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The Urge Theory of Emotion and Social Interaction*

[English Version]

Chapter 6. The Humankind as Active Copers
Chapter 7. Human Societies and Human Values

Masanao Toda

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* This report contains manuscripts for the last two chapters of my book, and will be the last of the series of Technical Reports distributed under the title. Revised version of each chapter may be accessed at "http://urge.cogsci.sccs.chukyo-u.ac.jp/~toda" where it will be posted when finished. The appendix attached at the end of the text summarizes some basic notions of the urge theory introduced in earlier chapters.

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Chapter 6. THE HUMANKIND AS ACTIVE COPERS

6.1 Active and passive coping styles

> Believing wouldn't make it happen;
> but not believing would make it not
> happen. *Everything starts as some-*
> *body's daydream.*
> (Excerpt from a novel by Niven,
> Pournelle, & Flynn)

The beginning

About four million years ago, new primate species had emerged somewhere in East Africa who later evolved into the modern humans. The early humans were little different from ancestral ape species as their close kin, except that they were full time bipedal with a slightly larger brain and slightly more dexterous hands than the latter. Their overall features, however, were not much impressive -- looked almost like another species of apes and behaved like one. Besides their physical features, there was just one telling difference between the early hominid, *Australopithecus afarencis*, and the apes of the time, and that was about where they preferred to live. The early hominid prevalently lived at the border of savanna and forest, occasionally venturing into plains in contrast to the other ape species who usually stuck to the traditional forest habitat of theirs. Perhaps it was not by any deliberate choice that the early hominid lived near the edge of forests. It is hypothesized that a rather long lasting climatic changes toward relative dryness had taken place in their homeland causing forests to shrink, and while other ape species moved with the retreating forests, the ancestral hominid kept staying in their original habitat in spite of the continual degradation of living conditions there.

The reason for their choice of staying in forest-savanna border might be ascribed to their bipedalism which should have been more useful on the plains rather than in the forests. Note, however, that this relative benefit of hominid' bipedalism on the plains should have hardly justified their boldly venturing into the plains which would have contained quite a few formidable predators who could easily outrun the slow hominid. Festinger makes convincing arguments in his book '*The Human Legacy*' (1983)[1] on how the slow hominid could have overcame this handicap by the benefit accruing from the liberation of their forelimbs, or arms with their dexterous hands, from their former locomotive duties. The freed pair of arms turned out later to be a great asset for creating the humankind as users of tools, but they could have been more an encumbrance than a boon for the survival of the early hominid. Still, these people did survive, most likely as cunning scavengers, foraging in savannas but keeping close to the border of a forest so that they could climb trees by using arms when chased by predators. They would also have operated in small groups, each of whom could issue a warning call, and defended themselves cooperatively when necessary.

Even though this is all a guesswork, the difference is interesting and suggestive in the ways the

[1] Much of my following arguments owe this excellent, and probably the last, work of Festinger's, especially because Festinger, as a well-known social psychologist, analyzed and interpreted the evidence of early human activities from the viewpoint of why they did these things under what conditions.

respective ancestors of the current humans and of the current apes coped with changing environmental conditions. Instead of choosing the easy coping strategy employed by apes of retreating with the retreating forests, the ancestral humans apparently chose to stay in the same place by altering their life style to suit the changing environmental conditions. This seems to suggest that these early hominid species already possessed some of the unique human characteristics, *i.e.*, the preference of meeting environmental challenges rather squarely than evading them. Note that this adventurous coping strategy would inevitably increase the selection pressure imposed by the environment, implying that special evolutionary favors would have been given to any new features in biological hardware and software that increased the species' survival edge in the harsh environment. There were three such features whose functions have undergone steady fortification during the periods of the succeeding hominid evolution: they were the brain, the hands, and the vocal chords.

After Australopithecus afarencis came a few species of Australopithcines, followed by *Homo habilis*, a species emerged around 1.5 million years ago who prospered and expanded its habitats to include east Africa. Homo habilis was succeeded by *Homo erectus* around 1.2 million years ago, and then came about 3 hundred thousand years ago *Homo sapience neanderthalensis*, who were apparently gradually replaced by *Homo sapience sapience*, that means us, who entered into the global scene around one hundred thousand years ago.[2]

The development of manual dexterity is obviously the cause that turned having free arms into a real advantage, more than demonstrated later by the fabrication of variety of tools. To possess a high capacity vocal chords provided the foundation for development of advanced languages, which not only enormously enriched the modes of coalitional cooperation through efficient communication, but also served as elaborate tools for thinking. And, needless to say, the enlarged brain was crucial for everything the humans did, and are still doing. The brain size had kept increasing from the estimated 400cc of Australopithecus afarencis, only marginally larger than the chimpanzee's, to a doubled size of 850cc at the time of Homo erectus. It was again nearly doubled by Homo sapience sapience whose average is about 1400cc. Note that bipedalism eventually paid off in this enlargement of the human brain as the erect posture was certainly convenient for supporting a heavier brain.

The physical features, or the biological hardware, are not all that counts in the hominid evolution. Advances in hardware mean little if they are not accompanied by matching advances in the biological software. Although biological software does not leave fossils behind, the evidence on the evolution of biological hardware is enough to make us raise fundamental questions about the nature of the corresponding evolution in the matching biological software on each stage of its development.

Take, for instance, the development of the manual dexterity. It had given the humans a great survival edge as tool users, which eventually culminated in the form of the technological civilization which only humankind as an animal species could have created. This then gives rise to at least two fundamental questions: First, why any other species, especially other ape species with manual dexterity of a fairly high level had not taken a similar evolutionary course if manual dexterity is such a great source of survival edge? The second question is about the nature of 'tools' in general. Exactly in what way does using tools contribute to the survival of a species?

The same types of questions may be raised with the development of advanced vocal chords. Why chimpanzees have not evolved it as the hominid did, and profited from its outcomes, languages and all that,

[2] There were naturally overlaps between old and new species, and there always is a wide margin of uncertainty about archeological datings.

notwithstanding their sharing of about 99% of the human genes? The direction of causality, however, is taken in reverse in this kind of arguments. In the first place, they had effectively chosen *not* to evolve advanced vocal chords because they had no need of them. Their ancestors chosen not to expose themselves to as strong a selection pressure as the hominid ancestors did, most likely because they chose an easier, or a cleverer, solution for coping with the changing climate; they simply followed the retreating forests, where safety and food were both abound. Not that chimpanzees were exceptional in making that choice; it was our ancestors who behaved queerly, by sticking to the changing environment and exposed themselves to a stronger selection pressure. If these conjectures have some ground, then this might be taken as a good example of how a small difference in the *original choice* could bring about a mountain of differences in later outcomes. To look a little more deeply into the issue, however, the difference is hardly a small one, since the choices represent a completely opposite pair of *coping strategies*, one of which was employed by the humans and the other practically by all other animal species. [3]

Coming back to the issue of the vocal chords, we can infer the reason why the selection pressure on this dimension was especially strong with early humans. The physically weak humans could have successfully contended with more powerful predators in the plains only by means of efficient coalitional cooperation, and the vocal communication was indispensable for ensuring flexible coalitional cooperation. I have already discussed in previous chapters how strong is the dedication of the urge system to the creation and the maintenance of workable natural coalitions. These previous arguments on coalitional cooperation will be further extended in this chapter to include artificial coalitions, usually much larger than natural coalitions, with which human communities and societies of later times are formed and run.

Since these issues and other related ones are closely knit with each other, the rest of this chapter will be devoted to presenting some new concepts that are useful in unraveling the nature of the human mental software as an outcome, and sometimes as a cause, of the very idiosyncratic evolution that has come to create the modern humans and their civilization.

Active and passive coping strategies

Let me now classify coping strategies employed by animal species, especially when the environmental conditions have turned a little sour, into the following two categories: the species with the *active coping strategy* and the species with the *passive coping strategy*. The species of the active coping strategy, of which the hominid species are perhaps the only members, are those whose members will try to actively improve the unfavorable conditions by altering the relations between themselves and the environment, by doing something new and untried, or even *controlling* the unfavorable environment if that is deemed possible. Before discussing the active coping strategy in more detail, first let me consider what the passive coping strategy is like.

For a species to employ a passive coping strategy basically implies that each member of such a species, hereafter be referred to as a *passive coper*, will take both the environmental conditions and its response to them as given and unalterable. Therefore, passive copers will practically do nothing out of the species-specific repertoire of actions, as long as the environment conditions remain stable and generally favorable to their mode of living. When the environmental conditions begin to worsen, the first thing they will do is to try to migrate to a new habitat with better conditions, and if no such places are found, they will

[3] I am not wagering the validity of my following arguments on coping strategies on this rather flimsy speculative evidence of the original choice. Even so, this is too pat an example for my arguments to miss entirely.

just endure the bad conditions as long as they can.

What constitute the environmental conditions of a habitat for a species are not just climatic and other such natural variables that characterize the habitat. Large contributions to the conditions will also be made by other cohabitants of the habitat, animals and plants, who jointly form an ecosystem through constant interactions among them. When a new species happens to migrate into an ecosystem and thereby changes the conditions, the older denizens of the ecosystem, assuming they are all passive copers, will try to readjust to the new conditions by utilizing some of their species-specific mode of activities. This process of readjustment will take some time, as some of the species may find the conditions intolerable and choose to migrate out, thus changing the conditions again. However, in most cases, a sort of an equilibrium will be reached by the ecosystem within which the selection pressures for most of the species would be kept rather low. [4]

Once such an equilibrium is achieved by an ecosystem consisting solely with passive coper species, no significant changes may be seen in the state of affairs within the ecosystem; even evolution may virtually be at a standstill there if selection pressures for the species are really minimized. And as a result this may continue for a really long time as long as the values of the natural environmental parameters stay within admissible limits, diminishing also the probability of any significant evolutionary change taking place among them. Such halcyon days, however, will eventually come to an end, even after millions of years, when some really untoward things happen to the ecosystem, like the intrusion of a powerful predator, or of active copers like the hominid, or more likely, a steady change in some natural conditions like climate, punctuating the equilibrium at the last.

A climatic change will first hit plants in the ecosystem, many of them, as epitomes of passive copers without mobility, will perish and may be replaced by new plant species, thus disrupting the traditional food-chain maintained in the ecosystem. Many of the animal species would migrate to more hospitable regions like when the ancestral chimpanzees followed the retreating forest. If that option is not open, they would have a little choice but wait out for a rescue to come -- rescue provided by biological evolution. Note that the worsened environmental conditions inexorably increases selection pressure, favoring mutated offsprings that suits the new conditions better. There is no surety, however, that such an evolution always comes to rescue, as mutation is a fickle entity apparently dependent upon a random process. So some species will perish without evolutional rescue, and some will survive in evolved forms one way or another, and the survivors would then start to establish another equilibrium, in line with the spirit of the punctuated equilibrium theory of Gould's.

Note that all this is for an ecosystem consisting entirely of passive coper species. An ecosystem that contains an active coper species like the humans would never reach an equilibrium, as they actively disturb environmental conditions. As history tells us, many animal species have already been brought to extinction because of the human interventions, and biological evolution can offer no help there since the changes introduced by active copers like the humans are generally too quick for the process of biological evolution to catch up.

Now let me turn to the characteristics of active copers, *i.e.*, the humans. As there is nothing better represent the characteristics of the human as active copers than their prodigal use of artificial *tools*, I shall begin my arguments with a conceptual analysis of what indeed the 'tools' are.

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[4] The nature of the equilibrium will be a dynamic one that allows for some ecosystem parameter values to oscillate, parameters such as the populations of the constituent species.

The role of tools in implementing the active coping strategy

The user of tools is not limited to the humans. Some animals use artificially constructed objects for certain purposes. Many species of birds, for instance, construct their nests using strips of various materials, but that fact does not make birds as active copers since all individual birds make their nests in the species-specific way, implying that the nest making is a part of their genetic programming.

Some of the tool-using examples of animals, however, are not ascribed to genetic programming. Though rare, their are some animals, especially birds like crows, and primates like the old world monkeys and apes, show ingenuity in discovering new ways of using various objects as tools to achieve their goals. Different crow species in the U.S. and in Japan, apparently independently, have discovered how to use passing cars as nutcrackers. They drop walnuts on streets and wait for a car to pass over them and crack their shells (Grobecker & Pietsch, 1978; Nihei, 1995). It is quite likely that some crows observed a walnut accidentally dropped on a street being cracked by a passing car. But there is a mountain of differences between just observing a certain event and inventing to use the causal relations inherent in the observed event for one's own purposes; the latter requires a *thinking mind* behind it. What is meant by this 'thinking mind' is a biological *meta-tool* that may show a way to create actual tools according to the information acquired by the owner of the mind. A similar thinking mind should also be assumed with chimpanzees who are known to be clever users of tools, making use of almost anything available for various purposes of their own (Goodall, 1986). Chimpanzees are intelligent enough to learn to comprehend simple natural language expressions, and are also capable of expressing their wishes by composing sentences over a special keyboard in the language they are taught to use (Rumbaugh, *et al.*, 1996). So it is not preposterous to assume that their mind works fairly like the human mind. What is missing in the ape minds that prevents them from becoming active copers like the humans may be just the *perseverance* which the human mind is richly endowed with, since perseverance is an indispensable trait for a mind to be able to create a 'critical mass' of inventiveness that sets off an artificial evolution. As will be discussed below, the humans make tools solely for making other tools, and once enough number of such tool-making tools are accumulated, there will be a chain reaction producing an explosive number of tools, effectively forming a 'world of tools' which is effective enough to alter the given environmental conditions.

As we, the modern humans, are living in the midst of this artificial world of tools, it may be instructive for gaining insight about what tools really are and how they operate to reflect upon the relationships between we and the tools we use.

Let me pose here for my argument a working definition for what a tool is: Any object is to be regarded as a tool for an agent if a certain deliberate manipulation of the object by the agent exerts an influence upon worldly events in a way to bring a benefit to the agent. Note that this working definition include does tools that are not material objects, though I start my arguments with material tools as they are easier to discuss.

Material tools may be roughly classified into two categories: the *consumable* tools and the *catalyzer* tools. Consumable tools are usually just special materials such as explosives or soaps, say, some portion of which is irrevocably consumed under use, as the use of such a tool means to let the tool directly interact with the worldly target. On the other hand, catalyzer tools stay essentially intact even after their use, as they just channel the agent's control action to the target in proper ways, without themselves being affected through the process. The material tools usually called instruments or machines are good examples of catalyzer tools. They may be affected somewhat through the process -- a knife blade will get dull and a

machine will wear down by repeated use, but that is just the entropic decay, and has nothing to do with their nature as catalyzer tools.

There are also a large variety of non-material tools that fit the above working definition of tools, like language, music, knowledge, societal systems, and so on, and they are all catalyzer tools as non-material tools are basically information systems in a broad sense of the term, and information is not consumable goods. Some of these non-material tools are *meta-tools*, *i.e.*, tools to make tools. Take a language, for instance. One uses language to form massages, and a message is a tool one uses for the purpose of influencing the listener's state of mind. Indeed, these tools and meta-tools, both material and non-material, play enormously important roles especially in the very complex ways of lives the contemporary humans are spending, even though we are seldom aware of how complex they are. Let me consider a snippet of a scene from someone's daily life just to glance at the complexity involved in the human-tools interactions taking place in the modern society.

Imagine that you have bought a model train kit as such is supposedly your hobby. The kit contains a brochure instructing you on how to assemble many small plastic and metal pieces contained in the kit into a working toy train system. The instruction brochure is a tool indispensable for you to figure out how to proceed in this assembling task. The instructions are written in a sequence of 'language' codes, and in your mind you have to possess the 'knowledge' as an information processing tool to decode these language codes properly. Just knowing the language, however, is not enough. In addition to your linguistic skill, you also have to have some 'common sense' and 'experience,' also as special type of knowledge, in order to figure out the meanings of the instructions, which are habitually ill-phrased. Then with the help of many 'diagrams' -- another kind of language -- which may be shown in the brochure, you may be able to start assembling. You will then find that the task requires some other consumable and catalytic material tools not included in the kit, such as 'hammers' and 'screwdrivers,' which you are supposed to possess. While you go at it, you may be often frustrated by intermediary outcomes your produced. You may try to brighten yourself up somewhat by whistling a 'tune,' another use of a non-material catalyzer tool created by some musician. Eventually, you may be able to complete the task -- and you had better be for not sallying the fame of your hominid ancestors who were renowned for their perseverance, whether the task they had at it was manufacturing stones tools or hunting a prey. When finally a toy train starts chugging along the toy rails aided by the consumable material tool called 'electricity.' Congratulations! You have achieved your goal of *actively* altering a part of your environment, *i.e.*, the basement of your house, to become more enjoyable than before.

Even a glance at such an insignificant activity of some modern person thus tells us how complex a world of tools we live in today. Indeed, most of the things a dweller of a modern city does daily must look typical manifestations of magic in the eyes of our ancient ancestors. When dusk falls, such a person presses a switch and bright lights will come on. It will not be long for a day to come when the person just mumbles "Lights!" and there will be lights, and this is exactly what a magician should do with his or her powerful incantation. Likewise, one may control the temperature of one's room, warmer or cooler as one wishes by just touching some buttons or dials -- a power even the great emperors of the past did not dream to possess. The day will come shortly when a person calls "Light!" and the lights will come on, which is exactly what once imagined a powerful magician would do with his magical invocation.

So that is the magnitude of things artificial evolution transformed the human environment, from the untempered wild environment to a world of virtual magicians who do their magical deeds by interacting with the world of tools with awesome complexity. Incredibly, this is the outcome (not even the terminal one at that) of artificial evolution touched off millions of years ago by some member of Genus Homo who

artificially produced a stone tool that was nearly indistinguishable from a natural stone. The process could be comprehended only by assuming that the humans have been endowed with some special urges, manifests of their nature as active copers, which have kept them pushing artificial evolution onward for so long a time that finally the process came to the stage of triggering a chain reaction, multiplying human tools millionfold, culminating in the world of tools as we see it today.

The control of fire and the creation of portable environment

Before going into this issue of urges responsible for active coping, let me first see the beginning stage of artificial evolution a little closely. The first evidence of primitive tools is dated around 2.6 million years ago whose creation is attributed to one of the early hominid species. It is quite remarkable that the styles of the oldest stone tools remained virtually unchanged for a very long time, about a million years. This is remarkable because making stone tools is certainly not programmed in human genes as birds nest-makings obviously are. So considering the obvious lack of any advance language in this stage of hominid evolution, the stability in the stone tool style only means that the hominid youngsters faithfully and stubbornly imitated the stone tool making of adults, and they kept at it generation after generation for a million years, without, most likely, ever losing the art. Although keeping a tradition strictly tends to be regarded as a liability, meaning a sad lack in imagination, it has to be emphasized that keeping what one has gained is the first step to make further advances.

So Homo habilis passed the first test for being active copers by showing their perseverance in preserving the art of their stone tools. Most likely by making a good use of these tools they expanded their habitats, and met new kinds of selection pressure, which eventually caused the birth of another dominant species, Homo erectus, at around 1.5 million years ago. Homo erectus innovated the art of stone tools, but after that they, too, just stayed with their style of stone tools.[5] They roamed the land broadly, reaching such far places like China and Java around one million years ago. The most daring venture Homo erectus went into, by which they proved themselves to be truly active copers, was the controlling of fire to use it as a tool for warming their bodies and cooking food, in which they had apparently succeeded already in half a million years ago (Festinger, 1983). Needless to point out, fire was a very potent tool as long as it was under control, but once gotten out of hand and turned into a wild fire, it could inflict awful damages upon one's fellows and habitat. So their first attempt to control fire from scratch must have been a stupendous endeavor, impossible to succeed as a one-person project. Most likely, the project would have taken generations of continual and fairly concerted efforts of fellow coalition members before some Homo erectus tribe acquired enough expertise in doing it. During that period, the participants of the project had to share the same goal, and had been undaunted by numerous failures and tragedies.[6]

The hominid, therefore, really revealed their nature as active copers by this accomplishment. Not only they were persistent in keeping the same goal for a very long time despite numerous frustrations (a good example of strong will discussed in Chapter 3), but also many of them presumably shared this same goal and cooperated. Furthermore, this accomplishment also demonstrated their inventiveness, an ability impossible to possess without the powers of thinking and imagination, together with the ability to learn from

[5] There were, however, two different traditions in stone tool technology developed by Homo erectus, one practiced in Africa and the other in other places.

[6] Needless to say, what has been recently discussed under the name of AIP (anticipatory interactive planning) was involved here as well (Goody, 1995).

failures. I shall attempt more in depth arguments on how they could have done these things without an advanced language in the next section of this chapter. (This supposition that Homo erectus did not possess an advanced language does not deny their use of vocal signals as many as their cooperative actions required.)

