



Title: Power and Love Principle in Social Organization

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Oct. 26, 87.

Dear Pam

Enclosed is a report of what I have been doing.

Yours

Sam

There are some physics in this, if you're interested.

POWER AND LOVE PRINCIPLE IN SOCIAL ORGANIZATION

A Paper to be presented to CPREA, Ottawa
June 1, 1982. Session VIII.

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Abstract:

Social organizations require the co-operation of their constituents. One way to secure the co-operation is coercion by Power of various forms. Newtonian Physics provides a paradigm of the Power way of system constructions. It is a "forced" relation among constituents. Another way to achieve co-operation is through Love. Both ways are as old and basic as Life phenomena, and one can observe them even in ecological systems. However, the dynamics of Love are not well understood. In view of the high energy cost of maintaining power-system structures, this underdeveloped state of Science of Love is of a grave concern. This paper is written as a plea for serious considerations and developments in social dynamics of Love. Implications to International Peace are discussed.

Power and Love Principles in Social Organization.

1. Power Principle and its Newtonian Metaphor.

It is almost a tautology to say that a social organization requires the co-operation of its constituents. For without some ways of maintaining a practical degree of coherence in their interactions, a collection of individuals can hardly be called "social". And we expect some mechanisms for "organization" to sustain functional structures and appearance of a constant order to claim its identity. Although a collection of atoms (individuals) like the "ideal gas" of statistical mechanics may be discerned as a paradigmatic metaphor behind some social theories such as the social contract theory and the equilibrium economics, society is not a collection of randomly acting independent individuals.

To keep an order, which may well be even nominal, the society has to plead, guide, persuade, manipulate, coerce, force or eliminate unwilling or misbehaving members within. Order costs effort and energy---as is the case for Entropy cost for mechanical systems, and we have power structures to carry out the task. If we call the way of organizing our society "civilized", then it is distinguished by its high energy cost before its merits are listed. Our education system is a part of the power structures as such. If the internalization of the social order is not, sufficient, it is followed by the penal system. We rely on the "adversary system" to bring out the best of our justice. The process of justice is at a sublimated level, but its metaphor is like boxing and its final outcome is at the hands of the sovereign authority which is the apex of the power structures and has the right to kill humans. We note that we have never denied the power of the sovereignty to declare nuclear war and annihilate the human race.

In terms of economy, we have a system of distributing unequal rewards among us. This has been justified by a hope that competitions for higher rewards stimulate higher performances and result in a net gain of economy overriding the cost of the reward system. The competitions are not just for possession of more material things, but more intensely for controlling power. To enjoy a high level of consumption is one thing, but to accumulate "Capital" is quite another thing. We enjoy our high level of consumption and we are proud of it, if not identifying ourselves with it. However, the consumption has to be sustained by the capital (means of production) which is not merely machines and factories but also control of human labor. The term "accumulation" may not be appropriate for the human-social side of the Capital as such, but it had to be built with accumulative energy input. And the distribution consumption side of the economy had to be controlled so that the construction-accumulation of the production side goes on. Unequal distribution of reward or "competition" is a technology developed to achieve the accumulation and maintenance of the power structure.

The unequal distribution of rewards also act as a deterrent to those who are unwilling or are incompetent players of the game. The threat to livelihood is a sublimated form, but it is a threat to life and violence. But, since economic inequality relates and simulates political power structure and what is conceived as "civil order", the violence is condoned as a legitimate exercise of power.

In terms of our inner thoughts or intelligence, we regard that which is successful in climbing up the ladder of the power structures to be the high quality one. And we try to attain it, or rather we think we ought to attain it. Our education system supposedly helps everyone with this ideal, but the "success" is only relative to failures, like in the "Zero Sum Game", and the system only intensifies the adversary competitions. The school system often acts as a "filtering system" by which "inferiors" are labeled and it prepares them for inequality that they are likely to face. Freud went so far as to say that civilization is an illusion. Illusion is distinguished from "delusions" of the "mentally ill" in that "illusion" is good for the economy whereas "delusions" are useless, if not damaging. According to Freud, I imagine, the "Reality" is an illusion which the controlling power of the economy takes as a set of reference points for its operations. We assume that the power has the right to "cure" those who have difficulties in accepting the "Reality".

In summary, the power is regarded as necessary and an ideal, if not "the only", means around which any society has to construct itself. I call this the "Power Principle". The power principle says if one desires anything, apply "force". If one has a problem, apply "force". Might is the answer to all. Thus, human relations are imaged as motions of objects that have to be forced, and therefore the "intelligent" and "realistic" way of dealing with them is to apply "force" as Newtonian physics suggests. The ultimate expression of the power principle is Nuclear War. Chemical, Biological weapons are relatively easy to prohibit, but Nuclear weapons, since it represents the power principle of our civilization, cannot be banned easily unless we change the fundamental image-metaphor of how we live together.

The terms like "force", "energy", "power" are terms of Newtonian physics. I shall not argue whether our ways of social organization are influenced by image and language of physics, or physics as such is merely one expression of our ways of organizing. According to L. Mumford (The Myth of the Machine), machines are modeled after political structures which existed long before the modern science and technology appeared.

Mumford's argument is convincing, particularly with respect to the popular image as a metaphor or paradigm of what machines are; perhaps physics is a refined expression of a popular paradigm, or even merely a refined language organization. Terms of physics are borrowed from existing language. And without the acceptance and support of society, even with misinterpretations of popular understanding, science would not have developed. In the age of specialization and professionalism, popular image-metaphors of "science" may not coincide with what "science" is doing for (and to) them. But there has to be a shared

paradigm which makes up a positive feedback loop.

On the other hand, however, it is doubtful if modern society could have developed in the way it has without the patterns of thought emerging along with the modern science. The Bourgeois Ideals, the Capitalism, and the Central Government System appeared along with the Science and development at roughly the same accelerated pace. And their "take off point" may be traced to about Galileo's time.

To be sure, ideals or ideas expressed may not correlate with practice. At least, time lags are noticeable. I imagine that the image of "machine", which may be very old as Mumford suggested, could not come into social practice until some means of converting fossil energy into some forms similar to human labor were developed. That requires developments in science, so that the "idea" can be connected to "know-how". That is, the idea or image has to be refined. And the idea has to win the support and cooperation of the society. Willingly or unwillingly, knowingly or unknowingly, our ancestors made the investments into the development of this civilization which had a long lead time.

As economists commonly point out, developments as such are slow --- i.e. with time lags --- at least at the initial stages. Society supports the necessary investment for a long time only on a basis of vague notions of what would come out of the process. It had nothing more than metaphor to go on. And unless the whole circle of the inter-related developments constituted a "Positive Feedback Loop", the system would not have "taken off".

Galileo needed the accumulated wealth of Italian textile merchants like the Medici family or the cultural affluence, confidence, and interest in science such wealth provided. Contradictions and resistances were there, like the "friction" of Newtonian mechanics. But as a whole, the positive feedback loop was formed and set into motion.

And the history of the past 400 years of European style development, which now includes North and South America and some Asian countries, is very impressive. There we find the roots of our faith in "science" or "rationality". Right or wrong, the history so perceived provides the metaphoric foundation for what terms like "science" and "rationality" mean.

It is not that non-European societies did not have some notion of "Force", but the notion of Force even in Newtonian mechanics is rather static. "Power" as "rate of flow of energy per unit time" is a dynamic notion. Admittedly it is only a slightly different semantic variation in terminology, and even physicists today may not make the distinction in colloquial usages of the term, but the fact that "power" in mechanics provides a distinction is an indication of a linguistic development and a corresponding shift in metaphor.

