

ROBERT E. ALLINSON

COMPLEMENTARITY AS A MODEL FOR EAST-
WEST INTEGRATIVE PHILOSOPHY

Recently it has been discovered that Niels Bohr, the father of quantum physics, was acquainted, at a young age, with the ancient Chinese philosophy of Lao-Tzu. New evidence has come to light from a letter written by Bohr himself, discovered in 1998, which is a reply to a letter of inquiry from a Svend Hugo Jürgensen, a teacher from the Danish town of Aalborg. The teacher had sent Bohr a manuscript entitled '*Tao Te Ching* and the Idea of Complementarity'. Bohr's reply, dated 26 March 1958 begins, "I thank you for your letter and the enclosed little note about *Tao Te Ching*, which I have read with great interest. I believe what you say about the old Chinese philosophy is in many ways quite to the point. In my youth I received a beautiful impression of it through Ernst Møller's book 'Oldmester', and at a visit to China twenty years ago I learned how highly the memory of Lao-Tzu is still valued." Since Møller's book was first published in 1909 (the year Bohr turned 24) and Bohr by his own account was in his youth, it is clear that his knowledge of Chinese philosophy preceded his discovery of the complementarity principle in physics (1927). While this does not conclusively prove that he learned his idea of complementarity from Chinese philosophy, it is nonetheless a document of great interest. ¹In any event, it is clear that Bohr valued highly ancient Chinese philosophy. It was either instrumental or decisive for his complementarity principle in physics, which has proved invaluable as an explanatory principle for Western physics. What better proof is needed to illustrate that the "Chinese mind" is not "of a different order of humanity" than its accessibility through the medium of Danish language to a Western physicist? That the same Western physicist could then apply the idea of complementarity to understand the workings of the universe common to both Western and Chinese minds is a further demonstration that the Chinese mind is as universal in its application to reality as its Western counterpart. And what better evidence can be cited to show that the

Journal of Chinese Philosophy 25:4 (December 1998)
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Chinese mind is intelligible to a Westerner than that a Western physicist was able to draw from its obscure and subtle principles major lessons for Western science.

Bohr's fascination with and feeling of identification with Chinese philosophy was profound. On Hanna Rosental's advice, when Niels Bohr was knighted, he chose the *T'ai-chi* symbol for the emblem of his coat of arms with the accompanying motto, *Contraria sunt complementa* (opposites are complementary).² Is it not remarkable that one of the greatest of Western physicists of the twentieth century was so influenced by classical Chinese philosophy that he chose both for his emblem and for his motto for his coat of arms, by which he most surely would be forever remembered, a classical Chinese image and a classical Chinese *leitmotif* both of which represent a core perspective and a core value of ancient Chinese philosophy? In addition, Bohr's favorite quotation from poetry was from Schiller's *Sayings of Confucius*: 'Only wholeness leads to clarity'.⁴ How highly did the Western physicist whose discoveries in quantum physics did so much to change the face of Western physics in the twentieth century value ancient Chinese philosophy! Not only was Chinese philosophy intelligible to the great Jewish physicist, Niels Bohr, but he was able to apply its insights to break new ground in the archetype of Western thinking, the science of physics.

Indeed, as Christian Bohr, Bohr's grandson, related to the author, the Dragon, symbolizing wisdom, was originally proposed as the symbol for Bohr's coat of arms when Bohr received the Order of the Elephant. But this was turned down on the grounds that the Dragon was not a heraldic animal. As a counter offer, it was proposed that stars be placed inside the four corners of the figure on the shield in the center of which the *T'ai-chi* symbol was to be placed, but Bohr turned down this idea on the grounds that stars could not be inside the cosmos. Thus, unlike all the other coats of arms in Fredericksberg Castle, in Bohr's native Denmark, the emblem on Bohr's shield has nothing in each corner of the figure in which the *T'ai-chi* symbol is placed.

Inside the Universe it may well be supposed that both Eastern and Western views of philosophy somehow could co-exist. How interesting it might prove to be if Bohr's metaphor for explaining the differences that exist in the microscopic world of physics might also

prove invaluable as a metaphor for the explanation of the contrasting mental sets that make up the intellectual universe! Just as Bohr (as Lao-Tzu before him) did not intend his explanation to be a description of ontology, it is not necessary to intend that an explanatory model for Eastern and Western modes of thinking is an ontological description. If a physicist may be allowed a metaphor for the explanation of the physical universe, then *a fortiori* a philosopher may be allowed a metaphor for the description of the mental universe or the world of explanations.