This control of fire by Homo erectus was indeed a giant, and very significant, stride forward in the advance of artificial evolution. Especially noteworthy effect this incident had upon the later development of artificial evolution seems to be that it opened a way to the technology of creating a *locally* comfortable environment even under uncomfortable external conditions. Homo erectus would have been able to put up some kind of wooden shelters as Festinger suggests, or some of them could have chosen to live in caves as did in China. In either case, the fire in hearth could have given them an enormous survival edge especially in the long and bitter winters in glacial ages.

The benefit accruing from the ability of creating a cozy local environment would have multiplied when these people became capable of recreating the same local conditions nearly anywhere, either by carrying live embers or by starting a new fire. This combination of portable fire and shelter-making capabilities is to be regarded as the beginning of what I call the *portable environment* technology. The skill of making wearable garments, whose origin being unknown, should be added to the list of incipient portable environment technology, as I suspect that it could have been the cause for the biological evolution to let the hominid shed most of their body hair, since with garments on the body hair would have been no more than a nuisance offering obnoxious vermins to nest there.

The portable environment technology has since occupied one of the most important domains in the human-instigated artificial evolution. It has provided the humans with an invaluable assistance in their settling on almost any part of the surface of Earth. And even this 'surface of Earth' restriction on human residence was finally removed in recent years by extreme refinements in the portable environment technology. Some humans have already set foot on the surface of Moon, and some stayed in Space for a prolonged period, neither of which would have been possible without the portable environment technology, for the external conditions in these places are the harshest imaginable for living beings.

That then brings us to the fundamental question: Why do we want to go to the Space or to the Moon? What kind of a survival edge does the Outer Space provide us with? Is that because the Earth turns out too small a space to accommodate the ever increasing human population? Note that overpopulation always has been a scourge to relatively prosperous animal species. As passive copers, the only means for them to avoid the trap of overpopulation is to curtail it, and each of them seems to possess some species-specific way for doing it. In contrast, the hominid has a definitely opposite course; instead of curtailing its population, they have shown a strong tendency to let the surplus population spill over to new lands, caring little about the conditions of these new places.

Apparently, the urges supporting the active coping strategy of the hominid are responsible in such human choice, giving those who join such expeditions a rather strong confidence, on the verge of overconfidence, to be able to cope with whatever conditions they meet in the new places. At this point I should reemphasize one of the points argued earlier, that the hidden purpose of the urge system contain no such humanistic concern as the welfare of the human species as a whole. No such concern was needed when the urge system evolved, whose maximum range of concern extended to just as far as the welfare of the group a person belongs to. So when a hominid group migrated to a new place, for whatever a reason, and found another hominid group already inhabiting it and reluctant to vacate it, the new arrivals would not have hesitated by occupying the place by force if the odds seemed favorable to them. Massacres would have been

rare in prehistoric times, however, even in such struggles, as there should have been ample place for the losing side to flee. Even so, it is also true that the hominid have no built-in inhibition against killing other humans; when it was necessary or convenient, they would have done it as killing is just one of the ways active coping, albeit a special one.

That is why the humans have been killing so often and so long by warring with each other in historic times, and they refrained from doing it in any major way only after the second World War, when they realized that any further fighting would be a suicide to themselves. Then thanks to the advancements in medicinal science and technology, and also to the ending of major wars whose incidental function was also population control, the human population on the Earth is rapidly growing unchecked. This naturally makes the urge system to goad us to find a new place, and where can we find such a new place beyond the overpopulated Earth except for the Outer Space? There our active coper spirit seems overconfident again, but we are just urged to try.

The major urges that make the humans active copers: curiosity and challenge

Now let me discuss individual urges that make the hominid real active copers. This is actually a difficult task as many of the hominid urges have their own contributions, large or small, either singly or jointly. However, I can count at least the major three with the largest contributions: the *curiosity* urge, the *challenge* urge, and the *dream-realization* urge. I shall discuss here the first two, leaving the last to the next section.

The curiosity urge is a close parallel to the hunger urge; the latter urges one to find food for the body to use, and the former information for the mind to use. As the hunger urge is comparatively stronger with animals whose body is large and activity intense, the same holds for curiosity: An animal species with a comparatively large brain and whose survival depends much on mental activities like planning is expected to have generally strong curiosity urge activities, as typically seen with the hominid. So when biological evolution increased the brain size of the hominid, their level of curiosity must have went up simultaneously, lest the unused brain should atrophy.

Still, one does not gobble information undiscriminatingly. Just as we are choosy about food, we are choosy about information. In the first place, the information has to be digestible by the mind, and has to have some material for the latter to chew on and benefit from. As for digestibility, the human mind seems far more versatile than the human stomach, especially since Homo sapience invented language, which made it enormously easy for the humans to acquire various information-processing meta-tools as mental skills through learning.

In fathoming the hidden purpose of the curiosity urge, we should first pay attention to the frequent, high intensity activation of the curiosity urge with young children. Since the young apes and monkeys show the same inclination, it is natural to assume that a young animal with a relatively large brain earnestly need information to grow up mentally, using it as materials to build a practical model of the surrounding world. This seemingly unsatiable hunger for knowledge in a young child, however, gradually abates as this personal world model takes on a definite shape, and in the adult stage, human individuals generally show large varieties in the way of the curiosity urge operation, reflecting disparate needs of the world models they developed. Some person may have acquired a model which self-monitoring (perhaps done unconsciously) tells one that the model is workable as far as the person's profession is concerned, but structurally weak and vulnerable. Such a person would then establish a very strong Festingerian defense system inoculating most

of potentially harmful information, and show curiosity only in the narrow band of information relevant to the person's profession. Some other may feel a strong need to expand the person's world model, and may keep activating a rather intense curiosity urge even as an adult, and the capacity of the human brain appears large enough to house even such a constantly expanding model.

So far, the parallelism between the curiosity and the hunger urge seems to hold fairly well. They differ, however, in one basic point that a food is consumed when eaten, but information is not. So while a hungry person is generally compelled to find the food for oneself, another activity plan is open to a curious person of waiting out for somebody else to find the things the person to curious to know. So there are familiar scenes in old stories of the people gathering around a traveler who just returned from his long journey to a far off land, and listening intently, with awe and suspicion, to the tales related by the traveler about the exotic and outrageous customs and deeds of far off people. In a very similar way, nowadays we watch moonscape or sickled Earth viewed from space through TV screens in fascination, and listen to astronauts commenting on them intently.

This is undoubtedly very economical, riskless way of obtaining information to sate one's curiosity at least partially. But it is to be noted that these curiosity-ridden bystanders are actually as important as travelers and explorers themselves in making the humans active copers. The explorers may be those breed of people with an intense curiosity and a high self-confidence, an ideal mix for making an explorer as a high risk taker. But who finance such expeditions which are very costly? They were often backed by another kind of high risk takers who wagered their money on the exotic objects these explorers will bring back from foreign lands, and such high values of these object were based on the people's love of rare and curious things. Note that the picture is not much different today. The general public does not oppose the Space Program being financed by their tax money despite its exorbitant cost mainly because many of them love to have the Space experience even second-handed.

It is true that there may also be many in the general public who are either indifferent, or critical to, the Space Program. Let me emphasize that they, the conservatives, too, are important for the human survival as active copers. To make the point clear, consider the following, far simpler but very likely, scene that would have taken place frequently in prehistoric times. In any hominid tribes there would have been a few hotheaded youngsters with intense curiosity urge. Suppose that one of such decided to go see what would be there in the forbidden region beyond the back of the village where it was believed that monsters lived who ate stray humans. Such adventurous youngster would have seldom returned to the village again to nobody's surprise. But what if the person returned and told others that the place was full of games and no monsters? Then there would be many volunteers following the person on his next trip, as their original fear being assuaged by the pioneer's report. But probably not all the members of the tribe. Some would have stoutly refused to believe the credibility of the report, and remained in the old place. This is obviously the correct solution for survival and expansion of a species. For a species to be active copers does not mean that all of its members are adventurous, that is too risky. The viability of an active coping species, *i.e.*, the hominid, can be guaranteed only by the species having three types of people, a few pioneers, a large number of followers who appreciate the works of the pioneers, and also a large number of conservatives who frown at pioneers and their followers.

The curiosity urge is not the only urge that may drive pioneers. They may do their pioneering works under various urges, under a sheer necessity for survival, or for obtaining fame and fortune as a successful pioneering endeavor generally acquires a high credit. But the most important among all the other urges that drive pioneers to their extremely hard work is the challenge urge, the urge that was introduced in the

previous chapter in relation to the typically human responses toward obstacles. The kind of obstacles I want to draw the reader's attention here in relation to the hominid active coping strategy are those which may better be called the *borderlines of the past human accomplishments*. Consider the zeal and rivalry some pioneers put into reaching the Poles of the Earth, or the top of the highest mountain in the world, Everest.

The question is: What makes these places so special? They are certainly no topographical obstacles for human traveling. There are neither any special treasures in these places, nor even any special information. North Pole is just a place of endless expansion of snow and ice, and by adding rocks and thin air you get the top of Everest. So even the pioneers themselves were hard put in answering questions about their motivations. The well- known "Because it's there," however, is not the correct answer, because the top of Everest had been there since the far geological past, and nobody ever wanted to go there in the past for that particular reason.

So it was only a recent thing that we began to notice that the top of Everest was there just beyond our reach. The explanation for this 'new realization' is closely related to what an obstacle is. An object is not an obstacle not for its own right, but it *becomes* an obstacles when a person realizes that it hampers the person from reaching something beyond it, like a wide river just shown up in front of a traveler in a foreign land whose traveling intention has been set toward the direction of the other side of the river. So the top of Everest or the Poles of Earth are just like this other side of the river for the traveler, whose existence has just brought to people's attention only because people themselves have come closer to these easily identifiable targets through their technological advances. Then the recognition of these targets as something that may barely lie within reach stirs up the challenge urge within the adventurous few, and people accolade those who succeeded in overcoming the obstacles that lied in between.

So we may conclude that the hidden purpose of the challenge urge is to expand territorial borders of the human domain in whatever dimensions, whether or not there is any immediate benefit from such an expansion. Indeed, what is the practical use of reducing the world record of running a hundred meters by a hundredth of a second? Nevertheless, runners compete for it, and people are crazy about the world record breaker. Note that this is also quite a recent thing, in the 20th Century, when we have become capable of measuring running speed with a fine accuracy. So the 20th Century is the remarkable period when people have become thinking themselves as almost a single group, only with respect to which a concept like the borderlines of the human past accomplishments, like the world records in sports, could be given a meaning. The challenge urge, however, should have existed since the beginning of hominid species, working just for the group one belongs to, gradually expanding the territories of human achievements as an outcome. In this sense, the challenge urge may be viewed as the exemplary of the human active coper spirit.

Artificial evolution and its acceleration

The most conspicuous aspect of the artificial evolution, in comparison to the biological evolution, is the high speed of the former, and it is not just a matter of speed, the process of artificial evolution is also accelerating (Toynbee, 1965; Toda, 1967, 1972). This accelerating nature of the artificial evolution will be made evident only by comparing the states of technology in a few different ages in the human history, *e.g.*, the times like five hundred thousand years BP (before present) when Homo habilis started to control fire, ten thousand years BP when the agricultural revolution took place, the time of industrial revolution only about two centuries ago, and today when the revolution of information technology is changing every facet of the human life. At the beginning, the time of controlling fire, the speed of the technological development was

almost crawling. Very gradually, the process has gained momentum, and now its accumulated speed is so fast that we have become perhaps the first breed of humans who shall die in an environment completely altered from the environment we were born into. Even though most of us have long lost the sense of wonder for rapid changes taking place in the world surrounding us, the very uncertainty we are feeling about our own near future is testimony enough for our subconscious realization of the magnitude of things taking place today. Of course, it is not just a matter in the sphere of pure technology, since all the human societies, cultures, and everything else that make up the facets of the current human life are destined to undergo drastic changes in order to be able to accommodate these technological advancements in the global scale.

Notice that in all this long period during which artificial evolution has made significant advances, little has occurred in biological evolution as far as Genus Homo is concerned. Homo sapience sapience, that means us, is not the same species as Homo erectus, but the difference is insignificant compared to the strides made by artificial evolution during the same period. The speed of change in biological evolution is apparently much slower than its artificial counterpart, and the next hominid species, the successor to Homo sapience sapience, is unlikely to emerge in the near future, especially when we are working hard at eliminating biological selection pressure, by trying to preserve human lives no matter what using the powers of medical science and technology, also offshoots of artificial evolution.

Now why could artificial evolution be an 'evolution'? Note that, as mentioned in Chapter 3, the three critical conditions necessary to cause an evolutionary process to take place are met by the denizens of the 'world' of artificials, the three conditions being 'self-copying,' 'mutation,' and 'selection.' Although tools are copied by the hands of humans, who does the copying is irrelevant to the mechanics of evolution. Tools also mutate, again engineered by humans, and this artificial mutation is hardly random or neutral as in biological evolution. This 'intentionally *inventive*' nature of the tools mutation is the very agent directly responsible to the acceleration of artificial evolution. The original and mutated versions of the same kind of tools will then be exposed to the user selection, that which suits the human purposes better will win the competition, and the best at one time may dominate the market for that type of tools, a niche in the artificial world, by being replicated in quantities. There are, of course, many more details, but these elements constitute just about the basic mechanics with which artificial evolution is driven.

Note that the role of humans played in this picture of artificial evolution is entirely catalytic, as they themselves do not directly altered by their meddling in artificial evolution. In the abstract level, their acts may be viewed to turn 'knowledge' into 'control,' as the source for inventive mutation must be knowledge, and tools are for control. And since a better control will lead to knowledge of a better quality, the relationship between knowledge and control is mutually facilitative, given the active coping humans as ever diligent catalysts. A process driven by a mutually facilitative relationship between the cause and the effect is naturally accelerative.

There are two important preconditions for this accelerative artificial evolution to materialize. First, knowledge must be preserved before some good *ideas* of creative mutation of tools are born out of it, and knowledge is perishable if not intentionally preserved, as any knowledge has to be encoded on some physical material, and physical materials are subject to entropic decay. For our long gone ancestors, there were no materials available to preserve their knowledge but the stone tools themselves and the brains, and the latter are quite perishable. So it is miraculous that Homo habilis and Homo erectus preserved their stone tool technologies essentially unchanged for so long periods. The meagerness of the knowledge itself is the only alleviating factor for the difficulty.

This task of preserving knowledge is expected to become much harder when the amount of

knowledge became more sizable, like when Homo sapience Neanderthalensis, the successor for Homo erectus, innovated the stone tools which could be manufactured only by taking a series of exactly defined steps. So Festinger argues rather convincingly that their adults must have *taught* their young, that is, transferred the knowledge from the adults' brains to those of the young using a fairly advanced language, a meta-tool best suited to this kind of tasks. Though there exists no evidence to confirm the supposition that Neanderthals had a language, I would not be surprised if they did, as new evidence tends to indicate that our prehistoric ancestors were smarter than they were thought previously.

With or without a developed language, however, it is almost certain that the prehistoric humans taught their young, as the humans are the only animal species endowed with the strong teaching urge. What I mean by 'teaching' here is an individual's attempt to transfer personally acquired chunks of non-species specific knowledge to another individual. This often intense teaching urge seen in humans might be responded by the corresponding zeal in learners, stirred by the curiosity and the challenge urge of the latter, if the content of the knowledge to be transferred matches between them.

So this active preservation of knowledge is obviously a part of the hidden purpose of the teaching urge. The teaching urge, however, includes more as its purpose, and that is the sharing of knowledge among others, especially one's close coalition partners, so that they can coordinate their joint actions effectively. The urged nature of teaching is quite clearly shown in the general difficulty of keeping secrets, especially from one's close friends. Sometimes, the intensity of one's teaching urge reaches an extremely high level, when it may deserve a special name of the '*missionary's urge*,' as some missionaries in past times are considered as paragons of extremely high teaching urge. The missionary urge is activated typically when a person recognizes that others, especially one's coalition partners, are fooled by some evil intent, such as the devil's, without themselves knowing it. 'They must be taught of the *truth*' is the belief of the missionary, or anyone under the urge, who may even take the risk of being crucified for the teaching.

Now let me get back to the topic of artificial evolution. The second precondition for artificial evolution to take place is that the humans, the catalyst in this process, must derive new ideas from the accumulated knowledge through thinking and imagination, as knowledge *per se* without a working mind does nothing of the sort. So let me delve a little into these dynamic processes of the mind in the next section, together with the meta-tool called the language that provides a powerful aid for them.

6.2 Thinking, imagination and language

Thinking without language

By embarking on considering thinking, I ought to remind the reader that the humans are not the only animals that think. As discussed a while earlier, crows and chimpanzees are often inventive tool-users, and as such their capability of occasional creative thinking cannot be denied, in spite of their lack of an advanced language. So let me first consider how a chimpanzee can think creatively without using language, using the classical experiment conducted by Köhler at Yerkes Laboratory (1925) as an example. In one of his experiments a male chimpanzee called Sultan was shown a banana suspended from the ceiling which Sultan could not reach by stretching his arms. In the laboratory were placed a wooden crate and a long stick, and Sultan had already learned how to use each of them as a tool to reach objects like bananas. He knew how to get at a banana by standing upon a crate, or by swinging to stick to hit the banana down. In the experiment in question, however, neither of them worked as the enticing banana was positioned too high.

Sultan paused a while as if he were in meditation, and then said, "Aha!" No, it must have been Köhler who said that when Sultan suddenly went into a rapid series of actions. He moved the crate directly below the hanging banana, grabbed the stick and climbed upon the crate, and got to the banana by swinging the stick from there. While doing all this, he showed no sign of hesitation.

Observing this, Köhler concluded that chimpanzees could solve problems by using their *insight*. But what need is there to use a special term like 'insight' to describe Sultan's thinking when exactly the same kind of problem-solving may be done by a human child? Suppose that a boy came back home from school very hungry, and no one at home. By looking around the kitchen he saw bananas put on a shelf too high for him to reach. But it may take only a moment for him to climb upon the kitchen table, and pull down the bananas using some stick. It is quite likely that no verbalized thinking process takes place in his mind; instead, his mind may be stuck, in an authentic Jamesian way, with the image of bananas, *i.e.*, the goal of his actions. One may say that this is just another instance of insight. If so, insight must be the most basic mode of thinking employed by animals and children, and the thinking process engaged by human adults cannot be much different, namely, they, too, think in insights except that they use the meta-tool, the language as a special thinking aid, rather frequently.

Among its multiple functions, language is especially useful in fixating ideas. Suppose, for instance, you are engaged in a fairly complex task of designing an elaborate plan. In doing such a task you may occasionally obtain a promising-looking idea, but are too busy in following up other possibilities to explore the further potentiality of the idea. But ideas are elusive, and you may not be able to get an idea back when needed, unless you coded that idea in language and put it on a notebook, or kept it in memory, at the time of its discovery. As language-coded ideas are far more stable than uncoded ones, you may be able to keep track of what you have been doing, overview your whole thinking process if necessary, just by looking at your notebook or searching your memory.

This is not to say that human children do not use language in their thinking. It is only that adults need more help from language in thinking, which fact occasionally leading to an illusory claim that an advanced language is *sine qua non* for thinking. The falseness of this claim is apparent, considering that chimpanzees, crows and Homo erectus obviously did and do thinking without an advanced language. So no fancy names like insight, intuition or whatever are needed for this language-less thinking, as it seems to be the thinking process on the ground level even for us, Homo sapience sapience, whose use of language only multiplies the power of the ground level thinking multifold, as the use of any good tool is supposed to entail.

Conditional anticipation

So any animals with somewhat developed brains, *i.e.*, humans, primates and many other animals, can think. Questions are now to be raised about how and what and why they think. The 'what' question concerns itself with the type of media upon which this information processing called thinking is coded and carried out. My hypothetical answer begins with the assumption that a thinking mind, of either an animal or a human, is able to partial out the external world into objects and events, and these coded media serve as their *representations*, whereby sensory inputs and their mental images operate as major links between the originals and their representations. I will discuss how this can be done later when the 'how' question is addressed, and move on to the 'why' question now.

Note here that thinking is an urged activity as all other human activities are. The reason why we seldom feel urged to think is because thinking is an almost on-going activity, and it can be executed in

parallel with most of external activities, except when the intensity of thinking activity gets very high, making one engrossed in thinking. Only then most of the person's external activities will gradually grind to a halt. Now, the 'why' question concerning thinking deals with the hidden purpose of this urged activity of thinking. As I have been doing throughout this book, hidden purposes of urges are to be sought in the context of survival, and considering the elaborations in the biological software and hardware that support thinking, the survival benefit brought by thinking, even rudimentary ones of animals, must indeed be great enough to make such evolutionary investments worthwhile. The only candidate that satisfies such requirement an enhanced ability of *conditional anticipation*, where by the term 'conditional anticipation' is meant an ability to anticipate the outcomes of each act taken by the individual at the moment, the outcomes that may differ contingent upon the given situation.