Physics may be nothing more than a linguistic system of model (metaphor)- making and rules of language for efficient communication. Or one might say physics is an art of "saying things"

like rhetoric. But "saying things" in certain ways have far-reaching consequences. Relativity and Quantum Mechanics are the prime example of how important it is to have a certain way of "saying things". I cannot tell whether notions, ideas, metaphors, images come first and generate language appropriate for them, or language forms come first and generate ideas. I imagine they are also in the "feedback loop"-relations, if not in a "vicious circle".

If so, it is vain to attempt to "explain" the relations in terms of the linear mechanics of the "Cause-Effect" rhetoric. We need the language of "system-dynamics" to describe such relations. Unfortunately, we are in a process of developing such a language and, at the moment, we are not able to give an appropriate description of the loop structure that can be accepted as an "explanation" on a social scale.

At the moment, the best practical language at the social scale is that of Newtonian mechanics. And within this language, or the metaphors it provides, only the "power" makes sense. People may not have formal training in the mechanics, nor are they necessarily conscious of the mechanics implied by their saying and thinking. But social practices are guided by languages of the society.

But to the extent we do have to communicate for social life, economic activities, political commotions, and to the extent that we may be able to change our languages with less energy than changing social practices, there is hope to break the vicious circle. Our "thoughts" may be nothing more than the "Form" in language, as Plato seems to have suggested --- that is, we start our "thoughts" from expressions in a language and we end our thoughts in some expressions in a language---, but we note that language also evolves.

And to the extent Newtonian language and metaphors of Power were important in the Western history, we can hope to make some input for the future by generating or, more modestly, by stimulating development of the physics of Love (Language of love). We note that even Newtonian mechanics taught us about time lags. If one tries ordinary statistical analysis, the "force" and "motion" do not correlate at all. This is because "force" is a term in the second order time derivative. As a number of objects or entities in dynamical description increases, the leading term in the description of the system as a whole gets to be higher and higher in the order of time derivative. That means the effects of the "higher order forces" would manifest in longer time lags. We should not be impatient, according to Newtonian Theory.

Of course, we need not believe in Newtonian mechanics. Personally, I am very critical of it. But as a learning process, one could follow the mechanics to a point. After all, Newtonian mechanics is the best we developed so far, even though a few flaws are known.

In a way, all of our descriptions, intellectualizations and theorizations are not only linguistic models but also simplifications. Our brain may handle a huge amount of information, but in terms of our "intellect", we can only handle a few terms at a time. Social

complexities are beyond our mechanics, unless we appeal to metaphorical imaginations. In this, Newton already introduced terms like "force" which is a "ghost term" as E. Mach, Albert Einstein et al pointed out. Yet the "ghost terms" are the essential ones in the system of "saying things". The western history attests to the importance of the "ghosts". By this I am saying that terms like "Love" need not be "unscientific" and "irrational", any more than "force" and "power" were.

Mach rejected the term "atom", saying it is a "ghost". He was correct in saying so, as the Elementary Particle physics later came to the same view. But for the Elementary Particle physics to develop and vindicate Mach, it was necessary to "believe in the "atom" and search for it until then. Mach was wrong in the development strategy. Mistaken ideas are often a more useful means of learning than the correct one, for if we have the correct answer, we have no motivation to learn any further. At least this is my excuse to dare introduce a "dynamics of Love" as a heuristic device for learning.

I imagine there is a need for studying the Power Principle much deeper than I outlined above. There are criticisms by social scientists against "physics" ---society, social phenomena are not simple like planetary motion, obviously, but the "Scientism" in social studies is far more powerful than the critics appear to estimate. And the basic metaphor of "science" is the Newtonian Mechanics. If it is difficult to get out of the metaphor, then second best would be to know what the metaphor is. Perhaps soul searching in Newtonian mechanics may be the way to overcome the myth. As Zen and Motorcycle Maintenance tells us, one needs to perform a Proper burial ritual to go beyond Newton.

However, in order to give some sense of direction to the search, I would like to present my speculations on the dynamics of love and discuss a few implications. If my story is of some interest, then I shall come back to Newtonian mechanics in detail. I think "history" is like "dream interpretation", which would be of no interest unless it suggests future possibilities, if not hope or even "prophecy". For that matter, knowing "what is of fact" is of no consequence unless it relates to "What shall be" (T.S. Elliot). If you find "prophecy" objectionable, then replace the word with "prediction". The latter sounds "scientific", but I would not know the difference, except for the false pretense the latter semantic carries.

2. Love Principle

---why and how to talk of it---

Love may be everywhere. And there may be many kinds of love. But, in comparison with the rather elaborate vocabulary for Power Mechanics, we have only poorly developed means of describing love phenomena. The unbalanced development of our language concerning Power and Love reflects our sense of value, priorities, and different sensitivities about the two.

In addition, our "scientific" or "intellectual" vocabulary is dominated by nouns and visual senses -- of objects named and metaphors or images derived thereof. But in the context of discussing "love" on a social scale, "love" is more like a verb. It could be replaced by "loving", but in the sense we say "rain" for "it rains", I have retained the simpler form.

I intend here to use the term "love" as a dynamical term. It is not referenced to a thing or object, not even to an "essence" of platonic atomism. It needs no object(-ive) "existence". We recall that terms like "point" and "line" in geometry need no objective existence, and their visual images and metaphors are more or less arbitrary choices in subjective interpretations or "animations". Terms like "force", "energy", "entropy", are also of this kind. Some physicists like P. Bridgman even insist that "electron" is not an object as it might be suggested by its noun name, but an operational term referring to a set of "doing things" and "measuring-detection" procedures-processes. "Electrons" is understood as "it electrons", in the sense we say "rain" for "it rains".

Thus the "love" here needs not to have an object(-ive) existence like vitamins or hormones that can be crystallized in a test tube. It needs not to be seen in a genetic code under an electron microscope. Somehow it could be sensed by body sensations, but needs not to have any visual sensation or perception. Hollywood movies might give us visual images of "love", but that is not the kind I shall talk about here. I think visual images, models and metaphors are helpful to us, and I intend to give several of them. However, they do not constitute complete pictures of "love".

My intention here is to start discussions on love by rather "heartless descriptions" of the "social engineering of love". It is only a small part and suggested as a starting point of learning processes. If this paper is taken by the readers as something like "Soft Technology", I shall be well satisfied. As it will soon become evident, even this limited treatment is difficult enough for me. I am sure that there are many people who know Love better than I do. And they might point out that my difficulty is due precisely to such a "heartless" attitude of "system engineering" which is necessarily limited in scope. Love, by its fundamental nature, has to encompass everything of life and environment, as they might say. I am aware of what E. Fromm and H. Marcuse said about love-eros. Their works are indeed impressive and perhaps there is nothing to add to them. But I

detect a Platonic Atomism in their rhetoric and attempt a dynamic approach as an alternative here. Like many geometries, alternative approaches need not inherently be better or worse. Thus I shall try a typical simplification of physical science here.

For a start I shall try "love" to be any tendency of interaction to form cooperations. Symbiosis, herd instinct, collective behavior of magnetic materials, emergence of quasi-stable structure out of random motions, or even "anti-entropy" may be taken as a metaphor for love at this level of discussion.