What is of course obvious from Bohr's choice of a metaphor is that there is good evidence to demonstrate that it arises from the soft, ruminative discipline of Chinese philosophy and yet is his core principle for quantum physics. His metaphor of complementarity is the expression of the basic principle of *Yin-Yang* philosophy. If a metaphor taken from Chinese philosophy may be of great explanatory power in the world of physics, may it not be all the more possible that the same metaphor may possess great explanatory power in the world of philosophy? This might represent a case in which a regulative principle of physics can be utilized as a regulative principle of philosophy. ⁶ A concept which has once left home, after it has been celebrated abroad, may be accorded the respect that it did not receive while it stayed within its own disciplinary boundaries.

The unspoken and for the present discussion, key dimension of the complementarity principle in physics is that the two viewpoints, whether matter is perceived of as wave or particle, are considered to be harmonious viewpoints. In other words, the core structure of the universe is not perceived of as self-contradictory, but as harmonious with itself. The concept of the world as being in harmony with itself even though composed of different and contrasting ingredients was Bohr's explanatory model. Such a model provided Bohr with the greatest possible explanatory power in the world of atomic physics. The two different and contrasting, although not competing models of wave and particle completed each other to form a complete union or whole. That each model did not compete with but rather complemented each other in the composition of the whole is what led Bohr to the label, the complementarity principle. ³ In certain circumstances, one model was to be preferred as the explanatory model; in other circumstances, the other model was to be preferred. *But neither model conflicted with each other and neither model*

struggled with each other for ultimate or sole supremacy. Interestingly enough, one model was a collective (the wave); one particulate (the particle). Even the very composition of the two models mirrored the composition of the models of the self respectively of East and West. (It is not to be suggested that the content of the models was self-consciously adapted from the images of the self of East and West by Bohr but it is not a surprising discovery.)

The notion of harmony as the underlying basis for co-existence is an ancient and arguably the most central notion of Chinese philosophy. The late distinguished Chinese philosopher in the West, Wing-tsit Chan stated, "...the foundation of the Confucian system lies in the moral realm, that is, in human experience itself. The thread is also generally taken to be identical with the Confucian doctrine of central harmony (*chung-yung*, Golden Mean). Indeed, this doctrine is of supreme importance in Chinese philosophy; it is not only the backbone of Confucianism, both ancient and modern, but also of Chinese philosophy as a whole. Confucius said that "to be central (*chung*) [with all]" is the supreme-attainment in our moral life. This seems to suggest that Confucius had as the basis of his ethics something psychological or metaphysical. ⁷

When the achievement of harmony is explained as a result of understanding that differences are complementary rather than conflictual, it becomes clear why a model that posits conflict and competition at the basis of reality is most likely to lead to disharmony and chaos as a result. The complementarity principle may be taken as the ultimate model, not only for physical explanation and for the achievement of harmony in Chinese philosophy, nay, in life, but as the guiding principle for understanding East-West mentalities. A Chinese philosophical principle can be both the central principle of explanation in physics, in life, and for the understanding of contrasting and diverging points of view.

To further unfold the concept of complementarity in Chinese philosophy, one may understand the concept as referring to a means of understanding change. An illuminating way of understanding the Chinese model for understanding change is to contrast it with arguably the most powerful, influential, comprehensive and effective Western model of understanding change, that of the Hegelian dialectic.⁵ For Chinese philosophy, the two halves, *Yin* and *Yang*, that

are perceived to be the two halves that make up the whole, are in fact related to each other in part by a cyclical process of change. In the Hegelian dialectic, in the process of *aufhebung*, the new concept replaces the old concept as the old concept is negated, although some of it is preserved in the new concept. The image of the Hegelian progression is of a spiral moving ever upwards as new concepts replace old ones whilst including parts of the old ones within themselves.

In *Yin-Yang* progression, the two concepts exist simultaneously with each other, and while one gradually replaces the other, the replacement is only temporary, and the one which has been replaced itself gradually regains its ascendancy. The image of the progression is a circle in which the top and bottom halves rotate in terms of their ascendancy and descendancy, but each half is never entirely replaced by the other half. The progression therefore is the rotation of a circle and not the ever-upward movement of the spiral.