Note that the learning mechanisms of conditioning and generalization proposed by behaviorists supply an organism with a limited degree of conditional anticipation ability; an experimental animal like a rat or a pigeon learns to press a bar or push a button when and only when a correct signal is given to them, which is an instance of conditional anticipation. The conditioning theories, however, would not be able to explain the behaviors of Sultan the chimpanzee, or those of crows cracking nuts using passing cars as they did not have a chance of learning the effectiveness of such behaviors, the acts of conditional anticipation whose effectiveness could have only inferred through thinking, and thinking requires a far more elaborate biological software and hardware than the conditioning theories do. So let me now call the hidden purpose of thinking is to give the thinker an *ICA* capability, where 'I' may stand for either 'inferential' or 'inventive.'

In the above argument, I do not mean to imply that experimental animals like rats and pigeons do not have this ICA capability. As a matter of fact, I am quite sure that they are thinkers as crows are. It is only that they are given no chance of showing their ICA as the behaviorist experimenters do not allow it, and they still does something inventive, it is most likely dismissed by the experimenters as 'superstitious behavior.' The so-called superstitious behavior, however, is actually a giveaway for ICA thinkers, as ICA thinkers are those who make quite a few inferences, and act according to them, often proving them wrong. It is only that good inferences made at critical moments make a real difference in survival, and that is the reason why evolution created ICA and further advanced it later on.

Speaking of evolution, it is also to be noted that the species which adopted ICA did not discarded the conditioning type of learning mechanism. Evolution seldom operates on the either-or principle; it simply adds new functions to the old as long as the latter are still useful. So chimpanzees and crows will utilize conditioning mechanisms to fill in the gaps left out by their ICA, and so do the humans. When the humans acquired the linguistic competence, they not only did not discarded the ways of animal ICA thinkers, but also they preserved a great deal of conditioning type learning mechanisms, which were rather economic resource-wise to do trivial learning.

Dynamic schemas

As thinking is a type of information processing done by the mind, there has to be information to be processed in the first place. The major source of information is the external world, carried by sensory inputs. The sensory inputs, after undergoing various sensory and perceptual transformations, are then presented as 'perceived images (not just visual)' in the mind. For this information to be processed, it has to be retained, and memory is the necessary biological hardware to preserve information. However, it is simply impossible to store every piece of perceived images in memory due to the sheer bulk of such images perceived every

moment, and furthermore, it is foolish to do so even if possible because of the tremendous redundancy existing in the consecutively received series of information. So this puts some kind of redundancy compression on top of the demand list on the function of the mind as an information processor.

In fact, this redundancy compression function is already genetically built-in within the ways the humans, and evolutionary advanced animals as well, perceive the external world in an object-centered fashion. Since the same object tends to replicate the same informational output, the object-centered perception allows the mind to carry out redundancy compression most effectively.

To obtain some idea about the actual process of data compression, imagine a movie camera directed at some stable object, like a green unripe fruit, which takes a picture of the object only if the current feature of the object is significantly different from the preceding image. By replaying the film taken by this camera, you will see a green fruit getting bigger while turning its color, to yellow and red -- a tasty ripe apple! Now suppose that a mind has a similar mechanism which keeps in memory such images of an object, each of which is significantly different from the previous one, in a proper sequence. This procedure does not take much memory space as most of the redundancy about the features of the object is effectively eliminated.

Now suppose that one of these memorized record is activated, perhaps by actually seeing a similar green apple. Then the memorized records of the object will play out the sequence and produce a ripe red apple very quickly, even though currently perceived image of the apple undergoes no change. This is anticipation, and language plays no part in this mechanism.

This sequence of stored images as an organized information is actually a chunk of knowledge, deserving the name '*schema*.' Unlike in ordinary notions of schema in which major emphasis is placed upon associative links maintained among the components of a schema, my emphasis here is at the schema's property of autonomously unfolding 'images' in an anticipatory fashion. Because of this difference in emphasis, I shall call the kind of schemas I have been describing as *dynamic schemas*, or *dysc*s for short (Toda, 1994).

Now let me consider how an animal or a person may think with dynamic schemas in one's possession. Imagine some early hominid person who had once eaten an unripe green apple and experienced a sour taste. So when he saw another green apple, the dysc activated by this perception unfolded the past experience, and produced a gustatory image of sourness, enough to prevent him from trying to eat it. After a while, he saw the same apple which had turned its color to red with a sweet scent. So he took the apple and bit into it, and found it delicious. Then his dysc of an apple has incorporated two scenarios in it: If he eats an apple while green, he will get a sour taste. But if he does not eat it and wait for a while, it will turn red with a sweet, delicious taste. So just by having such a dynamic schema, an organism becomes an ICA thinker as far as apples are concerned.

Let me now introduce another complication. While this early hominid person *A* was waiting for another apple to ripen next season, another person *B* came up and plucked the apple prematurely and eaten it. This new event now involves another dysc, as *A* would naturally possess a dysc of *B* who is the same tribe member, and *A*'s apple dysc will be given an associative power to activate the dysc of *B* when the former takes the beginning state of ripeness. Then the two activated dyscs will interact, and the outcome of the interaction is the disappearance of the apple. Since this outcome is quite disagreeable for *A*, he let his *self-dysc* join the scene in the replay of this *simulation* process (this is indeed a simulational thinking) when *B* emerges in the scene, and snarl at *B*. This will then leave the apple intact, as the dysc of *B* in *A*'s mind will tell that *B* will slink away under such an aggression. Now if *A* actually execute this *plan*, he may be regarded as thinking and behaving as a genuine ICA thinker.

This imaginary example just about lays out the most basic principles of language-less ICA thinking utilizing dynamic schemas. Note that all this can be accomplished just by selective memorization, which, while effectively eliminating redundancies and compressing perceived data, also enhances and help detect whatever causal, or anteceding-succeeding, relationships that exist within the observed event sequences. It is one of my fancy hypotheses that the causality-based comprehension of the processes of the world could have been just a serendipity, a byproduct of this image splicing whose direct purpose was redundancy compression, which turned out to be a very useful mental tool for the latter day humanity.

So the mind of an ICA will contain in its memory a great many of such dyscs as mental tools corresponding to all the familiar objects in one's environment, representing a substantial part of the knowledge in possession of the mind. A great advantage of having knowledge in this form is that the use of knowledge requires not much of the central control, as each activated dysc, usually a group of them simultaneously activated, will play out their content nearly autonomously, and this small demand on the capability of central control would have been very important particularly at the burgeoning stage of ICA intelligence.

Small though the demand on it could have been with incipient ICA thinkers, the central control should have existed, as dyscs, however autonomous they could be, are knowledge and knowledge needs a user. Among the components of the mind so far introduced, the appraisal monitor is the best candidate for the prime user of dyscs, since the function of the appraisal monitor is to appraise the given situation by anticipating what will happen in the external world soon. What the appraisal monitor needs to do is to activate the dyscs corresponding to the major objects constituting the given situation. Then these activated dyscs will display in the mind, in an interactive fashion, what will happen from then on much faster than real time. During the process the appraisal monitor will constantly be appraising the unfolding scenes (via the mood-states they trigger), and may put this simulation process to a stop typically when some particular scene significant enough to activate an urge, usually a very good or a very bad scene.

Suppose that the unfolded scene was a disaster to the thinker. Then it may activate the fear urge to the individual, urging the person to flee immediately. Note that the disaster has not yet happened in the real world. So this early flight will much increase the margin of safety for this ICA thinker. Consider another case when the time pressure for acting is less acute. Then the ICA thinker may *plan* one's course of action to reach the urge-set goal by using similar dysc simulation processes. The halted simulation may be restarted from the beginning, this time with the self-dysc as one of the active participants. The appraisal monitor may try various simulation sequences with the self- dysc intervening in the process in different ways at different time, until it finds a particular intervention that achieves the desired goal. This particular intervention of the self-dysc will then be employed as the action plan for the urge activity.

I shall discuss this planning phase of the dysc simulation a little more in detail later. For the moment, let me add a few comments on this dysc simulation process to prevent misunderstandings. First about the self-dysc. An ICA thinker must have a self-dysc as the source of one's actions and the target of other objects' actions, without which the ICA capability has little use. The self-dysc, however, occupies a very special position among the world of dyscs, the virtual center of the world from which every other object is viewed. And as such the self-dysc may be imageless. So the possession of a self-dysc does not imply that the ICA thinker has a concept of 'self' in the modern human sense, which can be acquired by an ICA thinker only when the individual becomes able to introduce a *relativity* into the world model it entertains, making the self somewhat equivalent to other conspecific individuals. A chimpanzee who seems to be able to identify oneself in its mirror image may likely be on this level, although showing interest or disinterest in one's

mirror image is no definite test for either proving or disproving the individual's possession of the concept like a relative self.

My second point is about the uniqueness of object-dyscs. As long as the general principle goes, a class of objects, like apples, may be represented by a single dysc, again for the sake of redundancy compression, though this principle does not forbid for some special member of a class has a separate dysc from that of the class. Taken this assumption for granted, then one must allow that images unfolded by the same dysc is not unique. An individual may experience sometimes that a green apple turns into a deliciously ripe red apple, but in other times it may be blown off by a strong wind, or eaten by a worm. So the course an object-dysc may take in its state transition may generally have many forks, and the probability that it takes each branch at such a fork may depend primarily on the frequency and recency of the individual's experience corresponding to what that particular branch represents. So by quickly repeating the same simulation process many times (a subjective version of Monte Carlo procedure), one may obtain a rough estimate of how much likely one type of outcome obtains compared to other outcomes, providing the basis for the subjective probability of obtaining that particular outcome. As the subjective value of each outcome is estimable through the mood-state that outcome creates, the ICA thinker in question can make decisions combining that value and this subjective probability. The precision of the subjective probability need not be very precise; it need to be precise only when the individual is up against a rather important and delicate decision, and because of the rarity of such decision situations, the ICA thinker would usually spend much time in this probability estimation. Needless to say, the probability of each event sequence will sometimes undergo a drastic change depending upon which other object-dyscs are interacting with the object-dysc in focus. So the subjective probabilities actually in use will mainly be subjective conditional probabilities (Toda, 1977).

The third point to be made here is about images. There may be objections from some readers that they do not use images much in their thinking, and that contradict my assumption that the dysc simulation procedure discussed above is the basic mode of thinking for all ICA thinkers including the humans. To answer this objection, let me refer to a series of experimental studies done by Hatano and his collaborators on 'mental abacus,' as they seem to provide a good clue about the nature of images we use in our thinking (Hatano, et al., 1977; Hatano & Osawa, 1983).

Abacus is practiced in Japan mainly as a hobby now, and there are still abacus classes where experts are teaching children. Really good abacus experts usually beat desk calculator experts in contests both in speed and accuracy. In the abacus conventions held regularly, participants usually join in mental arithmetic contests as well, since abacus experts are known to be good mental arithmeticians, *i.e.*, they can do arithmetic tasks nearly as well with or without using a real abacus. The secret for this feat was that, according to Hatano and his collaborators, the abacus experts can not only maintain a mental image of abacus, but also manipulate it as deftly as a real abacus, sometimes even faster because it requires no fingers movements for operation.

This skill of using mental abacus, of course, needs a hard practice to acquire. It is not too difficult for abacus experts to use a mental abacus of about five digits, but only constant practice allows them to increase the number of manipulable digits beyond that level, at the rate of one more digit per year, up to the maximum of about 15 digits. One of the many interesting aspects of the mental abacus skill observed by Hatano's group is that the mental abacus is represented, in the beginning stage, by a fairly concrete image, complete with an abacus frame and all that, and the person tends to twitch his or her fingers as if working on a real abacus. As the skill improves, however, the parts of the mental abacus unneeded for the operation, like

the frame, gradually drop out from the image, together with their finger movements. When they reach the high level of mastery, even the beads of the abacus disappear from the image, leaving only some sense of bead movements, while their fingers become completely still. Despite this fading out of their abacus image, their performances and self-reports attest the existence of a mental abacus as a tool to be operated upon. For instance, such an expert can read off the number currently shown on the person's mental abacus, of fifteen digits, forward and backward with no difference in speed and accuracy.

Even though the feat performed by mental abacus users amazes us, it tells us much about the nature of images we use in thinking. They may start out as concrete sensory images, the inexorable hand of redundancy compression works on them as they are used repeatedly, often eliminating from them all details but the most essential features that are required for their functions as dynamic schemas. Although mental abacus users need to go through hard practice to acquire their skill, we are similarly putting to a hard use of images of persons and objects around us, and they tend to lose unessential details. For instance, somebody very close to you, like your spouse. You may be able to tell very little about your spouses physical features if asked: auburn hair, black eyes, medium height, a little on the plump side, and so on but not much more. Even though that is all you can extract from the image of your spouse for the moment, it does not mean that you mistake every person who fits that description as your spouse. Even if you are unable to put into words most of physical features of your spouse, you still possess information enough to identify the spouse unerringly almost under any conditions. And that dysc image would take on the characteristic angry face of the spouse if you imagine deliberately insulting the spouse beyond a certain limit. So I assume that everybody has skills of using dyscs for almost every familiar objects, which are nearly as good as the skills of mental abacus users, except that the former surprises no one since it is only a part of our daily thinking.

Various roles of language in thinking and imagination

Having the meta-tool of language naturally helps such dysc operations in the mind in far more ways than one. One of the earliest innovations the humans made toward developing languages would have been to attach some definite *speech tags*, or *names*, affixed to major objects in a habitat of a human tribe, commonly used by all the members of the tribe. 'Affixing' here means that the auditory image of the speech tag of each object is *associated* in the mind of each group member with the person's dysc of the object. The merit of having common names for the objects important for a human tribe is obvious; when one of them shouts the name of a certain objects, the attention of the tribe members will be turned to the object named, and in the mind of each of them the dysc of the object will be activated. Even though the discs thus activated may not be exactly identical as each of the tribe members would have had somewhat different personal experiences with the object, they may still be quite similar. In other words, the thought processes going on in the minds of all the tribe members would be quite alike, providing a ground work for their cooperative actions about the object if one such is necessary.

Let me leave the communicational roles of language for a moment, and concentrate on the function of language in personal thinking, as language has its own use in solitary person's thinking. When I said that the name of an object is associated with the dysc of the same object, I meant that the name was not a part of the object dysc. Since association is occasionally lost, you may temporarily forget the name of your close friend, still being able to think about the person without any trouble. Names, therefore, must be considered as another kind of entities, which may still be schemas, but not dynamic. This stability is perhaps one of the greatest assets of names, and subsequently of languages, as they nicely serve as solid backbones to support

the principally fluid, dynamic schemas; the latter day humans could never be able to build large edifices of knowledge and beliefs such as religious and scientific models of the world without the stability provided by languages.

There are many large strides taken for the language to evolve from a few mere names of objects to fullfledged languages we are using today, as happened in nearly every branch of artificial evolution. So skipping intermediary stages let me now investigate about the function of strings of words called *sentences*, the function they play in our thinking process like the one described above. For the purpose of obtaining some clues for the investigation, let us imagine what happens in the mind of a child who is reading (or listening to the child's mother telling) a fairy tale starting with a sentence: "Once upon a time there lived a pretty princess in an old castle." If the child understood the sentence, it would mean that the child succeeded in setting up an imaginary scene that corresponded to the *commanding instruction* given by the sentence by activating and properly arranging some particular dyscs stored in the mind of the child. If the child failed in this task, it would usually mean that the child could not find a proper dysc associated with some of the words, or the ordering of words, and the child would ask a question. To the question, the mother will give another sentence which allows the child to fabricate the missing dysc from those the child is supposed to own.

Now let me get to more details of this sentence understanding process. In the above sentence, 'princess' and 'castle' are both object names, and the child, being familiar with fairly tales, may easily find the appropriate dyscs associated to them. Some other names in the sentence, modifiers like 'pretty' and 'old,' are not object names. Since the function of all names is to let the mind access to some part of the stored knowledge, these non-object names are also expected to activate some schemas associated with them. The function of these 'adjective schemas' is apparently to assign a certain attribute to the object dysc, or to replace its default attribute, by the attribute designated by each adjective.

There is also a verb like 'live' in the above sentence. A 'verb schema' designates either the action(s) for the object dysc to take, or the interactive relations that should hold among the activated object dyscs. The verb schema 'Live,' for instance, defines a set of constraints under which the princess disc operates in relation to the castle dysc. There are many other types of schemas corresponding to various parts of speech besides the nouns, and let me call them all together as *operator schemas* (Toda, 1980). The operator schemas activated by a given sentence will work on the object dyscs also activated by the sentence, or modify functions of other operator schemas, all according to the complicated grammatical rules of the language, and if every instruction contained in the sentence has worked successfully, a *mindscape* will be established in the listener's (or the reader's) mind, within which all the activated discs will be combined with interactive relations as a single whole, ready to develop dynamically into the next mental scene. (The principal verb often plays the critical part in putting all the dyscs together and setting the whole in readiness.)

The creation of these operator schemas as mental tools is an innovation of tremendous significance, nearly as important as the emergence of the ICA thinker who thinks using dyscs. One of the immediate merits of having them is that one can identify and activate a dysc among a great many without having assigning individual names for each of them. This opens the way for a person to keep a really large number of dyscs without taxing the memory too heavily for remembering their individual names, as the utilization of *combinations* of words increases the numbers of identifiable dyscs exponentially. Furthermore, one need not possess all of the dyscs thus made identifiable, as one may fabricate a new dysc from old dyscs if possible and necessary. So the use of operator schemas is another means for redundancy compression of a great

efficiency.

There are few clues for how the humans could have created such mental tools like operational schemas. Note at this point that object dyscs and operator schemas are entirely different entities even though they are both mental tools for thinking. Dyscs are dynamic, and may change its state autonomously. But operator schemas are non-dynamic; even verb schemas are. Consider, for instance, the verb schema corresponding to the word 'disappear.' When the 'disappear' schema is applied to an object dysc in the mindscape by a sentence, the object dysc may disappear from the scene, but the 'disappear' operator may be repeatedly used with different object dyscs usually with the same effect. Apparently, operator schemas are obtained by dismantling object dyscs into actions, attributes and so on, but how such a feat like dismantling dysc could have be done remains as a mystery.

Going back to the sentence on a pretty princess living in an old castle used above, let me consider the function of a whole sentence as an instructive command. This opening sentence is obviously for setting the stage for a story. What it does, however, is not just introducing the major actors of the coming story. The past tense used in it tells the listener that the coming story will be something about a world in the past. More telling than the past tense used is the opening cliché, "Once upon a time," which indicates that the world the story is about not the real world in the past, but a fantasy world in which the real world rules do not necessarily apply.

The fantasy world is obviously a product of *imagination*. But what is imagination? If it means an mental operation that produces images in the mind of things that are neither retrieved from memory or currently being observed, the ICA thinking is imagination itself, as dyscs are unfolding the scenes that may occur in the future. So the imagination in this sense is the basic process of thinking upon which both serious thinking and fantasizing depend. The difference between these two mental processes seems to lie only in the kind of *constraints* applied to the dysc operations. In the serious thinking process, what to be called the *real world constraints* are supposed to apply; *i.e.*, dyscs should, generally speaking, obey the laws of the real world, since, otherwise, the ICA thinking would have had little practical use. Whether animals and early humans had actually observed these real world constraints is an issue not to be worried; the dyscs they used are nothing but heavily condensed versions of real world processes, and, therefore, the state transitions their dysc could have undergone would seldom deviated far from possible real world events. In other words, animals and early humans without an advance language did not, and still do not, much fantasize.

So, interestingly enough, the world of fantasies is an outcome of language, or more specifically, created as a byproduct of the operator schema technology. As mentioned above, one can create an enormous number of potential identifiers of dyscs by grammatically combining various operator schemas, some of which may not exist in the listener's mind. When one such description is given in communication, the listener is usually expected to fabricate one such dysc in the mind using the existing dyscs for the efficiency of communication. Sometimes, the listener may succeed in this, and sometimes fail, and in the latter case the listener usually ask for a further explanation. Sometimes, the listener may succeed in fabricating one, but finds that such object does not exist in the real world.

Suppose that in the above fairy tale example the first sentence is followed by such a sentence as: "One day, the princess saw a *winged horse*." Even without any previous knowledge about winged horses, the child would have no trouble in constructing the dysc for a winged horse, which is primarily a horse but have a pair of wings on the back, and besides acting like a horse, it may also fly. The child may also know that there are no such creatures as winged horses in the real world, but does not care because the story is about the fantasy world where constraints are much weaker than the real world. Now suppose that, instead

of this child, it is you who heard somebody talking about a winged horse in your office: "I saw a winged horse this morning." You would look at the person to decide whether he is joking or crazy.