"Love" as collective behavior of many-body dynamics can be discerned among soldiers at battle fronts. The huge organization of war effort cannot be maintained without the "love" of millions of people. Nuclear weapons could not have been produced without the cooperation and support of many people. Therefore, one could say that Nuclear Holocaust, if it comes, is a product of "love". If people did not accept, obey, and feel good about identifying themselves with their hero-leader, the Holocaust of the concentration camps could not have been possible. Without supportive wives at home, men at work for Capitalism would have become monks and probably become extinct in a few generations. As for "behind every successful man there is a woman", we would say "behind every successful social institution and development, there is love". The state of "living together" constitutes at least "circumstantial evidence of "love" in this broad sense.

The crudeness of the above examples is purposely made to minimize the image of "nice and sweet love". "Love" can be nice and sweet, but it need not be so, and the primary interest here is on the social phenomena-dynamics of love, not on the romantic aspects of love. Love on a social scale can be just as infatuating as that of Romeo and Juliet, though it may not necessarily be "romantic".

But it is more important to look at the "low-intensity" types with longer time-scales, like the toil of mothers looking after their offspring. This type is rather like a "daily routine", always present and forever caring, if one takes notice. Even within the Power-centered civilizations, people do live together, accepting, accommodating, sympathizing, understanding, communicating, and taking care of the unrewarding "minor details" of life.

In this connection, it is interesting to note that the experimental and empirical ways of science (knowing) introduced by Galileo are deviations from the Greek tradition and closer to Love in that they require enormous care of minute details of interaction with the environment. But in the abstract theoretical expressions, they are acknowledged only as supporters. In practice, the means actually defines what science is. But the end claims the glory. It is the way we present and image our "knowledge".

Power cannot exist without Love. Just like the "Macho" or "Man-God" image, the power takes, or rather needs, all the credit, rewards, and public appearances, and it can not get enough, whereas Love is content with the invisible, unrecognized, unrewarding supporter's position. Power gets its energy from exploiting Love.

Love has to do with "quality of means, process", not the "end", "purpose", "intent". Love is not an "answer" or something that one achieves, like when heroes finally win over the monsters. It is not "value" or "evaluation". It does not look for "what", but rather is concerned with "how". It is the opposite of "intellectualization" and "rationalization". It is close to randomness accidents, particulars, that our intellect tends to look down on with contempt. Sweeping generalizations of our intellectual expressions are impressive. I fantasize that "Love" adores that, but the sweeping generalizations have to come from the nitty-gritties of particulars and have to go back to the chaos of life experiences. The image of love here is dangerously similar to that of the one who stays pregnant, cooks, cleans, and cares for everything that comes along in random chances. Unfortunately, that has to be done if our life process is to continue. The only way out is to give recognition to the love as such, and for everybody to share the burden. If we are to replace the love with the power-way of doing things, the energy costs of the necessary tasks would be forbidding.

Engineers know that any mechanical system has to have plays and tolerance. The system also needs "lubricants". One cannot control systems beyond a certain scale with dogmatic order, even though the metaphor of intellectual description may be "deterministic". Machines are not. In cases like Nuclear Power plants, one can conceive safety devices upon safety devices, but the probability of failure increases if too many safety controls are build into the system, for safety devices could also fail. That is, even a mechanical system, if practical, does not operate on the Power Principle alone. It needs something analogous to what we shall call Love. I attempt here to decipher Love Principle from such engineering principles. I acknowledge my image of Love is not necessarily a popular one. And I am even afraid that I am degrading love by pulling it down to the engineering level of discussions. But I am not saying this is all there is about love. It is only a small part, or a starting heuristic metaphor. I hope our learning about love is limitless. And I think this way of "knowing" love is tolerated by the Love principle.

This is analogous to what physicists and mathematicians do to "Non-linearity". The "non-linear" simply means situations for which linear theory description fails. The linear theories and descriptions are simpler and one can have sweeping generalities, provided linearizations are good approximations. In fact, in linear descriptions, one rarely needs to be conscious of the "approximateness" of the description. Tolerance is automatically assured in the structure of the descriptions themselves. If the description fails to accommodate tolerance and cannot maintain stability, the axiom of the linear language automatically rejects such cases to be outside the universe of the discourses.

Of course, we encounter difficulties. We cannot manage everything by the linear way of describing and thus knowing things and situations. But our sciences have developed only as simplification by linearization, thus whatever we excluded is called "unscientific". Today, we have a rise of interests in non-linear phenomena and the prejudice is diminishing. However, the simplifications strategy of scientific knowing has to be maintained. This is partly because the intellectual part of our brain cannot handle complexity. And if "science" is to be useful socially, it has to be reachable by anybody who is patient enough to follow the rules. The practice may deviate from equality, say in professionalism, or elitism that thrives on the monopoly of "scientific expertise", But even Professionalism has to claim the universality of science to justify the power of the monopoly position. And if professionals have theories at all, the theories are based on simplifications that they can understand.

Interestingly, however, the recent rise in interest for complexity came about because of computer developments, which can be understood as a part of the development of our language skills. We can now delegate "simple routines" to computers and afford to think and talk about complexities. Or it may be a sign that we have come to realize that we humans cannot compete with machines in doing simplified routines. If human existence is to be rationalized, then the image of "rationality" based on simplification cannot be maintained any longer.

Ironically, our "intellectual basis" is now threatened by the machines our intellect has created.

Francis Bacon warned about the "cheapening" of intelligence by the science that was rising in his time. But "science" as such has a historical role to play. It did prepare the next stage of evolution. Just as Marx was wrong in predicting the fall of Capitalism within his time, prediction of the fall of "science" may well be wrong. But no social structure we know of stayed constant. The vicious circle dynamics supporting such structures may be stable, but as much as the structures are manifestations of dynamics, they can only be quasi-stable, that is ephemeral". Physicists today think that even the Proton, the fundamental substance of all material existence, may decay, as much as the Proton is dynamical. And the Greek idea that Order has to be an eternal constant and therefore "knowledge" has to be eternal, is slowly fading in our science.

And an idea, metaphor or paradigm that we are describing relatively fast changes in references to relatively slow quasi-stable structures -- a Buddhist mandala -- is gaining popularity. This is a generalization of Relativity and, perhaps, abhorred by those who like to entertain the feeling of security in constancy. But as Galileo said, the Earth moves. To say it is another simplification is vain, if the intent is to defend the old myth. The paradigm of science already starts shifting.

Here I rather like to exploit the paradigmatic (metaphysical-metaphorical) nature of our intellectualization (science) to propose and encourage the dynamical ways of thinking and

talking. Love may not be a suitable subject for this infantile stage of dynamical language to talk of, in that it can describe love only in contrast to the Power that the previous language of mechanics talked of. But that hopefully becomes a translational bridge of two languages or a part of the transition between the two.

3. TOWARD DYNAMICS OF LOVE.

If we are to extend Newtonian mechanics to describe Love phenomena, it is perhaps possible to represent some features of Love in higher order terms in time derivative.

"Force" in the Newtonian language is a term in the second order derivative. "Power" is "the rate of Energy flow per unit time" and thus it is also a term in the second order.

One notes that the effect of a "Force" is not immediately visible. It takes a certain time-lag before we can see the effect of a "Force" in changes of positions. If one is to take a statistical correlation analysis between a "Force" and "change of position", one would not find any relation, let alone "Causality". Of course one can take a correlation analysis between "mass times acceleration and "Force". The correlation would then be perfect because the two terms are identical by definition. Since it is a tautology, it would be vain to hope for discovery of "Causality" in mechanics by statistical analysis. Social scientists are warned here that Newtonian sense of mechanics cannot be arrived at by statistical analysis. As to "Cause", Newton himself declared that he is not explaining the "cause", but merely describing how things move". In essence "Force" is a ghost term invented for convenience of description. In Newtonian language then, "Love" would be another ghost term representing a certain quality referring to the "how" of motion. If such a term achieves some efficiency of description and thereby assists us in our competence to communicate, then the term is amply justified.