A further difference is that in the Hegelian dialectic, the two concepts are in warlike opposition to each other such that there is an antagonism between the two concepts. In *Yin-Yang* progression, the two concepts are not antagonistically opposed, but are both necessary to each other's existence and complement and to a certain degree constitute each other's existence. In Hegelian dialectic, there is an infinite succession of new concepts replacing old and inadequate ones (leaving open the obligatory question as to whether Hegel's own system achieved the final progression and hence in a way negated the concept of the infinite process); in *Yin-Yang* progression, there is a constant rotation between two sides of the same concept revealing the necessity of both halves to form a greater whole, which at certain times emphasizes one of its aspects, and at other times emphasizes the other. The *Yin-Yang* progression follows a phase of expansion and contraction like the phases of the moon, in which one side of the concept reaches its fullness and thus reaches its fruition, and then must descend to allow the other side of the concept to dominate for a time. In the Hegelian dialectic, there is a constant onward progression of new concepts, and there is no corresponding notion of phases of ascendancy and descendancy. In *Yin-Yang* progression, the two sides are not replaced by a third, but each side requires the other side for its own completeness; the two sides gradually replace and are replaced by each other in terms of ascendancy and

descendancy; there is a phase or a period during which it is correct that one be at the zenith, and a natural time for it to recede to the nadir and to be replaced by its other half.

After this explanation, the notion of how to apply the principle of complementarity to East-West “comparative philosophy”, or what is better termed ‘integrative philosophy’ as will become more clear in the sequel, becomes more apparent. Firstly, one acknowledges that Eastern and Western philosophical approaches, or mental sets, are both *bona fide* dimensions of the human mind, and that each approach can be called upon whenever its unique merits best addresses or solves problems that arise relevant to the human condition. In order for this dual application theory to operate, of course it must be granted that *each side is transparent to the other*. If the same human being is to possess the skill to choose the approach that best befits a co-temporary condition, then both sides must be equally available to the same human being. In a way, then, the label “comparative philosophy” is a creaky old description that needs to be abandoned, summoning up, as it does, the picture of two static, a historical images existing side by side which are passively compared and contrasted with each other.

Instead, the labels ‘integrative philosophy’ and ‘complementary philosophy’ are to be preferred since the object will be to select whichever dimension of philosophy best addresses problems that are arising. The label ‘integrative’ emphasizes that both *Yin* (Chinese philosophy) and *Yang* (Western philosophy) make up a more complete union; the label ‘complementary’ emphasizes that East and West both co-exist, add to each other, and await their selection in harmony as suits the needs of the time. The notion of ‘integrative’ possesses the advantage of stressing the constant and continuous need to bring both philosophies into play and into harmony with each other; the notion of ‘complementarity’ possesses the advantage of stressing that either philosophy may be chosen by the world philosopher as the philosophy of choice for the co-temporary moment. Because of the unique advantages of each label of description, it is most advantageous, and in the spirit of complementarity, most suitable, to adopt the custom of utilizing both.

Needless to say, such a light description as appears above is an oversimplified account. The notion that philosophy can be encapsulated by such a geographical metaphor is misleading and certainly not all

inclusive. However, given the limitations of such a categorization, such a classification possesses at least a pedagogical usefulness. In reality, a philosophy or a mental set may consist of an intricate combination of both Eastern and Western (and other) emphases in a subtle and delicate balance. *Yin* and *Yang* are never in complete separation. They are always in a process of integration and/or separation and the distinction of relative ascendancy or descendancy may be a matter of the most delicate of degrees. At times one may dominate completely; at other times, the other dominates with equal force and intensity. At other times the blend is incomparably woven in such a tight knit that it is nearly impossible to tell which is which. At still other times the mixture breaks apart and one tendency gradually intensifies in a crescendo whilst the other gradually diminishes in a decrescendo. At even other times, there will be such a dizzying rate of change in which one tendency will replace the other in rapid succession that one can experience only the most staccato of rhythms. And at yet other times, one can experience even atonal combinations of the two, which as in a Stravinsky composition can issue forth in the most mystical and luminous East-West harmonies.