The real world constraints are the pervasive default constraints we use in communication, especially when we are talking business, and they exclude, as a principle, all unreal things to be mentioned in communication as they serve no practical purposes. Nevertheless, there obviously were someone who started to think about such unreal things such as a winged horse or a winged person. There are at least two possible causes that made this happen. The first possibility is that a person had nothing serious to think about when such an unreal dysc happened to have fabricated in the person's mind. So instead of discarding the dysc outright, the person followed through the process the fabricated dysc unfolded: A winged horse is flying! Why not put yourself, the self-dysc, on the back of this flying horse! Children usually start spinning their fantastic imagination this way, as they often have no serious thinking to make, and they are also driven by an intense curiosity urge.

The second possible cause, however, is more potent, and that is the fragility of the borders between the real world and the fantasy world. We, the denizens of the modern world, seem to possess a fairly solid idea about what the reality is. Still, there are quite a few people who believe in the existence of winged persons called angels (some satans as well), and what is the distinction between winged persons and winged horses? Just going back a few centuries, we find an era when the existence of angels was a common belief of communities where doubters were persecuted, and some scholars seriously discussed how many angels could dance on a pinhead.

Animals and early humans would not have needed reality constraints when their dysc only played out only their own experiences even however heavily edited. Even chimpanzees would not imagine winged chimpanzees because they have no chance of thinking about such an extraordinary entities. For the humans, however, a confusion started when they invented a language with its operator schemas, as combinations of dyscs and operator schemas could have produced any number of artificial, fabricated dyscs, and the reality constraints should have become a dire necessity to the things and events described by language. The borderline between real and unreal, however, should have been tenuous at best, especially because language allowed the humans jointly build causal models of the world of a large scale.

The benefit brought by a large scale causal model about the external world is indeed great, as having one such is prerequisite to having an effective control power over the external events. The trouble with such a model is that it keeps finding missing causes to observable effects. The early humans who started to use a language must have been worried much at their inability to finding good causes for many natural phenomena. Why the weather is so foul this winter? Language, however, would have helped them there easily; just by combining a few operator schema such as very powerful and unseen with a person dysc, one could have gotten at a fabricated dysc of unseen powerful human-like entity who was in a foul mood. As such an entity fit into their causal model so nicely that they believed its existence as a part of reality, and gave them an action plan to control the bad weather: 'Placate the deity with offerings!'

So people would have acquired religions rather early since they got language. Besides religions, other kinds of imaginative story-telling should have become rather popular soon. Note that what distinguishes imagination from serious thinking is that the constraints operating on the dyscs operating in the former are a little less stringent than in the former. When the reality standards themselves were somewhat shaky, however, imaginative stories should not jar with people's beliefs too much. Rather on the contrary, these stories told about the borderland of the people's mental realm of reality, where their curiosity was piqued most. So like when people listened to the incredible stories told by a traveler from a far off land,

they might have listened to the well fabricated stories half in belief and half in disbelief, fascinated in either case, and good stories could have been integrated into their shared beliefs, like in the case of legends, and thus have come to define their new reality.

Note that these are not things that happened in the long past. It is still happening even more vigorously today. Although the reality we perceive it now is far more solid and sophisticated than it was in prehistory, many parts of it can be upturned easily by a paradigm change in one of the branches of scientists, and scientists, at least good ones, are dreamers working in this borderland which has turned out to be a treasure house for new ideas. The case of inventors may provide a better case in point. For instance, the idea of a 'winged person,' not an angel but one's self flying with some kind of artificial wings, had kept capturing inventors' fancies for a long time.

This 'capturing one's fancy' usually implies the activation of the *dream-realization* urge mentioned earlier together with the curiosity and the challenge urges as the typical urges that make the humans as active copers. The hidden purpose of the dream- realization urge is very similar to the other two urges, *i.e.*, the expansion of the realm of human achievements. Note that the place where these fancy ideas, or dreams, are found is usually in the borderlands of the lands of reality, and since the borderlines are actually rather fuzzy, there may be a real pathway across the border that makes the dream come true. So first people roam in the fantasy land driven by the curiosity urge for the pure fun of it. Then they will occasionally encounter interesting imaginary states that temporarily elate one's mood-state, like flying in the sky with artificial wings.

Not that everyone who fantasized about oneself flying activates the dream-realization urge, unless the person sees a possibility, a non-zero subjective probability, for finding a real pathway from the dream to reality: "Birds fly with their wings. What if I make big enough wings to carry me up in the sky?" And tragedies would have befallen on numerous foolhardy dreamers since time immemorial, until Wright brothers finally succeeded in the early 20th Century, typically attesting to the active coping nature of the humans and their perseverance.

The two-window model of dynamic schema operations

At this point, let me discuss a little more in detail about the central control of dysc operations through introducing a *two- operation-window* model of the conscious mind, where the mind be either of a chimpanzee or of a human. In the mind is assumed to be two operation windows analogous to those on computer displays, and on each of them a set of dyscs are operating all the time. One of the windows may be called the *world-watch window*, or the *WW window* for short, and the dyscs working on it are those corresponding to the major objects in the observed world. Since dyscs in action tend to undergo state changes always a little faster than real time, dyscs shown on the WW window generally depict an *anticipated* image of the real world a moment in the future, which will be reset to agree with the oncoming perceptual images if significant discrepancies are found between them.[7] This short range anticipation and constant resetting is an economical way of keeping the display of the WW Window up-to-date nearly all the

[7] This correction can usually been done immediately either by resetting the states of the currently activated dyscs, or by activating new ones. Though very rare, it happens that the oncoming perceptual images fail to be matched by familiar dyscs, the WW window may momentarily go blank as I described my own experiences somewhere else (1975; 1984). Though I shall not go into this topic here, it is interesting to note that one has no conscious memory during this blacked-out period of the WW window, despite the fact that the mind then must have been operating furiously on some other level in order to make out unintelligible jumble of oncoming sensory inputs.

time, whereby the activated dyscs are forced to put under the *de facto* constraints that may be called the *observed-world constraints*.

The dyscs operating this way in the WW window may be transferred to, or more precisely, copied in, the second window, which will be called the *Imagination-thinking* window, or the *IT window* for short. Once copied, these dyscs will be run far more faster in the IT window for the simulational purpose discussed above, without bound by the observed-world constraint, but only be the reality constraint. The simulation may be done any time, sometimes without any specific purpose except for making the appraisal monitor to see things ahead of the time.

In one such a plain anticipatory simulation, the appraisal monitor may encounter a possible scene of interest, either good or bad, which will then activate an urge. As an activated urge will set its goal to achieve, the simulation on the IT window will become *goal-directed* from then on, and will be repeated with the self-dysc joined in the scene which will try various alternative action plans till the goal is reached on the IT window. Note that it is not required to preserve the initial state for this iterative simulation, each trial of which may be started by copying the current content of the WW window. Sometimes this current may have undergone some serious change from previous trials, showing, for instance an appearance of a predator, by which the individual will immediately stop the simulation and run under the fear urge.

In any case, the IT window operations of even ICA thinkers, animals and early humans, would have been strongly bound by the current content of the WW window. I am not claiming that it is impossible for them to have an IT window operation not directly linked to the current WW window content, because they, too, be able to activated dyscs unrelated the current dyscs in the WW window, through association. It is, however, only the power of the language the humans acquired in later times that entirely liberated the IT window operations from the current content of the WW window.

Imagine the content of the IT window in the mind of the child to whom the mother is telling a fairly story at the bedside. Full of the characters of the story, the princess, the pegasus, villains and heroes, it has nothing to do with what are registered in the child's WW window, the familiar objects in the cozy bedroom, except for the voices of the mother which command the child's IT window to activate dyscs of denizens of the fantasy world who act according to the story told, and do a little more for their own, in a context completely alienated from the content of the WW window.

This alienation of the content of the IT window from that of the WW window, of course, need not be always so complete. Sometimes, people may discuss what they are currently seeing. But even when people are talking about real world events, IT window content may be independent of WW window content. A couple of schoolgirls standing in a street may be talking about some particularly nasty trick played against their disliked teacher by some boy friend of theirs, and the remembrance of the astounded face of the teacher may make them burst into laughter. In this case the dyscs operating in the girls' IT window are real world objects, and the event played out by them follows the real world constraints, even though it has nothing to do with content of their WW window. After their merriment subsided, however, one of the girls may notice the content of her WW window in which a few passers-by are gaping at them wondering what are so funny about. Embarrassed girls will then walk away hurriedly.

This episode tell two things. First, language may be able to create almost any kind of dysc operations in one's IT window with disparate sets of constraints. They could be a fairly tale with a princess and a pegasus, or remembrance of antics of their friends, or esoteric speculations argued by mathematicians. Whatever being the case, the constraints to be applied to the dysc operations are generally self-suggestive. Secondly, a person's appraisal monitor is dividing its attention over the two windows. Which one of the two

draws more attention depends much on the urge currently activated. When the achievement of the goal set by the urge is concerned more with the external world events, like in the case when a person is fleeing from a chasing predator, the WW window will dominate the attention. If the urge intensity is very high, the here-and-now effect will set in, and the person will hardly be able to think, as the person's IT window operation is then seriously hampered.

On the other hand, when the achievement of a goal depends mainly on thinking or imagining, one's attention will be occupied mainly by the IT window, and the high urge intensity will make one engrossed in the IT window operations, with a scant attention paid to the contents of the WW window. So the philosopher deep in though may fall into a hole in the ground, and a daydreaming youngster may not notice whatever is happening around oneself. So the 'here' and 'now' effect in this case must be redefined as the 'here' and 'now' defined relative to the contents of the IT window.

In either case of the here-and-now concentration, it is interesting to observe that the apparently unattended window is still not entirely closed. A person walking in a darkened alley, fearful of a lurking mugger, may watch every shadowed area very closely, unable to think anything coherently. Still, the person may be startled by an occasional wild imagination that someone is stalking up to the person from behind. You may hit a boy deep in daydreaming hard on the back, and the boy will jump up startled. So the neglected window is not shut down, but only a survival-relevant significant event taking place in that window will draw the person's attention back to it with the moode-state of surprise.

The power of language

As mentioned earlier, all this power of language is gained by the emergence of operator schemas, and even though much of the evolutional process is shrouded in mystery, I suspect rather strongly that operator schemas originated from the sub-action agents of the self-dysc, *i.e,*, what actions one could infringe upon other objects, and what effects could these actions have upon them. Whatever have been the suspected origin, there is no doubt that biological evolution had its hand in some period of the hominid evolution. Whatever human tribes whose member could express his or her intentions more clearly to other members of the tribe by some voice signals would have had a better survival edge over other tribes concerning efficiency in group cooperation, thereby creating a strong selection pressure. And in a relatively short time, short in evolutionary time scale, a language speaking humans came out as the winner of all endowed with the linguistic competence both in hardware and software.

I have mentioned a part of the language software that corresponds to constructing and preparing dysc operations in the IT window according to the commanding instruction phrased in sentences. Now let me consider the reverse mental operation in transcribing the mindscape, be it of either the IT window or the WW window, in sentences as equivalent to the original mindscape as possible. This reverse operation, the language coding, is prerequisite, as well as the language decoding, not only to maintain a bilateral communication, but also to make a progress in a complex serious thinking process the humans are often engaged in.

Let us first consider how the language coding helps our complex thinking process. Suppose that a person is making a rather elaborate planning. The such a planning is usually done in advance rather than *in situ*, the content of the thinking person's IT window, the site of the dysc simulation, will be completely independent of the content of the WW window. In such a planning task, one has to go through many trial-and-errors, tossing out one idea and picking up another, and the simulation has to be iterated many times

under different conditions. In order to do this iteration, the person must be able to reconstruct the starting scene of the simulation, but in this case it cannot be simply copied from the WW window which is irrelevant to the problem at hand. Though the person may try to keep this starting mindscape directly in memory, such a memory is rather untrustworthy, as dyscs tend to alter their states autonomously when activated. That is why a person who is engaged in an elaborate thinking often verbalizes one's thoughts, or codify one's mindscapes in sentences using names for dysc operator schemas. Since sentences are less prone to memory-related errors because the names are far stable than dyscs they represent, and particularly important ideas may be scribbled as memos on a notepad to further decrease the memory error. These memorized or recorded verbal descriptions of mindscapes may then be retrieved and reconstructed in the IT window either by recalling or reading the messages through the function of sentences as commanding instructions for building mindscapes.[8]

If what I have been describing as the major use of language in thinking, then we are thinking not by language, but *with* language. Using a metaphor, language is a sort of tool to 'freeze-dry' mindscapes, or ideas, which in their freeze-dried state may be preserved nearly indefinitely. And they may be defrozen any time they are required, like when the thinker wants to start over the simulation process. Note that simulation need not always be restarted from the beginning. As long as the thinker keeps verbal records on major intermediary stages of the thinking process, the thinker may just backtrack to one of these stages to redo his or her thinking. Furthermore, the thinker may be able to conduct a consistency check for one's whole thought process by, say, juxtaposing the mindscapes defrozen from these verbal records, and see if there is no obvious contradiction among them. Though I am not going into details of this consistency checking procedure, the verbal sentences, including propositions, have to subject themselves to some constraints of their own, especially logical ones, particularly because there are usually many way of putting the same idea in sentences, and there is no guarantee that they produce exactly the same mindscape when decoded. In other words, errors may occur in any of these processes, but language as stable materials provides means to correct some of these errors.

Needless to say, the greatest advantage of language comes from its use in communication. One cannot transfer one's mindscape directly to another's mind, its freeze-dried language codes can be transmitted either in voices or in letters, which, once registers in the other's WW window, will be automatically translated as a mindscape in this person's IT window.

The advantages that the humans gained by the acquisition of this mode of communication would indeed have been beyond measure. Coalition members could have discussed about their joint project, share practically the same goal, and organize their joint actions to achieve the goal. More than these immediate benefits, stories may have been composed and told, regulating the dysc operations in the listeners' minds, and some of them became legends and mythologies of the community, forming a part of their reality constraints. These then enabled to establish the cultural heritage of each community, opening a way for communication to go beyond face-to-face communication. Once visual symbols were added to the system of languages, knowledge can be amassed and preserved far more efficiently, and it enabled the humans to establish a vast systems of knowledge as a common legacy to the whole humanity; whoever has an access can defreeze written records, even as old as Sumerian clay tablets written about 5,000 years BP, if one so wishes.

So the advantages brought by advanced languages and language-based communication are

[8] The notes may not be complete sentences when a couple of words are considered enough to recover the missing words through associations.

numerous and magnificent. However, there are limitations in this mode of communication, too, and these limitations come mainly from two sources. First, no two persons' dyscs are exactly the same even for the same object. This is unavoidable as dyscs grow and change as a person accumulate experiences with the object. So the mindscape acquired by a listener by defreezing a spoken message will be generally a little different from the mindscape the speaker intended to communicate, albeit it is far better than no communication. Note that this happens even when the coder and the decoder is the same person. A memo one wrote some time ago may become unintelligible to oneself later, perhaps because the *context*, the totality of the constraints operating when the message was written, was lost, or because one's dyscs themselves being transformed during the period.

The second cause for imprecision for verbal communication arises from the imperfection of the language as a tool to describe mindscapes. Despite the enormous descriptive power of language, not every details and nuances of a mindscape can be captured within a message short enough to be practical. Furthermore, the reader or the listener of a verbal message does not want to be bothered by insignificant details as defreezing requires mental resources. So a writer or a reporter tends to skip details which can be filled up by the readers, especially the parts that belong to the 'common sense.' It is well known that this omission of common sense knowledge is a consistent headache to historians who try to make out ancient records. And note that common sense corresponds almost exactly to what I have been calling the reality constraint. So what we take as myths of the people in ancient times were just a part of their reality, and that also implies that most of what we consider as reality today will become myths in the times to come.

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Chapter 7. HUMAN SOCIETIES AND HUMAN VALUES

7.1 Management of communities in animals and the humans

The ur-band

In this last chapter of this book, the focus of arguments will be shifted from human individuals to human *communities*, with the emphasis on the issue of community management. The term '*society*' may be used for the term 'community' alternatively, especially to indicate a very large community like the 'Earth Society,' but no explicit distinction between the two terms will be made. In my arguments, I shall divide the human cultural history in four periods. What comes first is the period just preceding the agricultural revolution, the *Times of Ur-Bands*. Then comes the agricultural revolution, the period of the *First Grand Transition* in the development of the human civilization. The third period, the *Times of War*, encompassing the human cultural history from the end of the first grand transition through around the middle of the 20th Century, when the *Second Grand Transition* as the fourth period approximately began, the period in the middle of which the contemporary humans live.

In the previous chapter, I sketched how hominid species gradually revealed their nature as active copers through a long time span of millions years, till Homo sapience sapience, the last chain of the hominid evolution came into the scene, around 35 thousand years BP (before present). Though details about their way of life are not available, it is quite clear that they inherited most of the remarkable human characteristics of their predecessors, those of being active copers, versatile cooperators, avid tool-users and, in addition to all of these, they apparently had a fairly advanced language.

I begin my arguments on the issues of community by speculating about the kind of communities Homo sapience sapience would have had a little earlier than they reached the stage of agricultural revolution. In spite of little archeological evidence suggesting exactly what their way of life would have been, this speculation is especially challenging because their community structure was expected to be simple enough, almost manageable with the regulatory power of the urge system alone, before the communities were bound by a horde of social rules necessitated by the sedentary life style and increased community population brought by the agricultural revolution. And, needless to add, the urge system of theirs were approximately identical to the urge system of the modern humans.

They undoubtedly had communities, hunter-gatherer groups relatively of a small size, with rather excellent hunting skills, and were nearly constantly on the move. Considering that they had a language, there is every reason to believe that their community life was rather boisterous, talking, laughing, bickering, and did almost anything their urge system suggested. Let me call these pre-civilizational human groups the *ur-bands*, or alternatively the *ur-communities*. (The term, 'ur-community' will be used more often when we are discussing their intra-band activities.)

There are various speculations are made on the size of human bands in the pre-agricultural times, ranging around fifty to one hundred fifty.[9] Hundred fifty at the outside, much less most of the times, seems to have been the proper size for ur-bands, proper from the points of view both from the natural resources available to a hunter-gatherer band, and also from the limited regulative capability of the urge system. As

[9] See, for instance, (Dunber, 1993), for arguments on this point.

for the latter point, remember my basic assumption that ur-communities had few social rules, which implies that all the management of community issues had to be handled on personal levels. It means then that the members of a ur-community had to know each other fairly well personally. Considering on the one hand the pressure toward increasing the band size from the efficiency of group activities like organizing hunting and gathering parties, and also from the necessity of securing a big enough gene pool, and on the other the counter-pressure toward reducing the number to increase the manageability of the band, one hundred seems to be a reasonable approximate for the average ur-band size.

Now note that this 100 as the ur-band size is, even admitting probable deviations from this hypothetical standard, too large as making the ur-band as any kind of close coalition. Buys & Larson (1978) concludes on the basis of their questionnaire data that a person may be emotionally bonded only with 20 persons on the outside. As long as close positive bonds are concerned, twenty seems to present a good approximate upper limit, since only a person with an extremely rich cognitive resources could afford to pay close attentions to, and care for, that many other persons. As strong personal hate also requires even a greater amount of cognitive resources, the sign of the emotional bonding, positive or negative, does not probably matter.

The size of close non-kernelled coalition will also be bound by this limiting number, and may actually be much smaller, as not every member of a close non-kernelled coalition is expected to be endowed with that much emotional capability. Note also that, should we accept this number 20 as the limiting number for one's close bonds, 20 cannot be the upper bound for the size of non- kernelled close coalitions, as every member of a non-kernelled close coalition is assumed to have a close bond with every other of the same coalition. So a coalition of size 20 would deprive its members of any multiple close coalition membership. It is, therefore, expected that the practical upper bound for the size of non-kernelled close coalitions to be far smaller than 20, maybe even less than 10, since it would be unlikely that all the members of a close non-kernelled coalition are so emotionally resourceful.

This does not apply to the size of close kernelled coalitions, however, since with a kernelled coalition it is only the kernelled member who is required to have such an emotional capability. So it is possible for a close kernelled coalition to reach this size of twenty or more, as it seems that such emotional riches is a part of the personal attractiveness of the kernel member. Still, even a close kernelled coalitions may not grow too far beyond this limit, because the burden on the shoulder of the kernel member would then be too heavy to bear, the burden of interacting with all the non-kernelled members, constantly caring and disciplining them. If some kernelled coalition look larger than this limit, it is usually an artificial coalition, whose coalitional integrity is helped to maintain by some social rules. As will be discussed later, artificial coalitions are generally formed according to an 'extended' kernelled coalition format, whose examples range from large families, extended families and mammoth social organizations, apparently with no size limit.