One of the features of Love as a higher order term is obvious, without any further specification at all. Love as such is not visible in motion (change of state) directly. It would take rather a long time before its effects emerge. In short time scale measurements, Love would not manifest. It may be that we have to wait a long time in the evolutionary time scale to see what Love does.

Newtonian mechanics deem that the universe of discourse is complete within a linguistic space of the zero-th and first-order terms -- positions and velocity. For this reason it does not require having any higher order terms than the second to talk of dynamical situations. However, if one is to talk of many-body situations -- any more than two --. the system of description consisting of the zero-th first and second order terms in effect make up higher order description.

In Newtonian mechanics, a situation with N bodies with 3 degrees of freedom for each can be described in a system, of $6N$ first order equations. If the equations do not contain "crosstalks" of terms, each equation can be solved as if it is for a single body in vacuum. In general this cannot be done. The "crosstalks" are representations of interactions. In some fortuitous cases, we can find "collective" motions which are waves extending over many bodies, but equivalent of individual motions. And even in such cases, the over-all system itself can only be represented if we desire to talk of the system as an entity like "society" -- by a $6N$ -th order equation.

A love phenomenon between two people, treated in mechanics as one between two atomic individuals with only one degree of freedom is already complex enough that it requires 4-th order equation.

We do not like higher order equations, for we are usually incompetent. So if possible at all, we like to treat things in the first order, or at most in the second order. That is, atomistic and individualistic talks and thoughts are simpler. The ordinary practices of Newtonian mechanics, thus, are limited in lower order treatments. And the wide practice generated a habit, if not a prejudice, that if someone is to talk in higher order terms, we do not fear it is "scientific" alone comprehending it.

Ordinary undergraduate texts in physics do not mention "Three-body Problems". Intellectuals educated in such limited mechanics become social scientists who might entertain an idea that to emulate such mechanics is science, if not "knowing" in general. Despite most people being aware of co-operative dynamics and Love, talks on such subjects are consequently regarded as "unscientific", if not "irrational", "sentimental", etc. But the trouble is not with Love. It is in our incompetence in talking and thinking of Love.

I am not saying learning of higher order equations and many-body mechanics would make us competent in Love affairs. After all, mechanics can only do certain limited things. Not all features of Love phenomena can be understood in mechanics. But if we are to entertain the idea of "mechanics = knowing" at all on the phenomena of systems like social, political and economical ones, and particularly Love, the higher order terms may be essential in talking-thinking of "how the system as an integrated whole behaves".

Higher order systems, aside from the time-lag mentioned before, have the possibility of "loop-structure" -- positive and negative feed-back--. In the context of talking about social phenomena, this loop structure is very interesting. I imagine that so-called "Dialectics" is referring to the loop, though the language of dialectics is too obscure to be mathematized. (However, the Catastrophe Theory is of interest in this connection: see R. Thom.)

Even the second order systems already show the possibility of the loop structure. And electronics engineers use the concept routinely. The loop can easily be deciphered in linear approximations as the "eigenvalue" of the matrix describing mutual interactions (cross talks). The "eigenvalues" are invariant within projective transformations of references. It is arbitrary in what "terms" or "measurements" are used in descriptions of the loop.

That a dynamical system contains loop structures is invariant even in a topological sense. That is, it matters little if we perceive the system or situation differently. If needed, we can use most any "measurements", "scaling". This feature is a great advantage for social-human studies. In fact, "measurement" need not be of that which mathematics defined as "measure". Social and human scientists are, in topological dynamics, no longer required to pretend that they are "measuring" in a rigorous sense. One can even employ "poetical

license" in descriptions, for topological characteristics are invariant under "poetical license". This would avoid a great deal of trouble in science.

In case one is interested in "non-linear" phenomena -- say, the "diminishing return" in economics, for example --, the topological approach is the only sensible one. I am saying the traditional "quantification" is for the birds, if not a fraudulent sham. For the situation the system is indeed non-linear, the approximability by quantitative language is no longer assured. The only thing meaningful is the "Qualitative" description about quasi-stable generalities of the situation system. This teaches us humbleness in our imperialistic tendency to "know", "predict" and "control" the situation by quantifications.

If President Reagan's economic advisers are somewhat less dogmatic and admit that economics is an approximation and could possibly be wrong, I think people in the US might find a better way of living together.

The dogmatic attitude of contending "truth" and "being absolutely Right" is prevalent not only in economics but in politics and particularly in the military. People know that, in such areas of human endeavors, things are not easily theorized, comprehended, and controlled. But, paradoxically, the inherent uncertainty, or rather the suppressed awareness of incompetence with regard to the situations tend to call forth strong dogmatic knowledge claims. Assertion of "truth" is used to soothe our anxiety.

Hitler was a great hero and leader because he knew how to exploit the psychology of people in perplexity. And what is striking is that the traditional knowledge claim by "science" resembles the psychological trick. That is, the "Power of Knowledge" is the same as a quasi-religious notion which emerges and is entertained by people in crisis. "Science" in the sense of the love affair of learning is often replaced by the "Power of Knowledge" in such a situation. People demand that "science" is the Messiah who solves all problems. They would be terribly disappointed if "science" is shown to be incomplete, or worse, is said to be a love play. People would complain why they have to foot the bill for a show in space, such as sending men to the moon at a cost of 30 billion dollars.

If the popular image of "science" is a kind that is powerful enough to blast away mountains to lay a highway through, then it is natural that people expect the same science to blast away "Evil Forces" such as U.S.S.R. or China with hydrogen bombs.

If the image of "science" is the kind that cures the disease of completely helpless patients and it is often imagined that patients are completely ignorant of their own state --, then scientists and experts say it is the Truth and has to be done. People are not requested to learn anything about their own life but are ordered to act as directed by the authorities.

I think our "science education" is a great propaganda machine. And I even wonder if "Peace Research", conceived as a science, is also part of it.

I have said nothing about "indeterminacy" or "uncertainty" that exist in fluctuating environments or in the Quantum States in this talk about Love Dynamics. Although I think it is essential to consider "catastrophes", "random", "chaos" in Love dynamics, it is beyond the scope of this talk. There are also some implications and suggestions from Quantum Mechanics and Relativity. However, I shall not go into this here, for I am afraid that it might be taken as a continuation of the scientism that I criticized.

Even without Quantum Mechanics and Relativity to talk of Zeno's Paradox on position and motion and time dimension in a dynamical sense, Newtonian mechanics already suggest our "intentionality" in knowing. To know "what is" of facts and situations is of little use even in the Power sense of knowledge. The knowledge as such is valued for its implications as to "what, shall be", if not what "ought to be". We call it prediction, but it is no different from "prophecy in religious contexts. Our Science as it stands today is not devoid of religious tendencies; it is political and psycho-therapeutic as well.