The model of “comparative philosophy” suggests a static witness role for the philosopher who stands on the sidelines and comments, as a neutral journalist or television newscaster, on the merits and demerits of Eastern and Western mentalities. Under this static model, the concept of “understanding” is reduced to the concept of tolerance. But tolerance is not really understanding; tolerance is tolerance of differences. In fact the concept of tolerance can even include a touch of arrogance and perhaps condescension as in “we can tolerate those people”. The concept of tolerance also entails a passive model of cross-cultural philosophic no-growth since the connotation of tolerance is that the tolerant one already possesses a fully formed viewpoint which is the “right” viewpoint and all the more “right” since it tolerates other viewpoints different from itself. The concept of tolerance is suspect because it carries with it the hidden prejudice that the tolerant party implicitly possesses the right point of view.

The viewpoint of “scientific objectivity” is also one of which one should be appropriately wary. The notion of the “scientific observer” carries with it the prejudice that a view that abstracts from emotions is more valid than one, which is emotion laden. Since no

view can be truly neutral but must always be value laden, the tolerating party may easily be judging rightness or wrongness while ostensibly merely tolerating. What is more obvious is that such a view precludes an alteration of one's own viewpoint and hence prevents one from enriching oneself from the tolerated viewpoint or changing in another direction altogether.

It should be stressed that it is not altogether fair to describe the scientific viewpoint as emotionally neutral, that is devoid of emotionality, as this is not, strictly speaking accurate. The scientific viewpoint is not emotionally neutral (it is difficult to know what this means) but rather emotionally "cold" or emotionally detached. Emotional coldness or detachment is a certain kind of emotionality, one which Collingwood satirizes in his *Principles of Art* as the *moving* words which are formed by the fastidious Cambridge mouth.

Nearly a decade ago, in my introductory chapter to *Understanding the Chinese Mind: The Philosophical Roots*, the model of a pro-active immersion into each culture was proposed as a viable hermeneutic for understanding East and West. While there is insufficient space here to repeat that doctrine in detail, an essential thesis of the viewpoint presented was that East and West were not alien to each other as each represented a different emphasis and degree of development of a tendency of the human mind.⁸ The why of such a difference was also the subject of that inquiry and cannot here be recapitulated. Suffice it to say that it was to a certain extent historical contingency that the East and the West developed in different directions such that each represented a complementary hemisphere, as it were, of the human mind. If one divided the globe into Eastern and Western hemispheres, the globe could be construed as the macrocosm of the human brain, the microcosm of which the Chinese culture sees in the walnut. The Eastern half (the right side) can be held to comprise the holistic, imaginative, intuitive side; the Western half (the left side) can then be said to comprise the dichotomizing, distinction making, logical side. For a fully functioning brain or mind, both sides must be integrated in order that one can operate at peak or optimal human efficiency and actuality. Indeed, the dexterity and deftness with which one can go from one side to the other is a measure of how developed one can become as a human being.

The problem of a view which does not benefit from the assistance of a complementarity principle or a principle of harmony, is that one is forced into an Either-Or kind of thinking. Either one view is right or the other view is right; there is no space for both views being correct. With Either-Or kind of thinking, one is forced into combat when one comes into contact with a view which is different, for all differences must be perceived of as conflicting differences.

It was the point of *Understanding the Chinese Mind* to attempt to show what was involved in the attempt to understand the Chinese mind and not to leave the Chinese mind as a "Chinese puzzle", or "impenetrable". It was in the hopes of overcoming the notion that the Chinese mind is something totally "other" that this volume was conceived by the editor and the project agreed upon by the contributors chosen by the editor that Western and Chinese minds need very much to understand each other and it was to the furthering of this editorial end-goal that this volume came into being and was carried through by its collaborators to fulfil the editorial purpose in the first place.