Although these are speculations of the contemporary coalitions, the size limits may apply equally well with coalitions in the ur-band times, except that there would have been few artificial coalitions to speak of, at least when they did not use their language much for making social rules. Then that leaves only the natural special-purpose coalition to categorize the ur-band whose expected size is just about too large for any kind of close coalitions. Apparently, the special purpose of forming a ur-band could be nothing else but the survival of its members, *i.e.*, defending themselves by joining forces when necessary, and also occasionally sharing foods, finding mates and so on.

Let me call this kind of natural special-purpose coalition th *community coalition*. The assumption

that it was a special-purpose coalition implies that not all of them were closely bonded to each other, not acting together all the time, allowing close coalitions and other kinds of special-purpose coalitions to exist inside it. Nevertheless, they would have lived fairly close by, having interactions among themselves so that they could take concerted actions when group actions were needed, and could also seek to find appropriate partner(s), as a mate or as a work- partner, among themselves when such a need arose. Note that these summarize the functions a community was expected to serve even in much later post-civilizational times. The only really serious difference between the early and the latter time communities seems to lie in the point that the ur-communities were managed without having much recourse to artificial social rules.

The issues of management for animal and human groups

This assumption that ur-communities are managed without artificial social rules do not exclude the possibility of their using natural rules, those which are incorporated in the human genes as a part of the urge system. To obtain a clue on this point, let us see what the group-forming animals are doing to maintain their groups. Some animal species, especially large herbivores, are often known to form rather large groups or hordes. The characteristics of hordes that I call the reader's attention is that horde members seldom interact among themselves as individuals, except perhaps in occasions such as mating. With few interactions there will be few internal conflicts that call for some kind of management. Even so, a horde serves some basic functions of a community; most of all, it provides its members with a far greater security than being alone. Note that the small need for management sets practically no internal size limit, and a horde may grow very large, and the sheer number of them is the major source of the horde's power that gives a security to its members.

When the food resources are not as abundant as grasses for herbivorous in the plains, other animal species with a relatively large body size seems to have met a choice in their evolution between the two life styles: either operating primarily as loners or living in groups. In order to choose the former, individuals of the species must have been either extremely powerful physically and/or extremely furtive. Otherwise, they had to form groups to increment their collective power both for defense and offense. Furthermore, they had to work it up without the sheer number of a horde to the level of effectiveness that would deter any potential aggressors in spite of their conspicuousness as a group.

As mentioned earlier, the effectiveness of coalitional cooperation would reach its peak when the whole group operates as if it were a single individual, with a single brain and many body parts. Though this is far easier to be said than done, the group forming animal species apparently evolved toward that direction, creating those parts of the urge system whose primary function is social. Such an evolution toward social animals, however, makes it a prerequisite that the animals already possess the ICA capability, as the intense interaction among themselves requires each group member to recognize each other member and create separate dyscs, so that others' responses to one's own action can be anticipated properly most of the times.[10]

It appears that biological evolution tends to make animal species to form groups insofar as the natural resources they need permit them to do so, when the species are advanced enough to be equipped with an ICA capability. The coalitional benefits accruing from doing so can be attainable, however, only when the group members can restrain themselves, by sacrificing some of their freedom of behavior, so that

[10] Social insects apparently found another solution for achieving this goal of group integration without the capability recognizing individual others, by assigning the group members recognizable cues to their genetically determined roles. That, however, is an entirely different story.

the groups can operate as self- regulatory systems. Intense intra-coalitional interactions and self-regulations may be made compatible only with ICA capable animals, but it is still a very difficult goal to achieve.

A solution to this difficult task is provided by the urge system, and some of the spirit of this solution seems to be represented by the so-called *linear rank order system* known to be widely practiced by group-forming animal species of higher order (Eibl-Eibesfeldt, 1970). Let me examine what this system stands for.

Linear rank order system and the intra-group competition

The linear rank order system that holds among groups of animals first drew attention of ethologist when Schjelderup-Ebbe (1935) found the 'pecking order' among the group of hens in his keep: they behaved as if they had a linear rank order among them which allowed higher ranking hens to peck lower ordered ones but not *vice versa*. Since then a similar system exists in almost any bird or mammal groups, small enough to allow the mutual identification of group members, apparently as a means to regulate their intra-group interactions. As most birds and mammals have some degree of ICA capability, it is not surprising that they can recognize who in the group is more powerful or less than oneself. What is noteworthy is that the such relative power evaluations they make among themselves agree to each other well enough to produce a linear rank order, even though it is not rare that some ranks are contested and undecided among multiple individuals.

This ubiquity of this system across species and its approximate linearity strongly suggest its old origin in the evolutionary process of the urge system, created for the self-management of relatively small but intensely interacting groups, handed down to late coming species each of which used it *mutatis mutandis* in accordance with their particular life style. For instance, mammals do not peck. So they either growls or squeals or does something similar to show one's dominance in rank to another, either simply to confirm the rank differential, or claim one's prerogative over an issue. And in response to such a dominance display, the target individual of such a display, an inferior ranker, usually acts submissively in a species-specific stylized way. It is through these stylized exchanges that make it relatively easy for an ethologist to identify the dominance relations among the members of animal group he or she is observing, and, needless to say, having such rank-dependent way of interaction prevents most, though hardly all, seeds of disputes from developing into more serious conflicts.

The really ancient origin of this self-regulation system of groups may be attested the observations made by Blanchard and others (1978) that even bears who are well-known loners develop dominance relations as soon as they are made to live in a group. The target of their observation was a group of captive adult Japanese brown bears who were used once as a tourist attraction. All the powerful adult males were seen frequently engaged in fighting among themselves for the position of the *alpha male*, or the highest ranking male. This fighting seldom incur any serious injuries, because they employed the mode of fighting called the *ritual fighting* in these engagements, targeting the swipes by their powerful forepaws at the opponent's neck and shoulder areas where the bear furs were thickest. This ritual fighting showed a marked contrast to punitive swiping a powerful one might give to a lesser ranking one who breached the food priority rule; the swipes would be aimed at the latter's abdominal area where the fur is thinnest, often causing serious injuries. This is the bear-version of group management through their linear rank order, which stays dormant as long as bears are allowed to operate as loners.

As the hidden purpose of having a linear rank order among group members is in the group's self-regulation, the actual rank order is desired to remain stable, but not overly so. Note first that the an

established rank order would be most stable when it correctly reflects the order of actual *control powers* possessed by the members of a group, where by control power is meant how much an individual can control at one's will events happening in one's environment, including those involving one's co-group members. For the moment, let me assume, for the sake of simplicity of arguments, that one's control power is represented solely by one's *physical strength*, which is at least the most potent component of the control power one wields as far as animal kingdom is concerned.

So imagine an animal group whose rank order parallels the order of actual physical strengths of its members. So long as it is natural that a weaker gives way to a stronger, this rank order will remain stable once it is established and recognized by its members as such, and the rank order system will perform the group's self-regulatory function as desired. But that state of affairs cannot last indefinitely, as physical powers of group members will wax and wane with time. A young cub will gain physical strength rather rapidly, and may want to have a higher rank that its increased power deserves. Just thinking is not enough, of course; it must *demonstrate* its increased power in public so that new power be recognized by other group members, and the rank order be revised accordingly. And what better demonstration is there for it than 'challenging' a higher ranker and overwhelm the latter in a fight?

So this direct challenge is allowed in many animal groups as a legitimate method of demonstration, despite that this *competitive* struggle apparently seems to impair the spirit of peace and order in the group fostered by the urge system. However, the urge system never puts the internal peace and order above everything else. The prime goal of the urge system is always survival, and keeping the peace and order is just one of the means to keep the coalitional effectiveness of a group high. The coalitional effectiveness of an animal group also depends upon how powerful its individual members are when they cooperated in meeting a threat, like a raid from neighboring groups, or in group hunting.

So rather than inhibiting such direct challenges, the urge system rather seems encouraging them through competitive urges, insofar as direct challenges are done only under the *species- specific rules*. The rules employed are rather diverse, depending much upon the life styles of the species, and the point of having these rules seems to be mainly in saving the group from being overly disrupted by constant internal struggles. There is, however, one central rule that holds across species: all 'direct confrontations' are to be temporarily suspended during the period when the survival of the group calls for its members' cooperation, like when the group is engaged in a communal hunt, or when it is defending itself against an encroachment of other group into its territory. The existence of such a central rule of course makes a good sense. Note also that this rule does not prohibit rivalry during such external engagements. Each of the group members may use such an occasion a good stage for the demonstration of their powers to other members of the group. Although there is no known evidence that animals do this, it is a well-known means of demonstration for human warriors to prove their fighting prowess.

Note that this central rule generally applies to the humans as well, so that later day human rulers, the conceptual equivalent to alphas, are known to intentionally create an external enemy as a political ploy to fend off direct challenges to their position, especially when the ruler feels his or her political power base getting a little shaky. The reason why I am considering animals here in my arguments on social urges is that there are continuities between the advanced animals and the humans as far as the operations are concerned, and animals often show them in far more clear-cut ways than humans do, as the latter tends to be marred by ubiquitous 'other considerations.' For instance, there are always some humans who are willing to break any given social rule, and above central rule, too, may be broken by a breed called 'traitors.' Note the significance for a human communities of having such rule-breakers which are often very daring acts as

punishment against them are usually severe. Notwithstanding occasional serious damages they cause to the welfare of the community, they still function as the last safety-valve preventing communities from smothering themselves with enormous number of social rules of their own creation. So let me go on discussing animal social behaviors for a little more, while keeping their human equivalents in mind.

Status struggle: the case of wolves

To see how animals go at their intra-group competitions, let me consider briefly about wolves and chimpanzees, wolves as an example of a hunting species, and chimpanzees as gatherers.

Wolves have two rank orders, one for males and the other for females, and the relationships between these two rank orders are not identified.[11] The confrontations for promoting one's rank takes place during the months preceding the female estrous periods in spring and fall, and males and females fight within one's own sex with little interference from the other sex members. Chimpanzees are known for their political maneuvers (de Waar, 1982), but wolves are also political enough to use alliances for augmenting one's control power. One of the popular patterns is such as the following: A gamma-ranking individual (in either the male order or the female order) may assist the beta who is challenging the current alpha. In a two-to-one confrontation, the allied side usually wins, elevating the former beta to a new alpha, and the former gamma, now beta, then challenges the new alpha. This tactic certainly improves the chance for the original gamma to eventually become alpha compared to using no such tactics.

Such confrontations among wolves are quite vicious, and the severely wounded loser will lose his or her rank as well with no control power left to support it, and in this point females are no less vicious than males. They are often more merciless than males in the point that the victor does not stop tormenting the loser, and the loser is usually forced to leave the pack. A lost male, however, may be allowed to stay in the pack if he so chooses, and sometimes he does, apparently politically retired, and plays the role of good uncle to wolf cubs.[12]

This frantic melee for status competition subsides at the end of this period, and a new rank order is firmly established both for males and for females, good for next such period. Then females become estrous, and the alpha male has the exclusive copulatory rights. Not that other males remain quietly celibate in respect of the alpha's rights; as they are all hormonally excited, they attack the alpha in frustration. However, this is different from the status struggle; it only requires the alpha male his worthiness by defending his rights, and the fact that he is capable of doing it implies that this frenzy is also a part of the rules.

Let me ask at this juncture why each wolf, politically retired ones excepted, looks so strongly motivated to raise one's social status. This question actually applies to any group- forming animal species of advance order, including humankind. My answer is, as naturally expected, that the urge system equipped any such animal species the competitive urges with the hidden purpose of keeping the coalitional effectiveness of such a group all the time as high as possible. This question is delicate, because there seem to be alternative answers. As far as wolf males are concerned, the 'selfish gene' hypothesis answers the question aptly, since only the alpha male can reproduce his genes. It also explains nicely why the female

[11] The primary source for my arguments on the social life of wolves is the book "Der Wolf" by Zimen (1990).

[12] Zimen (1990) wonders what merit this behavior of politically retired wolves would have from preserving one's genes. An wolf pack, as well as any natural animal group, is a community coalition, and a community member feels more at ease, and more secure, by making whatever contributions to the community, and that should supply a better, at least more natural, answer to the question.

wolf newly risen to alpha keeps persecuting the beaten former alpha, and virtually forces the latter to leave the pack. This does not explain, however, why most females do not choose a much safer way of staying submissive to the current alpha female, as the alpha male will copulate with them in any case.

Although the 'selfish gene' hypothesis works fairly well with wolf males, and many other mammal species as well, it does not apply to the humans. It is absurd to assume that any human to climb up the rank-ladder of current day corporate organization is lured by higher copulatory rights. In older days some of the rulers kept a rather large harem, but that can be explained by a much milder, and therefore more unrestricted assumption that ranks accrue privileges. Since the higher ranker are the more powerful within the group, it is more than natural that they get greater privileges, and the top ranker, alpha, keeps the greatest privileges such as the exclusive copulatory rights, as wolves have little else in terms of privileges that count.

Compared with wolves, humans have an enormous variety of privileges: monetary rewards, rights of doing various things allowed only to high rankers, and so on so forth. The point is, however, whether one who wants to promote one's social status is after only these privileges that accompany the high status. Is what makes someone aspire to be a president of a nation just the privileges of a president, or becoming the top political figure of the nation? It is quite probably both, but the former alone obviously cannot be the answer. So let me restate my hypothesis: the urge system of any advanced group-forming animal, be it a human or an wolf, is equipped with competitive urges to promote one's social status with the hidden purpose of maintaining and increasing the coalitional effectiveness of the group one belongs to.

There is an important proviso supplementing this hypothesis especially in the case of the humans. Although it is assumed that every person is equipped with these competitive urges, not everyone attempts actively to promote one's status. Probably due to the enlarged cognitive capacity of the humans, they are generally far more deliberated decision makers than wolves, and the estimated cost of such competitive activities and the duties and responsibilities accompanying a high social status will often far outweigh the glory of a high status and the accompanying privileges attenuated by low success probability. In such a case, a person will prefer No-Action to any direct competitive activities, even when some competitive urge, like envy, is activated.

Alliance power: the case of chimpanzees

The patterns of social behavior seen in chimpanzees are very complex, but the principles of their status struggle are quite similar to those of wolves. Many males exert themselves to acquire higher social status, especially the position of alpha male, and females do the same among themselves, although every male in principle outranks all females (Goodall, 1986). For the purpose of status promotion, they also form alliances, usually among males. One of the two major differences in the ways of status struggle among chimpanzees from those among wolves is that confrontations among chimpanzees are far less vicious than those of wolves; in many cases, just demonstrating one's superior power through threatening displays, like running toward the target individual with the chimpanzee's war-cry of punt-hooting, may be enough to make the opponent cower and flee screaming. So even though males are occasionally engaged in a real physical fight, the physical wounds sustained by the loser are rarely severe. This difference in the mode of confrontation obviously reflects the respective life styles of these two species. Wolves are group-hunting predators, and no individual can claim one's status within their pack without a real fighting prowess. In contrast to wolves, chimpanzees are no born fighters. They are omnivorous, and a few of them may hunt occasionally, but their hunts are far more capricious compared to the well organized hunting method of

wolves.

On the other hand, the status struggle among chimpanzees are not keyed to any fixed periods, as there is no seasonal estrous periods for chimpanzee females, each of whom becomes estrous individually once in every 36 days on the average. So the chimpanzee alpha male has practically no time to rest, defending himself from ambitious contenders, while enforcing his copulatory rights, which he has as the wolf alpha does, but is very often ignored by other males.

So the chimpanzee alpha apparently needs a rather powerful ally or allies not only for becoming the alpha but also to remain as the alpha. Let me relate two interesting episodes about the chimpanzee alliance which are instructive about the nature of politics which holds regardless of whether the concerned parties are chimpanzees or humans.

Nishida describes a piece of political maneuver played by three chimpanzee males in a wild chimpanzee group he observed in Mahale Mountains of Tanzania (Nishida, 1983, 1991). The contest for the position of alpha was fought between two powerful males, Kasonta and Sobongo, into which a third male, Kamemanfu, intruded with a clever political game of alliance-shifting. Since the control powers of the two major contestants were nearly evenly matched, whichever of the two could become alpha if he could ally with Kamemanfu. And Kamemanfu changed his alliance very often, actually seven times in four months, forcing each of the two major contestants to abdicate very quickly after he became the alpha. The question is: what benefit did Kamemanfu get by being so fickle in making his alliance? The answer seems to lie, according to Nishida, in the fact that Kamemanfu had copulated during this period nearly twice as often as any of the other two did, for the obvious reason that whoever being the alpha at the time was afraid of antagonizing Kamemanfu by restricting his copulation rights so that he might change side again.

Females chimpanzees usually try to avoid the scene of status confrontation among males, but there are exceptional cases as well, and an interesting case was reported by van Hooff (1982) about the social behavior of experimental chimpanzee group in Arnhem zoo. The alpha male of the group at the time of his observation, Yeroen, was often challenged by the beta male Luit and the gamma male Nikkie, whose alliance could have overwhelmed him had it not been for the females of the group aligning themselves around Yeroen whenever Luit and Nikkie approached him belligerently. Even though these females did nothing outwardly aggressive, their presence there was menacing enough to making the contenders retreat. Luit tried to harass some of the females, but then Yeroen came to help, followed by all the others. In frustration, Luit climbed up a highest tree in the compound, despite the jolt of electric protective fence of 15,000 volts he got, and screamed there for a long time. Eventually, however, Luit succeeded in intimidating these females one by one, and finally confronted with Yeroen alone while Nikkie drove off all females who were in support of Yeroen into a corner of the compound. Seeing this, Yeroen, who did not want to fight, stepped down from the alpha's position.

Despite the rarity of such an incident, this episode is suggestive in many ways. First, an alliance power may be created by relatively powerless members; if enough number of them unite, the combined power might be daunting even to powerful bullying males. At this point, let me distinguish between these two types of alliance coalitions: the term '*alliance coalition*' may be reserved for an alliance of relatively powerful few, and the term '*support coalition*' may be used for a subgroup of relatively large number of individuals in support of a candidate for an important position. Both of these are special purpose coalitions for political purposes, meant to be used for human alliance coalitions as well.[13] In the human political

[13] The possibility is not excluded that an alliance coalition is a close friendship coalition. Also in chimpanzee groups, a mother and her children often tend to form an alliance, helping each other in their respective status struggle.

system called *democracy*, the rules of competition are generally based on the size of the support coalition for each competitor. Whether the political system of a community is democratic or not, these two types of alliance coalitions never fail to play some key roles in the human political struggles as the easiest means to acquire control power.

The point I wish to put a special emphasis here is the basic continuity across animal and human socio-political behavior. It is not that the socio-political behaviors of some animals *resemble* those of the humans; they are virtually the same as far as the underlying principles are concerned. The apparent differences are created only because animals use species-specific self-regulatory rules -- making their behaviors fairly uniform given the species, while the humans use language-coded artificial rules as tools for self-governance. And these human socio-political rules evolve and proliferate rather quickly as all tools do through artificial evolution, contributing to produce a large heterogeneity in the outward appearance of human socio-political systems, as will be discussed later.

The system of social status to replace the linear rank order system

Before going into any further arguments on the socio- political behavior of animals and humans, especially the humans, we need to expand the theoretical framework as our conceptual tool of analysis a little further so that we may be able to make reasonable inferences about their principles. Needless to say, the social behavior of animals and humans are extremely complex. Even those of wolves are far beyond the level the brief descriptions given above do justice to, let alone those of the humans. What that implies is that we would simply be drowned in infinite details if we fail to grasp some underlying principles from which these details are supposedly derived.

Of course, what we can do for the moment is to find a working model for such principles, a model that actually *works*, meaning a model that is equipped with a built-in inference engine. One of the simplest, and often most effective, type of conceptual models with an internal inference engine are algebraic models. The particular merit of algebraic models is that, even though they deal with numbers, the numbers are represented by symbols, and exact figures of these numbers need not be known to make inferences with them. In other words, algebraic models allow us to make qualitative arguments using not exactly identified quantities.

By algebraic models I mean no esoteric ones which no one can prove or disprove. The kind I mean are simple linear ones like those having been used in earlier chapters. Linear models are bound to be approximations of the reality. But it has a merit that almost anyone familiar with simple mathematical expressions can use its inference engine, and falsify such inferences even as approximations. Many of the readers of this book probably would have found some of the statements I made false -- irrespective of whether they were expressed in mathematical terms or otherwise, because my intention was always with the former, and if so, it testifies the falsifiability of such models, and thereby their improvability.