Positivist philosophy in science today would like to eliminate the "intentionality" from science -- here again we see an example of the slip from "what is" to what ought to be" --. But elimination of the "intentionality" may be elimination of science-knowing. Rather, one is advised to recognize the intentionality and treat it with respect; when we include time dimension in dynamics, it is unavoidable that future and past come to play active roles in the dynamics. It is possible that loop structures are made in time dimension. Cyclic phenomena in many human and social fields are well-known. They may be projections of loop structures in time dimensions. If we are to talk of these phenomena, the rhetoric-logic of "what is" is no longer competent. Love that is seen as a higher order term contains this sense of dynamical time dimension. If we are to talk of these phenomena, the rhetoric-logic of "what is" is no longer competent.

We note that talks in love relations often contain references to time. Paradoxically, the feeling of Love transcends Time, yet the transcendence is based on a feeling of time in a holistic sense, not in mechanical time. That is, the negation of time in Love is negation of Newtonian time, not the time of Relativity. As such, I contend that in Love the dynamic Time is regained by negation of clock time as a Passive parameter. We are not quite free from the clock time of Newtonian mechanics -- it is the foundation of our intellectual order as it stands now -- but we try to see future possibilities in our love relations and endeavor to "promise" (prophecy) meaningful relations to grow.

That is, Power of Knowledge and Love are two different ways by which we try to deal with time flow, anxieties as well as aspirations, uncertainties and hopes. In Love we accept and take Time in trust and as such it needs not to be aware of the measuring-controlling sense of Newtonian time. Thus it would appear to be playful, sensual, or childish. We know that in love we would die sooner or later, but

that does not bother us at all. Perhaps death, i.e. the ephemerality, finiteness of our existence is the reason for Love. At least, while we can, we like to have a beautiful life. It is not by accident that we have the myth of Chronos (Time) as the god of death. If the clock time is the order of the universe, then in love we negate its power over us. But, in terms of modern physics, we need not depend on the clock time for our intellectual order. We can take dynamical time, if needed, in a topological sense. There we are not bound by the clocks. Somehow, love contains very good understanding of time in 4 or higher dimensional frames of reference beyond the primitive one in the Power sense of knowledge.

4. Love against Taboos

Our notion of love is formed, or rather deformed, other taboos. Perhaps, left in the natural state unconscious, involuntary functions of our body. To a conscious feeling, we need some resistance suppression to heighten our senses.

The Greek myth of love supposes that the original "Man" was a union of male and female. Only after separation, both genders can experience love in an attempt to regain the original union. Hegelian philosophy takes the dialectical view in that from the separation emerges the desire of reunion. Love as such is a "negation of negation". In that sense we might say that without the Power Principle dominating us, we may not be able to recognize the Love Principle.

Of course we do not need to take naive dialectics of the "opposition of poles" perceived in the linear metaphor. The dialectical opposites can be of two different dimensions, or on two different levels. We can recall examples like the opposition of "point" and "line" in Zeno's Paradox or "position" and "momentum" in the Uncertainty relation. The dialectical oppositions are metaphysical or metaphorical choices in geometries, any of which need not be superior to others. But we have one in our mind to coordinate, organize our actions and feelings in reference to it.

Interestingly, brain physiologists tell us that our middle brain, the Cephalum, is responsible for orgasm. The same part of the brain is also the one which imagines and projects future states of our body, coordinates contextual references and organizes actions. That sounds like what we refer to as "mind", but its function appears to be one that constructs metaphysical or metaphorical geometry.

The Cortex part functions on the basis of the over-all structure provided by the Cephalum as a computer assisting "mind". Perhaps love is one element of geometry of the "mind". And incestuous taboo may be another important element of it.

Incestuous taboo is not a direct opposite of love in the linear sense. It only opposes Love with certain specified objects and in certain specified forms of expression. Our biological organs, save the "mind", may not be able to recognize the taboo -- in fact Oedipus could not recognize his mother in the woman he married. This is a social-cultural phenomenon and, as such, artificial. Love as we recognize is not natural, nor purely biological. There are certain physical and biological bases and tendencies, but they do not dictate deterministically what we can do, feel, or think.

The Bible, for example, says "Love Thy Neighbor" on the one hand, and "Thou shall not covet Thy Neighbor's Wife" on the other hand. If we are logical we might say the Bible allows us to covet our neighbor's husband. Or we might interpret the Bible as commending a certain homosexual relation.

Of course, here I am deliberately sacrilegious in playing with logic. But I dare to suggest the interpretations of the moral commands, for they are sexual taboos imposed on love. And there would likely be some political, economical motivations or implications behind any taboos.

In cases like the Biblical metaphor of love we might consider social benefits, such as protection of private property right or prevention of communicable diseases. Marx contended that the family system is the prototype of "property" which acts as the production unit. And the Divisions of Labor started with distinctions of male and female roles in the production of children. Whether one agrees with Marx or not, discussion of Love soon gets into the social domain. Biology, or even Psychology, is then irrelevant. For the good of morals, politics, economy, or whatever we might say, we have to have civilized taboos against indiscriminate love. And in turn the taboos define what we recognize as Love, either in accordance with or against the taboos.

Monogamy may be good or bad. That matters little. It is one of those nominal values in our artificially, if not hypocritically, constructed mind. Society appears to be unaffected by practices of violation anyway. But there is an important consequence from the seemingly harmless exercise of our "Minds". That is, we accept social control of Love. A society can set up taboos against "love of the enemy", "love of undesirables", or "love of inferiors". We have many peculiar practices in this regard.

In Japan, only some 50 years ago, mothers were obliged to love, respect and honor the firstborn male child above and beyond her other children. Like in many other Western countries, her position in a family -- which is the "Property", the "Capital" -- was that of a slave laborer who produced offspring and reared them. Her love had to be properly channeled. In the U. S. the term "Nigger Lover" was a derogatory word only until recently. In Canada today, a "Commie Sympathizer" would not be considered to be a good Christian, although the "commie" might be the neighbor. If you are Polish, you ought not to love Russians. A Cuban girl who happens to love an American may be accused of "consorting with the enemy".

In business exchanges we supposedly do not mix love. Doctors should not love patients. Teachers have to avoid relationships which might be mis-identified as love. Military officers cannot talk of love in their line of duty. Bureaucrats are not permitted to consort with citizens. Political heads and Captains of industry are here to give orders, not to display love. Most institutions in our society are organized to carry on routine tasks and we refer to love only as deviations from mechanical routines.

It is not that love does not exist in our social organizations. On the contrary, at least the "fusing" kind of love that Sartre talked of in his Critique of Dialectical Reason, is essential for the existence of the organizations. But love as such is not admitted, not allowed to be recognized under ordinary circumstances. Love has to be hidden so that the order and edifices of the organizations can be maintained.

During the Industrial Revolution, peasants in England and Ireland were obviously not loved. Even Marx did not show too much love toward peasants, and distinguished industrial workers as the "Proletarians" would push progress ahead, overcoming the reactionary resistance of the peasants. The capitalists, of course, exploited the peasants, if they did not wish to kill them en masse like during the Great Famine of 1845-1847.

Due to such denial of love, we have an advanced technological civilization and the middle class triumphantly emerged and flourished. If people lived the Love Principle, like Ivan the Fool of Tolstoy did, like Christ and Buddha preached, or some of the Utopian Socialists recommended, we would not have this affluence we enjoy now. Not only that, we would not have developed science-technology, would not have achieved education of intellectual elites.

We of course today can point out that civilization as such is based on the subsidy of fossil energy resources we have been plundering. We have pollutions that threaten our lives, if we do not care about other life-forms and the environment. We have been escalating the Nuclear Arms Race as a logical consequence of the way we "progressed" and the neglect and exploitation of Love. But such is our "Intelligence".