It is suggested herein that the model of integrative or complementary philosophy is that one is not limited to the role in which history has cast oneself. One can expand one's own viewpoint; indeed, one can jettison non-serving and non-developing viewpoints. In Hegel's model, dialectical change involved alteration, cancellation, preservation or sublation and creation or synthesis. While this model was conceived of as an explanation of change it can also be perceived of as a metaphor for intellectual comparisons and contrasts, as a model, in short, for the history of philosophy. After all, this was its intellectual origin. Aristotle had already employed a "Hegelian" dialectic in his treatment of earlier philosophers. He argued in his *Metaphysics* that the pre-Socratics were attempting to say what he was saying but because of their limitations could only say lispily.⁹ Was this not the origin of Hegel's concept of the dialectic of the history of philosophy? (Despite his attribution of the origin of his notion of dialectic to Plato's *Parmenides*). Comparative philosophy today, if it does not at least reach its Hegelian potential, remains a limited and inessential tool, a tool which is of import only to philosophical antiquarians who relish the thought of comparing and contrasting viewpoints for the pleasure of viewing them in their

pristine display cases side by side as they observe them untouched, in the intellectual museum in which they are housed.

But antiquarian philosophers also remain untouched by the viewpoints which they have safely ensconced in their locked show cases. What assistance is such an idle viewing activity to either the philosopher, the cause of philosophy, or the world? What assistance is the talk occasioned by such viewing? It can only be likened to intellectual gossip, or in its use of technical terms and foreign words, a philosophy of those who talk about philosophy in the same way as those who attend musical performances to “see and be seen”.

The model of “integrative philosophy”, which differs from the Hegelian dialectic in the ways suggested above, suggests a pro-active role for the philosopher who commits herself or himself to the adoption and life choice of a philosophy that incorporates both Eastern and Western dimensions. Understanding is based not on “tolerance” but on the experience of a way of thinking and a life style that is steeped in the best of both Eastern and Western ways. In order to truly integrate an intellect, just as in order to truly integrate a society composed of different races and cultures, one must not leave the viewpoints in segregated “intelligible” and “unintelligible” categories. Not only does this provide the fuel for a later conflagration, but it is patronizing and self-limiting. It dirempts from the model of human growth and replaces it with branches that attempt to grow on their own without thought to the human tree to which they belong.

If one adopts the view that one should wait on the sidelines and teach and practise “comparative philosophy” from some presumably neutral standpoint, it will be difficult if not impossible to resolve the differences that will inevitably arise. The problems that face humankind if such differences wax into conflicts and then into wholesale atrocities, are immense and morally staggering. Far better for the world if Eastern and Western philosophy were to be integrated into a more complete whole, a complementary field, in which genuine interaction rather than polarization were to become the focus of the philosopher intellectual.

Consider the viewpoint of such a figure as Huntington who argues that cultures are headed for inevitable collisions.¹⁰ If one’s view of the different cultures of the world is such that they are perceived to be in inevitable conflict, then how much sincere and persistent attention will be given to attempting to provide the

conditions for a life in co-existent harmony? Probably not very much. In greatest likelihood, more attention will be given to the preparation for disharmony, that is, by the preparation for war.

Without a complementarity principle as a guiding principle of integrative philosophy, one is constantly forced into the confrontational posture of Either/Or. Chinese philosophy can play a marvelous role for integrative philosophy in the world today by offering a principle of integration, the complementarity principle. Perhaps this is one of the leading roles Chinese philosophy can play in the intellectual world today.

The integrative, rotation model which differs from the Hegelian dialectical model *simpliciter* suggests that the particular richness and the unique contributions of both East and West must be allowed to take their place in turn so as to address the peculiar maladies of the historical epoch in which one finds oneself on earth. The complementarity model suggests that neither East nor West possesses a privileged standpoint but that both viewpoints are necessary to balance and complete each other so as to form a more perfect union. The alternative is a conflict model and this is the way of Huntington and the inevitable collision and clash of cultures. The concept of harmony that so enriches and informs the Chinese tradition is the only viable wave of the future.

THE CHINESE UNIVERSITY OF HONG KONG

ENDNOTES

¹ One must bear in mind that 'Oldmester' is a Danish rendition of the name Lao-Tzu and the book itself is a translation of and a commentary upon the manuscript left by Lao-Tzu. This may well have been the very book Bohr's son, Hans, was referring to when, on 17 October 1995, at the Niels Bohr Institute, he told the present author that his father had been acquainted with Lao-Tzu in a Danish translation. There is considerable discussion as to whether Eastern philosophy influenced Bohr's discovery of complementarity in physics. The idea of the complementarity of opposites is advanced in the *Tao Te Ching*. (It is of course also an integral part of the

teachings of the *I Ching*). Bohr's acquaintance with Lao-Tzu is both early and authentic. The present author is indebted to the physicist, Finn Aaserud, Director of the Niels Bohr Archives, both for bringing this letter to his attention and for providing the translation above. The original letter can be found in the "Niels Bohr General Correspondence".