So much for rationalization, and let me get on with the expansion of conceptual tools I have been using in analyzing the socio-political behavior of animals. The first target is the linear rank order system. Despite the usefulness of such an ordinal scale for an outsider observer of animal groups, it is quite obvious that individual animals are not regulating their interactive behavior according to the ranks assigned by outsiders, not in any literal way such as "That one is the second in rank, and this one is the tenth. Since I am the fifth, I pay respect to that one, and expect that this one will pay me respect."

What they must be doing when one encounters another is a direct evaluation of power differential

between them, a quantitative judgment which may be crude but enough to make them decide quickly what is an appropriate action to take. Apparently, this is an ability of a very old origin, as they may not be able to survive without some such ability. Note that this direct evaluation is required to be rather precise when the power differential is small, since, when it is very large, what one does would not depend upon how large it really is.

Still, when a number of animals generally live together as a group, these power differential recognitions made by its members will cumulatively develop a crude linear scale, with a bit of help from a group pressure toward conformity, such as a conceited youngster who overrated one's power bearing the brunt of punitive actions by group elders till its inflated self-evaluation be sufficiently deflated.

So let me now take this crudely composed linear scale of socially recognized control power as granted, and call it the *scale of social status* established within a group of animals, or an animal community. And upon this scale, each member of the group is positioned in accordance with its socially recognized control power, which henceforth will be called the *social status* of the individual concerned. An individual's social status thus positioned on the scale, however, will in general be more blurry than pinpointed, first because the scale itself is coarsely grained, and secondly because the agreement among the members' evaluations of the individual's power cannot be perfect, and the pressure toward conformity may not bother small differences.

Besides allowing to build an algebraic model of social processes, as will be done shortly, the adoption of social status as one of the basic concepts in lieu of ranks is a necessity insofar as one assumes a continuity across animal and human domains. Consider the troubles of rank ordering even as small a human community as a ur-community of near hundred members. Besides, rank orders have to be redefined anytime there is a member change, which is especially frequent with human communities, while it has a far less effect upon the system of social status, though there may be some as will be mentioned later.

Multi-dimensional control power and the community norm for its aggregation

Before going into any further arguments on social status, I need another expansion of a basic concept, and that is about the control power. So far I have considered only physical strength as the component of one's control power. This is an oversimplification even with animals, as, for instance, fighting as a status contest is not just a matter of direct confrontation of brute muscle forces of the contestants. Fighting tactics depends much upon intelligence and experience, the powers originating from their brains. Alliances are a great source of power, but who allies with whom will depend a great deal more than just muscle and brain powers. There must also be personal attractiveness working among animals to facilitate forming alliances.

The multi-dimensional nature of the control power becomes more than apparent when we shift attention from the animal kingdom to the contemporary humans. *Wealth*, for instance, creates an enormous control power. Even with no physical strength and no intelligence to speak of, a wealthy person can exert a great control power, as one may control many people with money, even if it cannot buy everything. Having certain special skills, knowledge, personal attractiveness, occupying a certain high position in an important social organization, having important kin and friends, and so on so forth. Although these personal traits and relationships one holds are not entirely independent from each other, it is unmistakable that the control power of a person in a civilized world expand into a really multi-dimensional space.

The reason why the civilized humans have some many different kinds of control power dimensions

is clearly that they use so large a variety of tools, including meta-tools like language and knowledge, each specializing in different kind of controls. Leaving more detailed arguments concerning these control power dimensions, let me address a more immediate issue arising from this multi-dimensionality of control power, that is, how to *aggregate* these diverse control power components of an individual into a unidimensional social status.

Note at this point that the physical strength that seems the most important power component in most the animal species is itself an aggregated power. An individual with strong very strong muscles but clumsy in fighting, or one who is unable to make suitable allies, would fail to become an alpha. So wolves may be said to have a species-specific *norm* which aggregates individual's power components into a single attribute of the 'fighting prowess,' which by the norm-dependent social recognition converts the multi-dimensional control power of each individual into a unidimensional social status of the individual in the pack. This relative simplicity of the species-specific norm of wolf packs come from their very homogeneous life styles; apart from making allies in the period status struggle, their group hunt is always done using the genetically endowed set of 'biological tools' like their lithe body and sharp teeth and claws.

The chimpanzees may use a little different norms from wolves, and they may count intelligence more than the latter in their norm. Still their norm seems also species-specific, as their life styles are also quite homogeneous, and their use of tools is only marginal. In contrast to animals, the norms used by humans differ greatly according to the culture and the situation the community is under, apparently without any such thing as a species-specific norm. Concerning the situation-dependent nature of the human community norm, note that the social status of war time heroes declines rather rapidly when the war ends, and the community can enjoy a rather prolonged peace, in which heroes and heroines of an entirely different genre tend to emerge.

There is one point worth touched upon here about the system of social status among animal groups concerns one of Zimen's comments on wolf pack. He obtained a definite impression that high rankers in a wolf pack are far better defined, and with a larger status difference, than low rankers containing cubs whose rank differences are often quite insignificant if any difference at all. This suggests a shape of social status distribution within a wolf pack being roughly of the form depicted in Fig. 7.1. In this figure, just for convenience, alpha(s) are located near at the center of abscissa with the peak status, and others are located farther from the center as their status gets lower.

Insert Fig. 7.1 around here.

What this schematically drawn social status distribution given in Fig. 7.1 mainly purports to imply is first that there will generally be fewer high status members than low status ones, and status differentials among high status ones will usually be larger than those among low status ones. Secondly, it implies that status differentials among high status ones will in general be larger than among lower status ones. Let me refer to this type of status composition within a community as a *tapered pyramid* type.

It is one of my major assumptions that this tapered pyramidal status composition would be the major prototype of status compositions within an community, be it that of animals or humans, although the actual composition may contain many irregularities. The assumption is made primarily on the following two reasons. First, note that social status is a non-negative quantity, as one's social status is a socially recognized power of the person, and it is difficult to conceive a negative control power. So the downside of the scale of social status is bounded at the origin, zero. Secondly, the orderliness of community requires that a little

blurry values of social status are clearly separated especially with high status members, since it is the conflicts among these individuals of high power that may harm the orderliness of the community. Compared to these conflicts up above, strifes among those with weak powers, like those among wolf cubs, are trifles a community can easily dismiss.

The constant mean assumption for status distribution

One more condition, a critical one, need to be added to constrain the status composition in order to make the tapered pyramid status composition prototypical. Note that the concept of 'social status' in our daily usage of the term represents a *relative* power, and not an absolute power. As mentioned earlier, any person who lives in a modern society with all the amenities of civilization is more powerful by far than anyone in the far past times, in Middle Ages or in the times of ur-bands. But that does not give us all that more social status than the people in the past. So if one's social status is to reflect the control power in one's possession, what it actually reflects is how much control power one has in comparison to those of others in the same community.

The simplest constraint that will make the social status to represent its relative aspect is given by assuming that the *mean* social status over the whole community population is approximately kept constant, equal to some positive number *m*, say. Note that the exact value of *m* is irrelevant as the unit of social status is free. What is important is in this assumption is that there is a social process in a community to restore its constant mean status, whenever a change occurs in its status composition.

Needless to say, this assumption makes social status a relative measure. Suppose, for instance, everybody in a community has somehow doubled his or her control power. According to the traditional way of status reckoning, this may also make everybody's social status doubled, letting everybody feel elated momentarily. But since this status change will bring up the mean status of the community to *2m*, the status normalization process will be initiated, cutting everybody's status in half, canceling all the temporary effect of status elevation.

This constant status mean hypothesis also makes social status a very competitive commodity. Suppose that somebody high in status lost the person's power, and lost his or her status as a consequence. Since the lost status must be made up for to keep the community status mean, such an event will give everybody else in the community, except those whose powers were tied up with this hapless person as families or allies, will have a chance to increase one's status. The German term '*schadenfroh*,' to be pleased by others' misfortune, therefore, has a ground, just in the same way as an envious person is tempted to slander the one who has recently gained a high status.

So the constant status mean assumption gives the measure of social status the required relativity and competitiveness. The question is if it is the only one that satisfies such requirements. An alternative assumption that comes into mind is the one popular in the game theory, that people are playing a constant-sum status game, meaning that the sum total of the community members' status is kept constant. This assumption is identical to the constant mean assumption as long as the community population remains the same. But the community population is subject to frequent changes, and if one interprets the constant-sum status assumption literally, it should mean that people must averse to a population increase as it means more eaters for the fixed sized pie.

The constant mean hypothesis has no such shortcomings. Imagine a popular scene in middle ages when a community acquired a new batch of people of very low status as war prisoners or slaves, which

often meant the same thing. As such a low status addition to the community population will decrease the community status mean, it has to be compensated by elevating the status of most, if not all, of the old citizens, who would therefore generally welcome such a change. It is possible that they claim a higher income then, as one's income is often determined roughly in proportion to one's status, and they may even get it as the new labor force will generally improve the productivity of the community.

So, even as simple an assumption of a constant mean status provides the concept of quantified social status with a fair inference power which generally agrees with our daily observation of what people feel about their status. Now let me try another example in which each community member's control power is augmented with the same amount, instead of doubled as in the earlier example. Suppose that this incremental power should elevated one's social status by the same amount, d, according to the old power-status conversion rule. But, since this will increase the mean status of the community from m to $m+d$, the increased status composition must be normalized to bring it down to m again. If this is done by multiplying the normalization constant $m/(m+d)$, as is usually done, then the decrement in one's status caused by this normalization procedure will be larger for higher status, and smaller for lower status.

The critical implication this example brings about is that, when the members of a community become uniformly richer, approximately speaking, of course, the general shape of the status composition is preserved, (*i.e.*, formerly high status ones still remain high status and low ones low), but the *variance* of the status distribution within a community goes down, bringing down the peak status as well. Likewise, if every member of a community is nearly equally impoverished, the variance of the status distribution will go up, while preserving the general shape of the status composition in the community with its peak state hiked up.[14]

I am not proposing, at least in the current stage of argument, that this is any workable hypothesis to be applied to real human societies, as there are many other things that affect the status variance in a community. Nevertheless, this example seems to provide a precious clue to interpret what is happening in the contemporary world. Note that we are currently witnessing the crumbling of authorities in almost every corner of the world at least since the end of Cold War; neither of the head of a state, president of a company, teachers in a school, nor parents of a family, have the authority which the persons in the positions once had. And one of the major characteristics of the contemporary civilized world is that almost everybody possesses a great amount of control power as mentioned earlier thanks to the amenities of civilization. The amenities of civilization, however, have contributed to augment a person's control power nearly equally, whether the person is the head of a state or an ordinary citizen. The head of the state does not eat twice more than the latter, nor watches two TV sets at the same time. So even though the head of the state has a little more privileges than an ordinary citizen, the difference is not much to speak of compared to the basic control power that the contemporary civilization has made available to almost everyone. So as long as we are looking at only the phenomenon of crumbling authorities and the vastly augmented control power of the citizens of the modern world, the conclusion of the above simple example makes sense in a rather deep-seated way.

I shall come back to this topic at the end of this chapter. Before doing it, however, I need to address other factors that affect the status variance of communities, together with a more elaborate model of the system of social status.

Pack of wolves, groups of chimpanzees, and human ur-bands

[14] The new variance will be $(m/(m+d))^2$ times of the old variance, whether d be positive or negative.

One of the major factors that affects the variance of a community is the frequency and fierceness with which the community has to deal with external affairs like hunting and warring. As these events call for efficiently organized group actions, the status composition of a relatively large status variance will give such species a better edge for survival, as a large status variance facilitates coordination of group members' activities and their quick obedience to properly given commands. Note also that a good group coordination makes the stability of the status system within the group once it is established. The observed characteristics of wolf packs generally meet these requirements. They have a rather clearly defined tapered pyramidal status composition which remains stable at least between the biannual vicious status struggle periods.

Ethologists often emphasize that the alpha of an animal group is not the 'leader' of the group, at least not in the sense the term leader is used with a human group. At the same time, the alpha male of a wolf pack is not just the male of the highest status, but there must be something like the *office* of the alpha male, since privilege like exclusive copulatory rights belongs to the office, and not directly to the individual who occupies the office. And there usually are duties where the privileges are. Though it is not known whether the alpha male or alpha female takes any leadership in wolf pack hunting but for one of them being on the top of their marching column on about 70% of the time, Zimen mentions that the alpha male seems especially keen to preserve the coherence of the pack without any further elaboration.

Compared to wolf alphas, the alpha male of a chimpanzee group is even less like a leader, apparently doing nothing by way of group administration. Still, the chimpanzee alpha male is also to be considered to have his office, and Goodall makes an interesting comment on this point that the group looks 'disturbed' when its alpha is missing for one reason or another. With or without an office, the peak status of the chimpanzee alpha seems much lower than that of the wolf alpha, and their status system as a whole seems to be in a constant turmoil. This is perhaps because a chimpanzee group is more for its function of providing a community for them to interact within, rather than for external group actions. A chimpanzee group, however, is occasionally in strife with a neighboring group, and though such rarely develops into a serious conflict, they have demonstrated that they are capable of intentional slaughters.

So far we have seen how two animal groups, wolves and chimpanzees, self-regulated their group lives in their respective ways that match their life styles, some aspects of which are common to both and some different. And, apparently, they both have succeeded in maintaining essentially same life styles across countless number of generations without introducing virtually no new innovations, as passively coping species are supposed to do.

Now let me turn to the humans at the time of ur-bands. Humans are active copers, and could adapt to a vast variety of environments through their versatility. So ur-bands spread over a large portion of the world surface would have chosen rather disparate life styles on the surface. Nevertheless, the basic principles that governed their social lives could not have been too different from those of chimpanzees or even of wolves, *i.e.*, they were constrained by the status system of a tapered pyramidal composition, and they were nearly constantly engaged in status struggle (as evidently we still do) that was more of the chimpanzee style than that of wolves.

There were other respects which must have distinguished ur- banders from chimpanzees. First, the ur-banders were excellent hunters. Unlike wolves who are born hunters, the humans have no species-specific hunting method. Instead, they had craftiness and versatility as active copers, and were expected to invent hunting methods and tools that matched the specific environments they happened to live (Tudge, 1996). A fabricated (not species-specific) hunting method, however, would have required some kind of a command structure to implement it, like a hunting chief making quick decisions depending upon rapidly

developing hunting situations, barking orders which were obeyed by others without protests. Hunters also needed to be trained with the use of various hunting tools.

Besides organizing efficient hunting parties, the members of a ur-community, perhaps even more boisterous than chimpanzee groups due to their constant chatting and verbal quarreling, would have appreciated a relative peace that might ensue if the *chief* of the community could actively interfere and adjudicate on disputed issues. They could even have afforded to bestow a little extra status on whoever occupying the chief's office, as an enhanced authority of the chief would serve two useful functions. First, it would make the chief's role of keeping the peace and the order of the ur-group a little easier. Secondly, this enhanced authority of the chief will improve the chance of the incumbent chief to remain in the office, protecting the chief as a seasoned administrator from schemes of human Kamemanfu's, of the kind which human communities would never be in short supply.

Let me elaborate a little on this first point as it is important. Note that helping the chief control the community with a little extra authority implies that anyone willing to do so is actually handing over the chief that much control power over oneself. One would feel this power transfer a small price to pay for the peace and order for the community, but will do so willingly only as much as the community deems necessary. Let me call this the *necessity-based upward power transfer*. Note that, even though the amount of power thus transferred might be a small fraction of each community member's power, its sum total could be significant enough to create a pinnacle in the status composition of the ur-community.

On the other hand, it would not do to imagine a ur-community chief as a sort of dictator. There are to reasons that excludes this possibility. The first of these reasons comes from the size limit for the population of a ur-community. The second is that this necessity-based upward power transfer is made toward the office of the chief, and not toward the chief in person. Let me elaborate on the first reason first.

Imagine a community with an extremely small status variance. If such a community existed, it might look like as if it were a non-kernelled close coalition except for its size, since every the community member has a status nearly equal to the community mean, m. Likewise, a community with an extremely large status variance would look like an oversized close kernelled coalition, whose status composition is made up of a few very high status persons and all the rest with almost zero status. Something like this may be observed in cult type community with a religious leader with a real charisma who has an absolute control over the person's disciples. Now assume for convenience that the status of disciples in the religious community is equal to zero as they have little personal control over anything. Then to keep the mean status of community m, the charismatic leader's status must be equal to nm, where n is the population of this community.

So this nm is actually the upper bound for the status achievable within a community of population n. With the limited population of a ur-band, and no member of which would have given up all the personal powers for necessity-based upward power transfer, the chief's power augmented this way could not be overly impressive.

By the way, in the example of a religious cult, the power transfer made from disciples to the charismatic leader is not the necessity-based transfer, as with the former the transferred power goes directly to the leader in person, while with the latter it goes to the office of the chief rather the chief in person. The former may then referred to a *devotion-based upward power transfer*, made willingly by devoted followers of a leader. There is another type of upward power transfer that may be called the *coercion-based upward power transfer* used by dictators as will be discussed later. In the present context of ur-communities, these two extreme types of power transfer are most likely irrelevant.

Now let me get to the point that the necessity-based upward power transfer is associated with the chief's office and not the chief in person. It will help protect the incumbent chief a little better from challengers, but it is no absolute power like the one obtained through devotion-based power transfer. So if the chief's performance is deemed to be lower than the expected standard by the majority of the community members, they could have pull down the incumbent from the chief's office by redirecting their support from the current chief to another, more desirable candidate for the chief's office.

One more question to be asked about the ur-band is if it was supposedly engaged in chronic wars -- like conflicts with neighboring ur-bands. The possibility cannot be denied, but the probability for such being the general case seems rather low. What could ur-banders have ever gained by winning a battle, when there was virtually no spoils of war when the enemy was another hunter- gather group with no holdings? On the other hand, they could have lost much by being beaten in such a conflict, as unlike chimpanzees they were good hunters with deadly hunting tools, and like chimpanzees they would have had no compunction against killing.

So even though there might have been occasional bloody strifes taking place between neighboring ur-bands due to their bilateral anger on a certain issue, these should have been relatively short-lived affairs. Note that there was nothing worth defending for a losing hunter-gatherer band at the cost of their lives, no land, no town, no holdings. So with the losing side simply fled to another place, there would have been little chance for such a strife to develop into a chronic affair.

The reason I am speculating about is because constant warring creates the 'necessity' that raises the amount of necessity- based upward power transfer. This might not have counted much with a ur-band whose population was limited by a natural upper bound, but it would make all the difference in later times when this population limit was removed by the agricultural revolution; when the community population became hundreds or thousands of times larger than that of a ur-band, and when the need arose to defend the land to which the sedentary community was bound, a possibility emerged for the status of the ruler of the community to shoot sky high, as the increased community population created the necessary margin for such a high status by resetting the upper bound of social status correspondingly higher. And there might have been the 'necessity' for it when communities started warring with each other. Note that the higher the peak status, the more elaborate a command structure in the form of artificial coalition, like the hierarchical structure employed in the army, could a community house inside it as will be elaborated later.

So once one of the warring communities employed such a social structure, it would have been necessary for others to follow suit, and this necessity could have served as the basis for heightened necessity-based upward power transfer, in the forms of higher taxes, levies, and military services. Not that people liked such a transfer, but it was easy to convince them of its necessity as their survival hinged upon it.

So behind the relatively calm -- calm only metaphorically -- scenes of ur-communities, the seeds were already germinating that would engender great changes in human societies coming soon after. Besides the office of the chief, which will later turn into offices of kings, emperors and presidents, there must have been a few other features fairly clearly defined already in ur- communities which would come to play significant roles in the later societies. As artificial evolution should have produced a variety of tools in the times of ur-communities, together with meta-tools like skills and knowledge for the use of the tools, the members of an ur-community would have more or less segregated themselves into semi-professionals, each specializing in a certain skill, as such *division of labor*, which naturally included division of skill and knowledge, usually led to more satisfactory outcomes through exchange channels established across

different semi-professional groups, and even across different ur-communities.

Since the people sharing the same profession would have operated together most of the times, it is natural to expect for them to have formed a subcommunity with its own chief, like the head hunter. Such a person might also have had the his own share of upward power transfer contributed by the members of his profession. A likely scenario might then be that the chief of the community and these heads of various professions were in alliance for mutual support, an alliance that might have functioned as a precursor of the latter day government.

Such an governing alliance would also have needed to include a figure like a shaman, and it would not be surprising if much of the chief's power was based on him- or herself being a shaman.

Now I shall leave the context of the ur-community, and present first a more articulated model for the conversion of multi-dimensional control power into unidimensional social status. In this presentation, my viewpoint will be set mainly on individuals and their urge operations, while choosing appropriate background context freely from the known historical times on the basis that the principle of urge system operations have remained virtually the same since the ur-band times till today. After this ground work, I shall come back to the period right after ur- bands, and discuss the process of artificial evolution in the area of social systems that has take place since agricultural revolution till today.