A popular magazine "Psychology Today" (April '82) had an article on the differences between what "experts" and "laymen" think (value) of "intelligence". The article itself may not be of any significance, but it is interesting that the "laymen" apparently consider or value competence in social contexts, such as "accept others", "sensitive to other people's needs and desires", as the meaning of "Intelligence". The "experts" had no such notion in what they mean by "intelligence".

If one tries psychoanalysis on those psychologists who talk of intelligence, it is obvious that the professionals are conditioned by their training and by their political and economic interests. In most any profession, as Max Weber said, sorts of traits as "accept others", "sensitive to other people's needs and desires" are not only irrelevant to their professional competence, but also detriments, hindering their increase in prestige and income. Scientists are supposed not to be in love with people. There are more important things to do, if the scientists indulge in secret love affairs. Love does not bring professional advances or rewards to scientists.

Love of humanity, if we ever become conscious of it, has to be in violation of the general rules of conduct for economic, rational beings. Love is done in violation of taboos. Needless to say, not all taboos are irrational. On the contrary, most taboos are rational relative to the frame of references societies take for their operations. And, interestingly, taboos are often violated without substantial damage to society, as long as the violations are covered up.

What we perceive as the situation is more important than what we are actually doing. Without the nominal perception of the way we live together, we can hardly maintain social coherence. Thus we invent an intellectual picture of the way we manage to live in this world. The science of "Intelligence" is just an example. It is a part of the picture we have constructed.

If the Nuclear Holocaust comes, it is a necessary consequence of our efforts in developing and organizing an intelligence as such. I often wonder if Peace Research, even as a manifestation of the Love Principle, is not relative and depending upon the intelligence as such.

Here I like to believe in the dialectics of double negations. Perhaps the only humanly possible way to learn about Peace was through the mistakes. A. Eddington has said that Physics was a series of mistakes upon mistakes. Yet, we cannot deny that physics did learn something, if not of Nature then of the way we talk and think. We understand our mind a little better, thanks to the mistakes.

However the trouble is that in the realm of politics and economics, we have never acknowledged our mistakes. We have not learned from the Vietnam war, or the many, many wars before that. We have a notion of sovereignty which is a Neolithic heritage we got from ancient religious-political institutions. And the might of the country we associate ourselves with persists in our mind on the basis of our secret love for it. The love as such is one deformed by the taboos.

In comparison with our deformed practices of love, the kind of love preached by men like Wilhelm Reich appears innocent. I must confess that I do not understand the Orgone theory, let alone believe in it. But that does not say that the ordinary notions of love in our society make better sense.

If we do not like extreme expressions like those of Reich, we can look at notions like "Fraternity", "Solidarity". "Fraternity" was one of three ideals that the French Revolution talked about, along with "Liberty" and "Equality". In the course of revolutionary history however, only "Liberty" and "Equality" survived to our age. "Fraternity" was a pre-revolutionary ideal among French workers. But it was pushed aside in favor of the other two. The Declaration of Human Rights in 1789 talks of "property right" as a part of "liberty", but doesn't even mention the term "Fraternity". I do not know what has happened to "Fraternity", but reading Marx et al I sense that it was deemed utopian and "Unscientific", if not "Reactionary", and abandoned.

The term "Solidarity" appeared in the recent Poland crisis. The Russian translation of "Solidarity", ironically, would be "Soviet". And the "Soviet" is supposedly the supreme authority of the Communist State. But what is happening in Poland, and elsewhere, does not seem to have any relation to the term "Solidarity" nor "Soviet".

The Capitalist system is, of course, not a system based upon "Fraternity" or "Solidarity", nor for that matter "Brotherhood" or "Sisterhood".

Perhaps Marx was right in saying that, as long as the "State" exists, repression remains. The "State" as such is the embodiment of the Power Principle. And to this we might add that subjugation of Love under the Power Principle is the essence of our intelligence. However, we do not need to eliminate Power in the absolute sense. Instead of the Utopian ideal of the "stateless society", we might try a sensible balance. Perhaps, a little more recognition and respect for the Love Principle is all.

I shall not say any of these things are right or wrong. But if "Peace" has anything whatsoever to do with how we humans live together, the problems of Love have to be examined seriously.

5. Practice of Love and Implications to Peace

Love is not easily controlled nor contrived. One cannot reasonably expect a love response from the other side of interactions. Love, in a dynamical sense, is remarkably stable, or rather persistent. It tolerates disturbances, interferences, environmental fluctuations, and even abuses. But to initiate someone or some group of people into love dynamics is difficult, and even if it is successful, love responses are unpredictable. And it is often noted within our experiences that one might fall out of love without visible cause or on account of some silly little thing, just like falling in love. Another thing about love is that it is a mutual affair, though it may not exactly be equal in dependency, effort, and appreciation.

These are characteristics of Love. One may look at love from an "Engineering" point of view and analyze it in terms of physics. But that does not make the engineer or physicist become the creator or controller of love. We may appreciate and understand love. However, unlike other objects of knowledge, we are not likely to manufacture a Love Bomb for national defense purposes. This is an interesting contrast to things which our science has claimed to be knowledgeable about. At last we have found something safe to study without worrying if there can be abuse of knowledge, of pollution-entropy increase. The knowledge of Love, if there was any, would not drive us out of the Garden of Eden. In fact I hope for the opposite, though I like to stick to science and refrain from Utopian speculations.

Despite the unpredictability and uncontrollability of love, however, there are a few clues to the Art of Love and there seem to be ways to encourage Love. Or rather it appears that human beings are born lovers -- "genetically programmed to be lovers", as hard-nosed scientists might say -- , and unless otherwise educated or conditioned, they keep on learning the art of loving. We can try to remove hindrances, suppressions and inhibitions. If necessary, we might even try un-educating ourselves in order to regain love.

The basic step in love, despite all its complexities, appears to be very simple. That is, we can start with close contact. In fact, most people know this and avoid close contact. Something happens to our perception or mode of thinking-feeling operation when someone or something comes closer than a certain distance so that our visual field is fully occupied. I even feel this in reading books, in contrast to listening to someone across a table. Most of the time I am unconscious of it, however, occasionally I notice a funny feeling that "I" am not in my brain but in the book.

In the "contact" situation, as the prototype of love, we note that our sense of self becomes confused. I do not think it has to do with "altruistic" motivation as much as it has to do with difficulties of maintaining the metaphor of "Self". In a too close distance we face the epistemological problem of where the region of "I" starts and where the "other" starts. We cut our fingernails and hair quite often, but in ordinary circumstances we do not feel or think that our "I" is diminishing. We eat food, but we cannot tell when and where the food becomes part of the "I". In short, we do not

really know what "I" is, except for the spatial region around our body. If anything comes into the volume of space conceptually marked as "I", we have trouble maintaining the metaphor of "I".

Of course the volume of space demarcated as "I" is perceptual. It can be large or small. We do not carry a hard shell around us. And senses like "Privacy" may even be "psychological" or "intellectual" constructions with no reference to physical space.

Our sense of kinship and family is generated in close and frequent contact, but the perceptual "space" is not a physical one. We note intermixing of time dimension in our perception of relations in this regard. The sense of family originates in close physical proximity in which the members of the family live. However, this sense can be extended in physical space on the strength of perceptual juxtaposition in significances. A dog can be like a member of a family, but sons and daughters who live in far away places are considered to be more important in value. To an extent, this might be due to historical conditioning and social construction of values. Or more immediately, the sense may depend on memory, if not nostalgia. But we do note that the sense of "living together" can be extended despite physical distance and remoteness in time.