² Hanna Rosental was the wife of the physicist Stefan Rosental who was Bohr's right hand man for many years. The husband and wife escaped together from Nazi Germany. Hanna Rosental, an historian, was a former classmate of Hanna Arendt's and a pupil of Edmund Husserl's. In fact, they took the same class from Husserl together. The author was pleased to spend a fine evening with her and enjoyed her personality and rapier sharp mind.

³ Cf., Henry J. Folse, *The Philosophy of Niels Bohr, The Framework of Complementarity*, Amsterdam: Elsevier Science Publishers, 1985, p. 54.

⁴ The physicist, Finn Aaserud, Director of the Neils Bohr Archives, confided to the author that Bohr was more of a philosopher than a physicist. It is of special interest to note that Bohr himself held that the greatest significance of the ideas of physics for philosophy lay precisely in the implications that new ideas of physics possessed in challenging the foundations of our most fundamental concepts. Rasmussen points out that, "In the very first sentence of his 1958 contribution to Klibansky's *Philosophy in the Mid-Century* Bohr said, 'The significance of physical science for philosophy does not merely lie in the steady increase of our experience of inanimate matter, but above all in the opportunity of testing the foundation and scope of some of our most elementary concepts.'" Cf., Erik Rasmussen, *An Essay on Fundamentals of Political Science Theory and Research Strategy*, Odense University Press, 1987, p. 124.

⁵ This is the argument of the complementarity principle in atomic physics as advanced by Niels Bohr, which he introduced for the first time in public in 1927 in Como, Italy in a lecture on "The Quantum Postulate and the Recent Development in Atomic Theory" at the International Physical Congress. Cf., Niels Bohr, *Essays 1932-1957 on Atomic Physics and Human Knowledge, The Philosophical Writings of Niels Bohr*, Vol. II, Woodbridge, Connecticut: Ox Bow Press, 1987. According to Heisenberg, Bohr developed his ideas on complementarity while on vacation in Norway. Cf., Max Jammer, *The Conceptual Development of Quantum Mechanics*, New York: McGraw-Hill Book Company, 1966, p. 347, 351. Simply put, it states that an exhaustive description of quantum phenomena is possible only through recourse to two, mutually exclusive sets of classical concepts. One cannot employ either the expressions 'Either-Or' or 'Both-And' to Bohr's complementarity principle since the former implies that one of the explanations is enough and the latter implies that both can apply simultaneously. The author's "mixed salad" description of 'Either-And' was greeted with a positive response by Finn Aaserud, Director of the

Niels Bohr Archives, when it was put forth in a private conversation on 20 October, 1995 at the Archives. Heisenberg's uncertainty principle is a special case of the complementarity principle. Cf., also, Sandro Petruccioli, *Atoms, Metaphors and Paradoxes, Niels Bohr and the construction of a new physics*, Cambridge: Cambridge University Press, 1993. (In the complementarity principle advanced in this present work, it is not suggested that the two different points of view are mutually exclusive.)

⁶ Cf. Wing-tsit Chan, 'The Story of Chinese Philosophy, in Charles A. Moore (ed.), *The Chinese Mind, Essentials of Chinese Philosophy and Culture* (Honolulu: East-West Center Press, University of Hawaii Press, 1967), p. 35.

⁷ The idea originated with Fichte rather than Hegel but Hegel borrowed it and it became famous via his use of it and it has thereby been associated with his name.

⁸ Robert E. Allinson, (ed) 'An Overview of the Chinese Mind', *Understanding the Chinese Mind: The Philosophical Roots*, New York, Hong Kong, Oxford: Oxford University Press, 1989, 1998, Eighth Impression, p. 23.

⁹ This notion of dialectic was already prefigured in *Phaedo* when Socrates explains how delighted he was when he heard someone reading from a book that he said was by Anaxagoras asserting that mind was the cause of everything. Then he found by reading Anaxagoras that Anaxagoras did not make any use of his concept of mind. Socrates subsequently appropriated the concept of mind and extended it to explain why he would stay in prison to accept the penalty of Athens.

¹⁰ *Foreign Affairs* (Summer, 1993).