7.2 A model for the system of social status

Dimensions of control power bases

As artificial evolution has made its progress, it created many new control power bases unknown in the times of ur-bands, in relations to various types of tools it produced. Let me list up a sample of representative power bases that have worked as such in historical times as well as today: physical strength, intelligence, charisma, alliance, material wealth, knowledge, skills, lineage, morality, physical attractiveness, social positions, and so on so forth, the list is virtually endless. There is obviously no doubt about the multi-dimensionality of control power bases, even though not all of them are mutually independent.

Leaving detailed arguments concerning individual power bases to when such arguments are called for, let me consider here mainly about the principles concerning how particular control powers are created out of these power bases.

Note first that how much of a control power is produced by one of these power bases depends very much on the context in which the owner of the power base is situated. For instance, imagine a person left alone in wilderness for whatever a reason, severed entirely from the human society. Such a person will usually find oneself utterly 'powerless,' as most of the power bases the person may possess would generate no power in such a context. Wealth and good looks, for instance, are rendered useless as wild animals are unbribable and uncharmable.

So apparently the society and the interpersonal interactions taking place within the society are causing to generate a large amount of control power. The reason may be illustrated by the following example: Consider, for instance, a person who has hit upon a new method of growing grains which produces about twice as much harvest compared to the traditional method. This is by itself a significant control power of the person, but is no more than that before the fact is brought to notice by other members of the community, as will happen sooner or later. Once the fact becomes a common knowledge, however, the person's control power will be magnified multifold, as everybody else would want to learn the technique. As

a result of such desire of others, the person may become rich by selling the information, or acquire a large amount of potential favor return from others if the person chooses to teach the technique freely to others. In either case, the community will benefit much by the innovation introduced by this person as the total grain output of the community will also be doubled.

So for the survival of a community it is important for it to cultivate whatever a power base newly arisen with one of its inhabitants, and to make the power a common asset of the community. The hidden purpose of the very important urge of *demonstration* lies in providing the necessary intermediary step for this to occur. This urge is activated when a person recognizes a growth in one's control power, whose action plan, typically *boasting*, is set toward the goal of letting others know the person's newly acquired power. Of course, the benefit of the community may not usually on a boaster's mind; what a boaster intends to achieve by the act is usually just for the person's augmented power to be properly recognized by others, with the corresponding increase in the person's status as a natural consequence of such social recognition not far behind in the mind.

As a major member of the status promotion urge family, a great deal needs to be discussed about the operational modes of the demonstration urge. Before going into status-related urge operations, let me first introduce a linear model for the power recognition and the conversion of multi-dimensional power into unidimensional status. Needless to say, the assumption of linearity here is no more than a convention, as nothing about power and status seems strictly linear, but this model, easy to handle because of linearity, still is a good tool to glimpse at the basic principles underlying the psychological and social processes involved.

The principle for recognizing others' control power and the adaptation level hypothesis

Imagine an episode in some medieval times in which a mighty warrior came to a kingdom and offered himself to join the kings's army. The king naturally was very pleased as such a fine warrior was an invaluable asset for the kingdom which was in a constant battle with its neighbors. Suppose that the superiority in physical strength of this newcomer to the king's former champions was obvious to everybody's eyes. As usually expected to happen in such a case, the newcomer would outshine the others in the physical strength dimension of control power, and the once mighty looking king's former champions would come to look less formidable than before the newcomer's arrival, even though objectively speaking none had happened to decrease the physical strength of each of them. At the same time, it is also to be noted that no similar depreciation of physical power would take place with any of the more ordinary, common warriors.

The same effect of outshining takes place in other dimensions of control power. When a young genius has emerged in an area of science and shown a real excellence, most of the previous authorities in the field might look a little less indomitable, even if none of them were failing in their tasks. Interestingly, a similar effect has long been known in sensory perception. Helson (1964) discovered that his experimental subjects tended to judge the same object lighter when they held a heavy object immediately before the exposure to the target object than otherwise. By examining his experimental data, he concluded that one's subjective weight judgment was done against a certain reference value of weight called the *adaptation level*, defined as a sort of mean value of all the weights the subject was exposed to prior to the target object.

In other words, according to the theory, a person judges a given object heavy or light, and how much so, with reference to this adaptation level which sums up, in a sense, all the weights that the person has encountered recently. This naturally implies as a corollary that a person recently experienced a very

heavy weight will tend to judge other objects rather light. This is then another outshining effect, enough to make us suspect the existence of a similar underlying principle. I am not claiming that the appraisal of other person's control powers is another kind of psychophysical direct evaluation of external stimuli. What I intend to claim is that such a process as represented by the use of adaptation level is the basic underlying principle common to most of the unipolar (*i.e.*, non-negative)[15] quantitative judgments the humans make.

The gist of the principle I propose may be expressed in the following way: Assume first that there is a subjective magnitude scale on any dimension, sensory or otherwise, on which one makes a magnitude judgment. The scale is fixed, given the person, only up to a multiplicative transformation; in other words, the scale may be expanded or contracted by multiplying a positive number. This transformation will be conducted whenever a new specimen is judged so that the mean of all the specimens judged in the past (of course, all those still remembered) is always kept at some constant, say, *1*. In other words, the subjective magnitudes in one's experience are always *normalized*.

To gain some insight for how this judgmental system works, let us follow up a process when a person encountered a specimen whose subjective magnitude in the dimension under consideration, be it the weight dimension or the physical strength dimension, is extraordinarily large in the current subjective magnitude scale, creating a response such as "What a heavy object!" or "How awesome looking person this newcomer is!" Then the normalization process will set in to bring back the mean value of the specimens, increased by the joining of the new specimen, back to the standard value of *1*.

Let n be the number of specimens in the old population, the population of specimens at the time of inception of the new specimen. Let x^* be the subjective value given to the new specimen. As this value is assumed to be larger than *1*, its addition will increase the old population mean from *1* to $(n+x^*)/(n+1)$. To bring the mean back to *1*, the new scale specified by normalization requires every subjective value in the old scale, x, by the factor of $(n+1)/(n+x^*)$. The actual amount of reduction for x is then given as

$$x - \frac{n+1}{n+x^*}x = \frac{x^* - 1}{n+x^*}x . \tag{7.1}$$

Now what is this population? In the case of the subjective weight judgment experiment, it may be assumed to be the sample of objects given to the subject to weigh prior to the object weighed as x^*. But let me forget about psychophysical experiment, and from now on stick to the issue of power recognition.[16] In the case of the physical power recognition, n may be able to be taken as the population of the community itself, since in the times when the community was relatively small everybody would be aware of the physical power held by everybody else in the community.

Since I assumed that x^* is extraordinarily large, it must be larger than *1*, the population mean in the

[15] The principle may be extended to include bipolar quantitative judgments, like those on the joy-sadness dimension, and the arguments given on this subject in Chapter 3 may be seen in the light of the current argument.

[16] The model I presented here is different from Helson's, who proposed geometric mean instead of ordinary mean to account for the adaptation level. The variables Helson used to calculate the geometric mean were all 'objective' weights of the objects used in his experiment, and for that reason his model cannot be applicable to our argument, the recognition of control power for which no objective measures are usually available, certainly not for the kinds of power bases as good looks, lineage, and charisma. So my arguments begin with subjective evaluation and end with subjective judgment, although I shall touch upon some objective- subjective relationships concerning control power later, where such an argument is possible.

old scale, the amount of reduction given in (7.1) is positive, and the amount of reduction will be larger for large x. (As a matter of fact, (7.1) is good for any x^*, large or small. If it is less than one, the reduction becomes negative, meaning that every x is increased in the new scale rather than decreased. But let me stick to this assumption for the sake of argument.) Note that this reduction applies to x^* as well, the newcomer's power recognition being affected the greatest. Since the person is a newcomer, however, this reevaluation would count little; the person may now look more normal than extraordinary after the normalization (no pun intended). Compared to the newcomer, the reduction in the recognized power of all the king's former champions would be palpable; they might not look as powerful as they once were in front of this newly arrived magnificent warrior.

Now let me assume that this normalization is conducted separately for each control power dimension, be the dimension wealth, good looks, intelligence, charisma, and whatever, as long as the dimensions concerned can be assumed mutually independent. Along each dimension, the unit of the scale is always set at the community mean. So a person with *1.0 ps* and *1.42 int* will mean that the person is just about the community average in the person's physical power, and is a little on the brighter side of the community average in intelligence.

Note that this power-dimension-wise normalization model is one step more elaborate than the simple-minded model presented earlier, the one in which the mean social status is kept constant through normalization. In the current model I am describing, the mean social status is kept constant as I shall demonstrate shortly, but normalizations are conducted separately for each power dimension. Let us see the merit of the new model with the above example of a new mighty warrior. Such a person is quite likely be conferred a rather high social status in the community. With older model in which the social status system within a community is directly normalized, having a high status newcomer automatically implied that all the formerly high status persons in the community like the king and the head of the clergy should have suffered from a considerable reduction in their status. In that case, the king might have declined to hire such a person, forfeiting the chance of winning the war. With the new model, however, no such contradiction occurs. Those who suffer in status by joining such a person would be only the king's illustrious employees whose power bases were primarily on their superior physical strength. If the king's power base was primarily on his lineage, and the archbishop on his charisma, their powers would have remained untouched by this new employment. The king might even have increased his status by having this mighty warrior as one of his allies.

Personal appraisal of others' multi-dimensional power

As a necessary intermediary step toward reaching a model that discusses how a person's multi-dimensional power is converted into the person's social status, let me first consider how a person, say, *K*, personally *appraises* the control powers of every community member, including him- or herself, by using *K*'s own unidimensional appraisal scale. Now suppose that *K* is appraising a person *I* whose control power is represented in such a way as *(1.0 ps, 1.2 int, ···)*. It is quite possible that some of the popularly used power dimensions are, strictly speaking, not orthogonal to each other, but, considering the approximative nature of our linear model, little harm seems to be done by assuming for individual power components we consider are mutually independent, which amounts to assuming, for instance, knowing the person *I*'s physical strength does not make *K* any wiser about *I*'s intelligence.

This assumption allows us to represent *I*'s multi-dimensional power as a vector **I** in *m*-dimensional

vector space, rooted at the origin and pointed toward the spatial coordinates corresponding to *I*'s *m*-dimensional orthogonal power components. As I am assuming here for all control power components to be non-negative,[17] only the first quadrant of this space will be used in the forthcoming arguments. For the convenience of illustration, let us begin by considering only two dimensions, intelligence and physical strength. Generalizing the arguments from two dimensions to *m* dimensions is straightforward as will soon be shown.

Insert Fig. 7.2 & 7.3 around here.

In Fig. 7.2, the *X*-axis represents the normalized scale for intelligence, and the *Y*-axis that of the physical strength, and the power components possessed by the person *I* are depicted as x_i and y_i, respectively. In the same figure, the powers of another person, *J*, is also presented, less powerful in intelligence but more powerful in physical strength than *I*. The person *K* observes these two persons, and may appraise *I* more highly than *J* because *K* is predisposed to take more stock by intelligence than by physical strength. Let me call the outcomes of such appraisal the *personally appraised status* given to *I* and *J* by *K*, designated as $p_{i,k}$ and $p_{j,k}$, respectively. The predisposition of *K* in favor of intelligence makes $p_{i,k} > p_{j,k}$. This predisposition of *K*'s will be modelized by what is to be called *K*'s *personal status- appraisal axis*, E_k, a straight line passing through the origin, as shown in Fig. 7.2. The stronger the predisposition of *K* in favor of either power dimension, the more inclined would E_k be toward the axis that represents the favored power dimension.

The personally appraised status of *I* by *K* will then be represented by the length of the projection of *I*'s power vector onto *K*'s personal status-appraisal axis, *i.e.*, **I** onto E_k. Namely, *I*'s power appraised by *K*, $p_{i,k}$, is given by

$$p_{i,k} = r_i \cos \Phi_{i,k}\,, \tag{7.2}$$

where $\Phi_{i,k}$ is the angle formed by **I** and E_k, and r_i designates the length of **I**. Note that the right hand side of (7.2), that is actually the scalar product of two vectors, **I** and the unit vector (a vector of length *1*) along E_k, holds when the *I*'s power vector and *K*'s personal appraisal axis are located in *m*-dimensional space. The principle underlying this generalizability is illustrated by Fig. 7.3. Note first that *I*'s power vector, **I**, is the vectorial sum of two power component vectors of **I**, $\mathbf{X}_i$ and $\mathbf{Y}_i$, and the sum of the projections of these two component vectors onto E_k is equal to $r_i \cos \Phi_{i,k}$. Namely,

$$p_{i,k} = X_i \cos \theta_1 + Y_i \cos \theta_2\,, \tag{7.3}$$

where $\cos \theta_1$ and $\cos \theta_2$ are the direction cosines of E_k against *X*- and *Y*-axes, respectively.

In this form, it is convenient to obtain an alternative general expression of (7.2) which explicitly involves *m*:

[17] This assumption may be removed without any essential difficulty if one wishes to build a model of greater generality.

$$p_{i,k} = \sum_{s=1}^{m} x_{i,s} \cos \theta_{k,s} \ , \tag{7.4}$$

where $x_{i,s}$ is the sth power component of the person I, and $\cos \theta_{k,s}$ the sth directional cosine of K's personal status- appraisal axis, *i.e.*, E_k. The right hand side of (7.4) implies that K's personally appraised status of I is assumedly done by taking a weighted sum of I's power components, whereby the weights, $\cos \theta_{k,s}$, are determined by the inclination of E_k in the m-dimensional space.[18]

Now let me consider the community mean of the K's personally appraised status of K's fellow community members (including that of K him- or herself), all appraised by K. Let C_k denote this community mean.

$$\begin{aligned} C_k &= \frac{1}{n} \sum_{r=1}^{n} p_{r,k} \\ &= \frac{1}{n} \sum_{r=1}^{n} \sum_{s=1}^{m} x_{r,s} \cos \theta_{k,s} \\ &= \sum_{s=1}^{m} \cos \theta_{k,s} \left(\frac{1}{n} \sum_{r=1}^{n} x_{r,s} \right). \end{aligned} \tag{7.5}$$

Note that the term in parentheses in (7.5) is none but the community mean of the members' powers in the sth dimension, which is assumed to be normalized, and thus equal to 1. Thus we have

$$C_k = \sum_{s=1}^{m} \cos \theta_{k,s} \, . \tag{7.6}$$

This implies that the mean of personally appraised status is automatically made constant given a personal status-appraisal axis as long as the powers are normalized on all the power dimensions, irrespective of the waxing and waning of community members in their powers.

This is the end of the presentation of the approximate linear model dealing with the relations between multi-dimensional power and status. Despite its approximate nature, it still captures some essential features underlying the relations, and let me now make use of some of them.

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[18] This means that the weights are chosen by K under the constraints that $0 \le \theta_{k,s} \le \pi/2$ for every s and that $\sum_{s=1}^{m} \theta_{k,s} = (m-1)\pi/2$.

Community norm axis and social status

Consider *n* different personal appraisal axes each corresponding to each of the *n* members of a community. Can their locations be mutually independent? Hardly, since they are interacting with each other. The gross location of one's personal appraisal axis does show through such interactions, as one's appraisal axis is, at least partly, the manifestation of the belief system one holds, and as mentioned earlier a person generally feels uncomfortable, or even threatened, with another of too different a belief system from one's own. So within a close-knit community, as has generally been the case in the past, the odd- man-out principle evokes a pressure toward conformity of belief systems among the members of a community. This pressure may also be manifest on individual appraisal axes, pulling them together toward some 'center of gravity,' so to speak. They will not merge completely, however, as the need to conform will weaken as they come close, and people also would want to keep their individuality.

So more often than not, there may exist a single major cluster of appraisal axes for members of a community, which may be represented by a hypothetical appraisal axis at their center, even though there may be no particular person whose appraisal axis coincides with this central axis. Let me call it the *community norm axis*, and one's social status is the person's multidimensional control power appraised against this community norm axis. [19]

The community norm axis will thus correspond to the core beliefs shared by majority of community members, consisting mainly of the traditional beliefs and also of the commonly conceived needs of the community. The former include moral codes, both religious and secular. This part of social norm gives the community norm axis a sort of inertia and stability. The latter, the part of the recognized need of the community, however, may occasionally undergo a drastic change. Consider for instance, a neighboring community with which the community had been engaged in an internecine war somehow stopped to be a threat at all.[20] When the majority of the community were finally convinced of no standing chance of an external threat, the community norm axis may go through a significant shift, from the one that appraised highly the kind of power bases useful for the art of war to the one in favor of more peaceful contributions to the community. When such a major tilting of the community norm axis takes place, the order of social status of the members of the community may be shaken up as well; the glory of war-time heroes will fade and new stars in the peace time may rise, as illustrated in Fig. 7.4.

Insert Fig. 7.4 around here.

Status struggles within subcommunities

As seen in Fig. 7.4 and also indicated in other arguments, it is the higher echelon members of a community whose status is sensitive to various events that take place within the community. In contrast, the amount of corresponding changes in the status of lower echelon community members will be minuscule, easily buried unnoticed within the characteristic haziness of social status values. If this is all there is, then the status struggle would be a foreign concept to the people of low status except for a very ambitious few

[19] This statement is on the same level of approximation I have been employing for the moment.

[20] A similar situation has taken place in many parts of the contemporary world when the Cold War finally ended. This

who might try to ascend the status ladder by accumulating power.

This is, however, against the hidden purpose of the urge system for providing them with the status promotion urges, and that purpose is to urge people to augment their powers -- the *power augmentation* urge, and to demonstrate the augmented powers so that the community could make a good use of such powers -- the *demonstration* urge. Note that those who need most of these urges are young ones and small kids as the fate of the community very much rests upon their burgeoning powers, but these urges would not function properly if the community norm axis is the only standard against which youngsters compete insofar as they belong to the lower echelons of a community which they do in most of the communities. This dilemma, however, can easily be mitigated by allowing them to have another standard, a *subcommunity norm axis*, which applies only to the members of a subcommunity of youngsters. There is a good reason to call groups of youngsters of a similar age as they tend to interact heavily among themselves, and while doing it they may compete for subcommunity status which will be finely graded enough to make the competition worthwhile.

Take grade school children as an example. When adults are absent among them, they may behave within the context of their own subcommunity, whose subcommunity norm is often a highly simplified version of the community norm. Note that many of the power dimensions highly regarded among the high echelon of the community, the powers which only grown up adults can possess like skills and knowledge, are irrelevant to children. What make sense to them, and create differences among them are more primary sorts of power, like those which would have dominantly operated in the ur-band times: physical strength, intelligence, and alliance powers. Though their physical power is small in the scale of magnitude counting little with the community norm axis, it still makes a big difference among the children's subcommunity, allowing, for instance, the physically strong to bully the physically weak, but various alliances formed among them complicates the situation. Such kid politics are often beyond the observability of teachers and other adults, as children usually their roles well as insignificant members of the community when they recognize themselves being outside the context of their subcommunity.

Besides subcommunities of youngsters, there are many other types of subcommunities in large communities in civilized times, with subcommunity norm axes of their own. As its members' status get higher in the whole community, the subcommunity norm would become less and less independent of the community norm itself, and in such times when the subcommunity of the ruling class existed, their subcommunity norm would have been nearly identical to the community norm, and the subcommunity status of its members would have been closely tied with their community-wide social status. However, if they forgot about the general public outside of their 'society' by being engrossed with their court intrigues, the public might forsake them altogether by shifting the community norm axis causing their joint downfall, as they all needed the public support as the basis for their power and lofty status.

There are much more to be discussed about the ruling class, but before taking up societal issues more extensively, let me first deal with the issues of individuals in society, and of the operations of the urge system behind them.

Personal status appraisals and the emotional attitude of paying- respect

Going a few topics back, let me reexamine the psychological implications of the concept of personal appraisal. As touched upon then, a person is assumed to making a personal appraisal of oneself as well as of

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case will be discussed close to the end of this chapter.

other community members. Let me refer to the outcome of this self-appraisal, $p_{kk} = r_k \cos\phi_{k,k}$, the person's self-esteem. Needless to say, one can maximize the self-esteem, given one's *m*-dimensional power vector, **K**, by setting up one's personal appraisal axis, E_k, to lie exactly along with **K**, *i.e.*, $\cos\phi_{k,k} = 0$. However, one may not be able to ignore the conformity pressure to tilt the personal appraisal axis toward the community norm axis.[21] So a person's personal appraisal axis will usually locate somewhere between one's own power vector and the community norm axis.

Insert Fig. 7.5 & 7.6 around here.