There the sense of "I" is extended to include family. It is, perhaps, because the "I" in that context is the sum total of experiences which necessarily include interactions. "I" cannot be purely "individual" like atoms, independent in isolation and be constant in environment.

Interestingly however, in terms of intellectualization, and in particular in legalistic contexts, we have the notion that family as an integrated entity has a will. It is treated as a "person", that is a metaphorical projection of "I" to somewhat larger entities. Business corporations are also this kind of pseudo-"I" and are often treated as "persons". There also appears the sense of "Property". The "property" belongs to families or other pseudo-"I". And it is the "property" that identifies unity in these cases. Just as much as the body was the visible identity of "I", the property is the identity of the pseudo-"I". It is not by accident that the French Revolutionaries insisted on Property Rights -- against frequent arbitrary confiscation by the ruler of the state -- as the central item in their concept of Justice and Liberty. I think these revolutionaries were not ignorant of the fact that Justice and Liberty are abstract concepts. But humans need some media to express concepts, even if the visible objects are symbolic. Without something to relate the sense of "I" to, there can be no "I". Unfortunately, that suited the Capitalism rising at the time, and the ideal of "Fraternity" without having any visible medium of expression withered. Marx's analysis of "Family and Property" was significant, but it appears to have missed the pseudo-"I" aspect of the mechanism.

The next step of extending the "I" on a social scale is that of community -- tribe, village, city, artisan guild, religious communion --. It may be noted that before the Industrial Revolution, peasants were "communist", even before the term was invented in the political

vocabulary, and lived off "commons". The "Commons" were exterminated by the Enclosure. For Capitalism needed "private property" to dominate the economy. Historically speaking, the notion and practice of "Family" as the property owner came after "community". This is an interesting example of how an economic system as an expression of the form of people's relations to each other affects the way people develop the sense of "Pseudo-I", or rather "We". The "We" is the way people organize activities on a social scale, Just as "I" was. Of course the social interactions are diverse and often get into conflicts, if not exploitation and suppression by one part against another. Thus the notion of "We" is difficult. It used to be that only the Sovereign King was entitled to speak in terms of "We". The rest of "we" were not amused by the peculiar language protocol, but it shows that words and consequently concepts are politico-economic, even at the simple level of saying "we".

The difficulty of "I" also appears in national boundaries. We do not really know what "my country" is, due to the same epistemological troubles. This, however, does not prevent us from entertaining quite seriously the metaphor of "I" and "my country". Roughly speaking, we can take a geographical territory as "My Country". It is a good approximation, though not absolutely definable. And our international relations are interpreted on this kind of geometry and we organize our actions based upon the metaphor mental image. As long as everybody is far away, this meta-geometry is practical enough. But unfortunately, our interdependency brings in contact. Then we have trouble in maintaining the mental image of the individual "Self" and the independent "sovereign Country".

Because of this incompetency of our mental image, we on the one hand avoid "close contact" with others at a personal level, but we insist on "national territory" as a protective shell.

We also have metaphors like "Race". Sometimes the image of "Race" is mixed up with "nationality", or "citizenship of a country". "American", "Russian", etc. is sometimes used as if they were races i.e. Russian attitude about Jews" etc. But to be fair we have to admit the mix-ups are natural. After all, who are the "Jewish", or "Spanish"? What is "Japanese"? We may trace certain genetic traits or bloodlines in history and get to certain geographical regions as the origin of the name-labels. But tracing semantic usage in etymology does not tell what "race" is or what happened to "race" in the meantime, if it has to do with biology. For that matter, we are all monkeys, of some varieties. "Americans and British" were right in calling Japanese "yellow monkeys", except they forgot that Dr. Darwin, the eminent scientist of whom they are very proud, told them a century before that they themselves were some kind of monkeys.

In the face of biological diversities and complexities, it is ridiculous to maintain metaphors like "Race". Yet, we even have to fight wars on the meta-physical basis between people like "Arabs" and "Jews". We even have linguistic trouble like "Anti-Semitism among Arabs", although anti-Arab and anti-Jew sentiments artificially created on the metaphysics of "race" do hurt people now living in that particular region of the world.

In one sense the notion of "We" is beautiful. It lets many people overcome the narrow, self-centered life and makes them somewhat competent to live together. But on the other hand, the notion of "We" is just as difficult as the notion of "I" and when the notion is perverted, "we" as such lead people into bloody fights, not mentioning the difficulties it creates in social interactions.

The inescapable fact is that neither "I" nor "We" is "Independent". They exist on mutual interactions and mutual dependency. However undesirable we think it is, we cannot eliminate interactions. The only thing we can do is to try to make the interactions as one-sided as possible. We have to have relations, thus we try to the best of our intelligence to make the relations un-symmetric, unequal, less mutual as we can manage. It is a simple mechanical principal that in an equal, mutual, two-way flow of energy there can be no "Power".

Even in "knowing", modern physics tells us that it is a mutual interaction between the "knower" and the "known". But the trick is to minimize the effect on the "knower" and maximize it on the "known". That is where the "Power of Knowledge" is generated. Nature tends to follow the Love Principle of mutuality. But our Science has to try to cheat Nature into asymmetric relations. In the contexts of social relations the ruling class has to maintain differentials and gradients for its existence.

The maintenance of asymmetric relations requires a great deal of effort and restrictions and inhibitions of Liberty for both sides of the relations. We construct institutions, including the sense of Justice, to protect the inequality. Only in love relations we forego our intellectual preoccupation with denying mutualness. We do then enjoy the liberty and natural justice as well as Love itself. There we find a foundation of Peace -- Liberty, Equality and Love --.

Viewed with this projection, our effort towards Peace is the effort to extend the scope of the primordial "contactual love" to a social scale and encompass the whole world. And if this conjecture is plausible, we have a lot to learn from children in the way they find playmates.

It is not that the formal contractual ways to make international organizations are invalid, or that the scientific efforts to convince and assist governmental structures for Peace are unimportant. But there is another dimension to Peace, which is not just controlling violence or managing conflicts. For humanity to learn Love, the impending Nuclear Holocaust has to be prevented. While spending on huge armaments, it is difficult to encourage understanding among nations. Thus we have to de-escalate the arms race. Conflicts in many regions of the world have to be managed. Starving children have to be fed. Those tasks are urgent. Yet even those tasks would be helped by the understanding of Love and can be used for learning love above and beyond the Hollywood movie romances; there seems to be no other basis for Peace than Love.

6. In Summary

- I. Love is discussed here as a negation or alternative to Power. And Power is taken as a term in the language of Newtonian Mechanics. Thus, Love appears here as a deviation from Newtonian World View.
 - I.1. The formula "Double Negative = Affirmative" is used, however, as a provisional means. (The principle of Exclusion of the middle from the Classical Logic may not be valid. However, I have not come to the logic of Love in this paper.)
 - I.2. There are other approaches; Love from ethical, religious, or spiritual side (young Hegel, Feuerbach, Theology of Liberation), and Love from poetical side.
- II. There is one advantage in trying Newtonian mechanics of Love. Newtonian mechanics is the dominant language of intellectualization today and understood well. Therefore defects become easily visible.
 - II.1. As in the case of geometries and various mechanics, terms such as "point", "line", "force", "energy", "power", and "love" and "undefined" terms. Terms (notions, concepts, ideals, metaphors) acquire and develop-evolve their "meanings" in their usages, applications in practices, and in feedback loops in historical time-dimension.
 - II.2. As in the cases of geometries and various mechanics, theoretical structure (linguistic systems) are neither true nor false. They provide organization for talking and thinking. The power-centered theorizations, ideologies, political-economical rationality are just as metaphysical (metaphorical) as love-centered ones. This paper is a part of comparative study of alternatives.

