us. These children most of all could enjoy stimulation of their senses; yet children in the cities are herded into conditions that are shocking to our five senses, from the foods they are given to the noise they must suffer. They spend most of their day, especially if they spend their free time on the street instead of in your beautiful parks, in an aesthetically repulsive environment. How can they be expected to become self-expressive and creative if their own senses that might lead them are blunted and starved?

We must preserve the balance between the world of our senses and all its works from music to architecture, from sculpture to the culinary, and from poetry to mathematics, works of fancy and imagination, and that other partitioned world of knowledge and fact which has found its way into the printed page, the blueprint, the computer, the bomb and the satellite.

I would like to dwell shortly upon the teacher's attitude to children. Children are much quicker than adults in their perception of the vain and pompous, the unsympathetic, the ungenerous, the fraud and the fraudulent — these they all recognise instantly. For my own part I believe there is no shame in owning up to one's own ignorance, to ask a child quite honestly a matter of information about which the child may well be more informed than the adult, or to admit the stupidity, the tragic idiocies and arrogance of adults since creation. We must always be prepared to recognise superiority and pay respect wherever it is due, even if it crosses the line or runs against the stream of established strata of respect and rank. In these admissions there is no shame, for the pompous pretence of being all-knowing is worse than useless. Of course, a teacher must be able to guide and to impart ability, technique and knowledge in an absorbable way; he must also be able, however, to live every moment of his task as if it were his first and his last. His routine must merely serve him to understand the particular moment, the particular child, the particular need and condition; he must not lazily barricade himself behind his position of authority or the text book, not to speak of the cane, however useful these may be at times.

But for the purposes of education, this frozen kind of instruction is dead and, to the extent it may still be applied, it lays the cold hand of death on children's fancy, talent and, eventually, their souls and creative intellect as well. Thus not only should the teacher teach, but every person in the swim of life, as he never abandons learning, should also give part of his time to teaching. Surely a principal justification of early retirement of able people from Government or industry should be to enable such men and women to teach; and the teaching profession must be prepared to welcome assistance from every quarter and every age. I can think of nothing more degrading and humiliating in the human sense than the closed-shop mentality among teachers.

The position on the ladder, the hierarchy, as it were, of the teaching profession, or of any other social ladder, should merely be a skeleton on which the living flesh and blood—on which life itself must be hung. The teacher must have something on the one hand of the nursing mother, and on the other of course of the dignity of his rank and his task.

It was the superstitions we shared which have hitherto bound human beings into groups; it was the God that they had in common, the God covering all the unknowns and all the unspecified. He was there not to explain; He was there to punish. As He also had sometimes to prove His own free will, He, therefore, had to be arbitrary and wilful, like those Red Indian gods of volcanic origin, placated only by live sacrifice. He had always to be available to support us and if possible, to uphold and justify as many of our immediate urges, appetites, survival exigencies and all of our meaner impulses and this was only by proclaiming His superiority over the gods of all our chosen enemies. Thus belief as such is as ready to serve the wicked as the good; it certainly does not of itself resolve the conflict of good and bad. Even the pardoning, forgiving God who, in the long run in spite of our best efforts, even forgives our enemies, does not quite achieve this. No, I firmly believe our new morality, our

new faith, can and must be based on foundations far more solid than have ever before existed. As our teachers change, so will our Gods and vice versa.

Morality may be divine, but it is not dependent upon God. It is by no means the preserve of any one church or "ism". But it is a formula for the highest kind of success.

The test of success in life is a happy and healthy old age, as well as the happiness of those one has lived with, and beyond that, of one's own people and all the peoples of all the earth. Again they are other limited fields of success depending upon criteria: the highest is self-sacrifice to others, as well as for knowledge and achievement in art and science. Somewhere in the middle there is success in finance and other forms of worldly success; in security and various forms of privilege, such as that of being able to order one's life more or less as one would like to. And, lowest of all, is success gained by cunning, flattery or brutality, all of which lead to very pitiful ends.

And finally, the words of a poet who saw more than we can explain

*All nature is but art unknown to thee,  
All chance, direction which thou canst not see,  
All discord, harmony, not understood,  
All partial evil, universal good.*

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