III. The Power concept in this paper is that of the Bourgeoisie-Technological society, including both the Capitalist and the Communist versions. (For this concept of power, see C.B. MacPherson Democratic Theory: Essays in Retrieval Oxford U. Press 1923.)

III.1. In the Ideals of the Bourgeoisie Revolution: Liberty, Equality and Fraternity, the last one was lost in the historical development thereafter. I notice Liberty and Equality are incorporated in Power centered sense of political economy. But the Fraternity (Love) is not. I sense a prejudice against Love and suspect the root of the troubles of the Bourgeoisie-Technological society, including our logic of power which leads us to Nuclear War.

III.2. The concept (notion, metaphor) of "I" (individual, self ego) in the Bourgeoisie-Technological society of ours is an "Atomistic" one. It is a possible construction (theorization), provided interactions (mutual dependence, love dynamics) are negligible or neglected.

Newtonian mechanics, which we take as the basic model of "science", if not intellectualizations in general, was developed to deal with simple situations with weak interactions. That is, we are incompetent to think and talk of Love.

III.3. The metaphor of "I" gets into troubles in Love affairs. We fear our realization of our own incompetence. Thus we defend "I" by force.

The more fearful we are, the stronger we cling to our ego. Our intelligence, rationality, and their language are developed within this context, by and large.

- III.4. If natural fears were not strong enough, we can add social-political ones like "Scarcity", which drive us into a frenzy of wanting to have things. (As to the development of the notion of "Property Right", see MacPherson, for example. Marx, Proudhon et al talked about this at length.) The notion of Power of ours is from such an environment --- and the environment as such is made out of such a notion, perception, in a vicious circle type of dynamics ---.
- IV. Love stands in a different dimension from Fear. It does not require having a strong concern for Ego. It is not in defense of "I" or "Private Property". It does not appeal to "Force", "Power", "Coercion" and not even "Duty", "Obligation", "Contract", "Right" etc. of the power centered social mechanics.
- IV.1. It is interesting to ask an inverse question. Namely, how is it possible at all to lose the sense of "I", (individual, atom, Ego) that we have constructed with enormous efforts in our history? Love simply wipes it off from our mind-intellect. How come we do not fear this awesome disaster of Love which annihilates "I"s into chaos? Many philosophers said that Love is irrational. Yet we fall. Are we stupid or crazy? Moreover, we can observe at least the "Fusing" kind of love in most social organizations. (See J.P. Sartre Critique of Dialectical Reason. NBL. 1976. For "Fusing" kind of Love.)

- IV.2. My contention is that Love is not irrational, but our "rationality" is incompetent. Our intellectual vanity makes us say, whenever we fail, the object projected is irrational. It is we who love and it is we who fail to understand what we are doing. (Love is not an "object", though the modern physics would say that what are so-called "objects" are symbols, manifestations of dynamical processes. Thus we need no "objective" existence of Love to be victimized or to enjoy it.)
- IV.3. Love is needed for the making of social organizations. Nationhood is impossible without some feeling of love, though it need not take extreme expressions like "Nationalism" or "Patriotism". Wars would be impossible, in the scale by which we recognize wars, without the cooperation of millions of people. Nuclear Bombs could not have been produced without some love to maintain coherence of organized efforts. If we do not expect love, however perverted and exploited, in a Nationhood, we would not demand that the Sovereignty act to protect our private properties, let alone fight wars on behalf of our interests, at great costs to the nationhood.
- IV.4. Therefore, we must understand Love, either in a positive or negative sense. To say it is irrational is of no help. Our intellectual vanity may need defense, but our life suffers more by the neglect. However, it seems that we have to construct alternative geometries-dynamics to deal with Love, which appears not to be easy.

IV.5. It is instructive to look at the biology of Sex. Biologists today say that Sex is disadvantageous to the "Survival of the Fittest". A-sexual reproduction is twice more efficient than the bi-sexual reproduction. It puzzles the biologists why and how the majority of life forms adapted bi-sexual reproduction in their evolution.

The Darwin notion of the egoistic individual gene struggling in an adversary environment appears now to be rapidly becoming a superstition, a bigoted ideology, in biology today. "Competition in power struggle" does not seem to hold water.

The biologists suggest that survival concerns the "Gene Pool", rather than individual gene. However, even with this socialism of genes, the phenomenon of Sex is not understandable. Perhaps, the whole eco-system has to be considered in the Evolution, though even then the puzzle of Sex may not be solved.

At any rate, biological studies do not support our assumption of the "aggressive" nature of life forms. Rather, Love is more fundamental for life.

(See W.S. Moor et al. "Sex in Random Environment" Journal of Theoretical Biology vol. 92. pg. 301. 1981. And references therein. It seems that this line of studies was initiated by J. Maynard-Smith "What Use is Sex? J. Theor. Bio. Vol. 30. Pg. 319. 1971.)

V. Our notions of "I" and "Nation" are analogous. The analogy comes, not as a realization of the similarity, but because we, as many "I"'s, demand the nation to be in conformity with our notion of "I".

"I" is the embodiment of "sovereign will" (B. Russell talked about this in his book Power), conceived in a strong perspective of "adversary", "hostile" environment and political economy. In the bourgeoisie system of ours, the "I" is the exclusive owner of properties, by means of which the sovereign will try its best to extract satisfaction. To this "I", the other "I"s are instruments for attaining what this "I" desires. "Power" notion conceived in such a context is that of "ability to secure the conformity between the will of one man and the acts of other men" (James Mill, quoted by MacPherson).

An atomistic aggregate of such "I"s may concede to the advantages and enter a collective contractual arrangement in which they accept a certain set of restrictions. But the "collective" of "I"s as a whole would then be obliged to pursue what is yielded by the "I"s. The "Sovereignty" of a nation, having a "Will", exclusive properties (territory) and seeking the maximum power is made by the contract (supported in the metaphor).

Despite it being a social entity, the egoism conceived in the adversary perception of the world persists in the notion (metaphor) of Nation and it is demanded to act accordingly.

- V.1. If the above contention offers even the faintest clue to the troubles of our society and particularly to the problem of Nuclear Arms Race, phenomena of Love appear to be very interesting subjects of studies for Peace.
- V.2. Love phenomena do exist and function even under the dominance of Power ideology-intellectualizations. Whether humans are stupid or crazy, they do fall in love, despite good advice by the "rationality".

We can take advantage of such human nature for Peace. Or we can construct a dynamics of love and replace the obsolete "rationality" based on power. "Force" is not the only possible term in description of motion. Love as a term in dynamics may not lead to "Causality" (and Determinism) and as such it appears wishy-washy. But Newtonian "Force" is not "Cause" either, if one examines the mechanics critically. The term "Force" only provides animated illusion of Causality and hence "order". It is largely psychotherapeutic by linguistic symbolisms. In view of the impressive effects of Newtonian metaphors, our Love dynamics need not be any more "scientific" than Newtonian Mechanics. Rather, we can use Topological languages, as Poincare et al did. This allows us "poetical license" and makes our task a bit easier.

- VI. In Peace research, Love appears indispensable and inevitable. It seems to provide convenience for s integrating various studies.

S.K.