One of the consequences of this particular positioning of one's personal appraisal axis is that a person's self esteem tends to be higher than the person's social status as illustrated in Fig. 7.5, the recognition of which will help create a nagging feeling that one's power is underestimated by the society. The two ways for dealing with this unpleasantness are, first, to demonstrate about one's powers so that others may appraise the person's power more highly than before, and, secondly, to tilt the person's personal appraisal axis closer to the community norm, which amounts to decrease one's self esteem. Which of these two alternatives, the self-assertive one and the self-effacing, is largely a matter of personality, and also of culture.

In Fig. 7.6 are shown power vectors of three persons, *I, J* and *K*, and *K*'s personal appraisal axis E_k. Let $p_{i,k}$, $p_{j,k}$, and $p_{k,k}$ be the personal status of them appraised by *K*, respectively. Suppose that

$$p_{i,k} > p_{k,k} > p_{j,k} \tag{7.7}$$

holds as illustrated in the figure. Now I shall give some urge- theoretical substance to this inequality relation. I assume that if $p_{i,k}$ is significantly greater than $p_{k,k}$, *i.e.*, *K*'s self esteem, *K* will develop an emotional attitude of *respect* toward *I* with an intensity approximately proportional to the difference between the two values. (The significance means here that the difference exceeds the ambiguity caused by the haziness inherent in these appraised values.) Likewise, *K* may develop an emotional attitude of *contempt* toward *J*, if $p_{j,k}$ is significantly smaller than $p_{k,k}$.

The function of the emotional attitude of respect is to activate in *K* the urge of *respect-payment* with a proper intensity by meeting such a person as *I*. What the urge creates is a flame of mind which makes one prone to pay respect to the other, to be attentive to the other's wishes, and to comply with them if possible. Now note that this is a natural inclination prompted by the urge system, and that may not exactly coincide with what the community expects the person to do. According to the rules of the community, the person is expected to do the same with the person whose social status is that much superior to that of the person. This usually creates little dilemma as long as the person's personal appraisal axis lies fairly close to the community norm axis. The dilemma may become quite serious in the case of a person whose personal appraisal axis lies rather far from the major cluster around the community norm axis. In the old feudalistic times such an outlier would have had to pretend to be a rule abiding ordinary folk by constantly concealing one's true feelings.

For a person to having an emotional attitude of contempt toward another usually does not lead to

[21] There may be a stronger pressure toward the subcommunity norm axis, but the distinction between community and subcommunity is not essential in the following arguments.

any particular urge activation; when a person feels superior to another, the situation is rarely problematic enough to call for a special activity. There are, however, many exceptions. One of the popular cases of such an exception may obtain when two persons meet one of whose main power lies in one dimension and another of a different dimension. As depicted in Fig 7.7, they are assumed to have similar social status, suggesting that they are in a rivalry relationship, while the personally appraised status of the other is inferior to one's self-esteem for both of them.

Insert Fig. 7.7 around here.

The pair such as *I* and *J* as shown in Fig. 7.7 may often be in rather unfriendly relations, but that is no rule. Though rare among common people, they may find themselves mutually compatible, and form a close coalition or an alliance coalition. The point *B* shown in the figure gives only a hint of how high the coalitional power thus created may reach. This, however, is not a part of my linear model, as coalitional powers are evidently non- linear. Besides, close coalitions excepted, alliance coalitions are costly to maintain, and ordinary people usually have little need to form one.

I shall come back later to the topic of respect-payment and alliance coalitions when I discuss the issue of ruling class. For the moment, let me just emphasize the point that a regularly performed respect-payment among its members is the custom of status- dependent community of the greatest importance, and as such it is widely practiced whether be it a community of animals or humans. So it is no surprise that the respect-payment had been one of the most strictly enforced social rules in the times when each community needed to keep a very *large status variance*, one of the major themes to be taken up in the next section.

Sources of power

At this juncture, let me tackle a few basic issues which has been passed over rather cursorily. One of such issues is the source of power. Unlike psychophysical judgment dealt with Helson, only a few of the sources of power we are concerned render themselves up to easy quantification. The proprietary power, the power created by possessing a quantity of material objects, is one of them. As mentioned earlier, the power judgment belongs to the category of value judgment. Possession of a quantity of a certain material object gives a person a power because the possession makes the person valuable to other people. How much value a possession creates, however, depends on the social context the person is in.

Let me return to the example of the person marooned in a wildness alone. Suppose that he found a mushroom after a desperate search for food. This piece of mushroom would be very valuable for a hungry person. The second mushroom he found would be also valuable, though not as much as the first. But what if he found a large group of them? So the value of each addition of an object gradually decreases its value depending on the amount of the object the person already possesses in this context. This is the well-known law of diminishing marginal return in economics.

This law is important because it initiates the motivation to exchange. Suppose now that the person is no longer alone, and has a neighbor. Then he may give the surplus mushroom of little value to himself to the neighbor, who may give him back something in return, beans, say, which the neighbor has aplenty he is in short supply. So the activity of exchange creates an additional value for the exchanger, who gains something more valuable at the expense of something of a less value. By expanding the exchange relationship to a wider network, like a economic market, a great deal of additional values are created in this way.

An important point to be noticed here is that, once such an access to the market is in a person's mind, the objects in the person's possession are no longer a surplus. For one who is collecting mushrooms in woods to sell them in the market, his own consumption of them would be of little concern, and the marginal return of mushrooms will diminish far slowly than when he is collecting it for his own use. So let me distinguish these two kinds of value components. The first component, the one that applies to a solitary person, the *strictly personal value component*, and the second component, created by having an access to an economic market, the *commercial value component*.

Note that even the commercial value components diminish as the amount of the objects to be traded increases. The diminishing begins when the amount nears the limit the market can handle, where the mounting cost and the lowered price eat up the merchant's benefit. Up to that point, the value of possession steadily increases with its amount, as it correspond to the total need of the community within which the market functions, ant as such it goes far beyond the strictly personal value component of the commodity coming out of the owner's own consumption.

Usually, this need of the community is diluted by the existence of other merchant handling the same commodity. Which means that a still higher value would be created if this multiple participant condition of ordinary market was compromised. That is the case of oligopoly or monopoly.[22] Imagine, for instance, a food merchant only who hoards a large amount of food while the community is in famine. This is typically where the *power component of value* comes into the picture. Indeed, there is a really desperate need on the side of the community, and it would give the merchant an enormous means to control other community members for a share in the hoarded hood. Of course, the merchant has to wield this power most judiciously. If he is overly greedy, the desperate people might resort to whatever means available to get to the food, including a mob attack to the merchant's granary. It seems unavoidable for a large power to always accompany a large risk, as long as a large power source is a thing that other people covet to partake of.

The point I am making here is especially that the power of a person increases somewhat exponentially as some property *concentrates* upon the person -- the property owned by the person either as the person's attribute or the person's possession that many other persons strongly desire to partake of or to make use of. Wealth is a good example of such concentrated power source. If a person owns a concentrated fortune, not just an ordinary savings, then the person is powerful indeed. Such a potent power source need not be as quantifiable as money. A woman who possesses good looks like that of Helen of Troy, a concentration of attributes characterizing the female beauty, may shake the world. Or, if the time is not right for that like today, she can at least make a renowned TV star, and as such can wield a potent power. The same can be said probably every other source of significant power, be it a brilliant intelligence, great artistic and other talents, extraordinary physical strength, charisma or whatever else.

Most of these potent power sources are valuable attributive properties concentrated within a person, and as such they can hardly be regarded as a monopoly. Nevertheless, the effect is the same. The more attractive the property, and the rarer the concentration, the greater would be the power vested upon the person, and once properly appraised, the higher would the social status of the person become. This need of proper appraisal, however, usually requires a community large enough to match the power. However great the talent of a person, the appraisal done in a small isolated community can hardly do justice to it, since, first,

[22] Oligopoly and monopoly are thus an Achilles' heel to the market economy, and governments of capitalistic countries try hard to prevent the ills through statute like antitrust laws. Although the effectiveness of such prohibitions is always in dispute, the relative superiority seems to have been amply demonstrated of maintaining market functions by whatever means available over its extreme opposite policy, that the government monopolizes all the major power sources and tries to judiciously distribute them over the general populace.

the power value a community of population *n* can give to the owner of the power has the upper bound of *n* to keep the community mean on the power dimension has to be normalized to one, and, more practically, it is probable that the community cares little of that particular power dimension. Imagine a child of a latent ability of Einstein or of a religious vision of a great prophet born in a desolate village deep in the woods. The child might spend the life without an awareness of its potential power. But if the child is given even a small hint of his or her unusualness, the child would be urged to take leave of the community for a larger community, where the child might find a better chance to nurture and demonstrate his or her latent talent for it to be properly recognized. The urge system apparently cannot afford to waste potential sources of power, which should belong, if they were real, to the shared asset of the people who need them.

The demonstration urge

Demonstration urge is a very popular urge, one of the most dominant urges in the family of status promotion urges. As the members of this urge family, what comes first is the *power- augmentation* urge which is activated whenever one recognizes a good chance to increase one's power almost in whatever dimension. The advantage of increasing one's power in survival of oneself and the community one belongs to is unquestionable. But, as usual as in many urges, the urge makes one pursue the goal without paying attention to its hidden purposes; the power augmentation urge is self-rewarding, and is very strong at that.

To say so does not mean that everybody is a power-monger. Everybody may be attracted to the notion of having a great power to wield, but not everybody does something serious to obtain a considerable amount of power, and that is primarily because of the risk and cost of gaining and maintaining a high level power, the common factors delimiting the number of really *ambitious* persons relatively small.

A person's power may increase, sometimes as a consequence of power-augmentation urge activity, sometimes by fortune, and often as an outcome of natural process like growing up. Whatever the cause, the recognition of one's increased power will activate the demonstration urge. The major hidden purpose of the demonstration urge is to let others know of the rise in one's power. The scheme of the urge system, that of building the social order on the basis of social status, hinges upon this urge activity. As usual, such hidden purpose of the urge system is outside of the demonstrating person, whose goal is to notify the others of the person's new power. Had it been properly appraised, the outcome should correctly reflect in the person's elevated status.

The action plan of the demonstration urge comes in various forms. The commonest is simple boasting. Imagine a child given a rather expensive toy as somebody's gift. Such a gift will of course has its 'strictly personal' value component, *i.e.*, as the child's plaything. But the child may find even a greater pleasure in showing it off to friends. Observing the friends' envious admiration of the expensive toy, the child may puff up with self- importance. Adults are also no better in resisting the temptation of boasting in a similar situation.

Consider another everyday example. Imagine an adolescent boy who has recently developed a considerable physical strength which certainly deserves a serious demonstration so that the community will accord him with a full status of adulthood. The most direct activity plan to demonstrate one's physical strength is to act violently, and such an act might give some physical harm to other members of the community who happened to be around him. Many communities in the past which did not want to tolerate such haphazard violence developed various forms of 'rites of passage'
to facilitate smooth transition from childhood to adulthood. Among hunter-gatherer communities, the rite

often took the following form: Adolescent boys who came of age were confined within a facility and given intensive training to make them fit to be responsible adult hunters. Then each of them was given a test, such as to go out into wilderness alone and kill a beast single- handedly.[23] Note that such a procedure served double purposes: it not only gave a community the chance to train youngsters effectively and properly, but also restrained the youngsters from premature violent demonstrations.

Not that rites of passage have gone out of practice in modern times. Compulsory military service still serves in many nations a function similar to the rite of passage. Academic tests also play some testing function at various levels of youth schooling. These modern version similes are, however, quite unsatisfactory as the rite of passage, because these procedures are shaped almost exclusively from the needs of adult community, often just as screening devices for various organizations to get hold of proper job candidates, whereby the youngsters' need to demonstrate is almost completely neglected.

Despite the much lessened importance of physical strength in most of the contemporary societies, adolescents, especially boys, feel the urge to demonstrate their rapidly grown physical strength, and those who have not gifted enough to demonstrate it in things like sports may be tempted to do it through a show of violence of one kind or another. Making extremely loud noises, or sounds, is one of the few socially sanctioned, though barely, demonstration of physical power. Whether they do so by using sound-making tools like electric guitars or motorbikes is immaterial to the fact that making loud sounds is their way of demonstrating physical strength -- just as chimpanzees do their power- displays through drumming whatever produces cacophonous noises.

Pride and shame

The demonstration urge may be activated even in the absence of any recent ascent in power. That is mostly due to the fact that one's social status is generally lower than one's self- esteem as mentioned earlier. Note that when one's power increases, this gap increases as well, since, in contrast to the quickness of self appraisal of this incremental power and the ensuing raise in self-esteem, the corresponding increase of the person's social status, done through others' appraisal of the same power increment, will generally come much slower, if it comes at all.

The target of demonstration will be the increased power when that is the case. When one demonstrates without any such particular cause, one usually does so about the most potent (in the person's view) power component in one's possession, as one may attribute the gap between the person's self esteem and social status to be mainly caused by its underappreciation. The emotional attitude one holds toward such favorite target of demonstration seems to correspond to what is generally called the *pride* of the person.

The target of pride may be almost anything, either an attribute (in a very broad sense) or a possession of oneself, preferably something that is more or less concentrated, rare and of some social worth, again in the person's own view. The target of pride of a person may be of an ordinary kind, the person's physical strength, intelligence, wealth, and so on. But it could be something more trivial, like having an influential relative (or a friend, or an acquaintance), having a bright and/or lovely children, possessing some piece of a rare object or a knowledge that denied others. It may also be the social worthiness of one's deed like charity, the social importance of one's profession, the rareness of one's experience and so on. It seems as if a person direly needs at least something to hinge one's pride on, and if one has no obvious candidate for the target of pride, one does not hesitate to fabricate a story of worthiness upon a tiniest clue.

[23] Girls go through a similar procedure though the test is much less severe.

This strong need for a person to have some target of pride seems to be related to the fact that pride is categorically regarded as a praiseworthy emotion. The hidden purpose of the urge system creating this need appears not too difficult to fathom. Consider a person with a strong pride. Such a person would naturally demonstrate about the person's target of pride with an proportional zeal to the intensity of the pride. The appraisal the others give in response to such demonstration would not, however, be satisfactory to the person, because that is where the gap exists. What the person can do to convince the others to the person's satisfaction then would then be to produce an undeniable evidence of what the person is claiming. Note that the target of the pride must have a potential social worth, whether the society here is the whole community or subcommunity, since otherwise the demonstration is meaningless. So it would bring the community a great net benefit if most of its members tried to prove the their worthiness to the community by producing evidence to back up their pride.

Of course, not everybody is able to substantiate his or her claim of worthiness. So few people can help but glorify one's target of pride more or less by fabricating some imaginative stories to give one's proud demonstration some credibility. This conscious or unconscious glorification of one's target of pride, however, makes the pride rather easy to hurt, since it is often not difficult for other to find flaws in such glorified stories It is therefore usually a part of the etiquette in most cultures not to blatantly point out contradictions in someone's proud claim, especially in a public occasion. Perhaps the person him- or herself knows best the weaknesses in one's claim, but one can hardly afford to concede the point in public, as not just the person's self esteem, but the person's self esteem as well, are at stake then, leaving the person no alternative but to show a strong anger at the one who disclaimed. The role of etiquette is mostly to prevent uncalled for conflicts as much as possible.

Now let us turn the face of the coin, and see the other side of pride and demonstration, which are *shame* and *concealment*. Shame is an emotional attitude directed toward some of one's own attribute, or one's own past deeds from which others may infer about the person's attributes, the kind that would most likely impair one's social status if it became the wide public knowledge. Because of such nature of one's shameful attribute, the concealment urge would make one hide it from the public eye for one's own protection.

Despite the nature of shame and concealment being nearly the complete opposite of pride and demonstration, respectively, there is some fundamental distinction between these two pairs of urge activities. While pride and demonstration are major urge activities almost exactly along the major spirit of the urge system, that of sharing the information with one's coalition and community members, especially about the locus of socially useful power,
the concealment urge is a mere offshoot of self-protection urges, and goes entirely against the spirit of information sharing. Consequently, shame and concealment are rather unsettling urge activities, colliding quite often with other urge activities.

The concealing urge activity, however, is risky and troublesome, both from social and the personal points of view. It is socially risky because one has often to depend on telling lies to conceal, and lies not only require a large cognitive cost for maintaining their consistency, but also add another piece of shame when the truth was exposed.

Small shames, however, do not count when one keeps a large piece of shame, or a *guilt*, as guilt and shame share many common aspects. Consider guilt first. Imagine a person who feels guilty because he had not immediately extended the necessary help when a help was asked by a dear friend, and it was too late when the person belatedly decided to help. This is guilt because the person brought a harm to a close friend

in violation of the coalitional rules. An example of shame may be given by a youth who habitually boasted of his bravery but chickened out at a battlefield and secretly fled without being noticed by others.

Note that in both cases the actor has a good reason the external eyes, and so the concealment urge would be activated. A guilty person is therefore shameful as well. By realizing his proud past demonstrations to be false and hiding the evidence of this falsehood, the shameful youth would acquire some feelings of guilt, too.

Even when they succeeded in hiding the facts from the external eyes, they would probably have to fear more their inner eyes, as the memories of these deeds will stand out in the mind due to their inconsistency with other core beliefs about themselves, and the consistency maintenance urge will insist them to do something about the inconsistency. Since it is impossible to forget such outstanding events, what a person in such a situation would be able to do is to put in a sort of cognitive cocoon, in other words, to develop an internal defense mechanism which semi-automatically deflects the thought process that may otherwise reawaken the memory. This is a part of the healing process for mental wounds discussed earlier, and such a mental cocoon may be labeled as the *Freudian defense mechanism* (Freud, 1936; Toda & Higuchi, 1994). Note that the operation of the Freudian defense mechanism must be assisted by the corresponding Festingerian defense. As is well known, a person hiding a shame or guilt is perhaps more touchy than a person of high pride.

Keeping a Freudian defense mechanism in addition to a Festingerian, the major internal and external defense mechanisms, is costly and disturbing to normal cognitive functions so much that some who suffer may activate the *confession* urge. The function of the confession urge is somewhat like a mental surgery, which punctures the wall of defense by telling somebody, preferably a person of discretion, about one's guilt or shame. However discrete the confidant might be, confession is a risky action; the information may spread and the person's status may be severely impaired. But the importance of a peace of mind thus obtained may well overwhelm the risk, as then and only then one may be able to start to rebuild one's belief system upon a sound ground.

Before temporarily leaving the issue of the concealment urge, let me add that the concealment action plan is often used under other urges. The most important use of concealment of this kind is seen in keeping the monopoly of a certain information. When this is done in a rather large scale, it may provide the owner of secret information with a strong power base. I shall come back to this topic shortly, as the monopoly of 'knowledge' has often served as the most potent power base for the ruling class.

Status market

I have assumed in the linear model of power and status discussed above that the powers of community members are appraised by each other, whereby each person uses his or her own personal appraisal axis, and also that such appraised powers are normalized for each power dimension, and the status distribution within the community automatically maintains its mean at a constant value. When a community is large, it will not be possible for all such personal appraisals to be done through direct encounters. Direct appraisals may indeed be rather limited, done only when opportunities present themselves. So the question is how a community-wide power normalization process can ever been taken place within a community whose population goes far beyond the size of ur-bands.

The rest of the appraisals then have to be made indirectly, based upon the information and gossips about each person that are carried through the community information networks. Of course, the personal

information exchanged as gossips and rumors is often quite inaccurate and biased, as gossipers themselves are also competitors vying for status; while gossiping they may also demonstrate their own powers, slander others, and occasionally tell honest opinions spurred by the teaching urge. Nevertheless, the aggregate outcomes of such chaotic exchange of opinions tends to come out fairly close to the truth, at least far more often than otherwise, probably because distortions generally cancel out leaving only the common factual component intact.

The underlying opinion-forming mechanism of this mass gossiping process seems somewhat similar to the information network that works among customers of a stock market. Rumors naturally run amok in stock market, and some stock prices may be deliberately manipulated on the basis of some false information, but effects of such artificial manipulation will wear out in relatively a short time, and the stock prices will come to settle on a reasonable level sooner or later, albeit it is only after some shrewd stock brokers have gleaned a large profit. Note the negative feedback mechanism working as the basic stabilizing force in any market, be it a stock market or more general commercial market; customers sell when the price is higher than reality, and buy when it is lower.

Apparently, a very similar process goes on in the gossiping network; there may be disclaimers when a person seems to keep too high a social status than the person is worthy, and there may be more accolades for the person in the opposite case. So the community-wide gossiping network indeed deserves to be called the *status market* (marriage market discussed in Chapter 5 being one of its submarkets), within which the social status of each person in the community is dynamically molded through the operations of the chatting urge.

An aspect of the status market to be noted is that it usually consists of quite a few overlapping submarkets corresponding to overlapping subcommunities like social organizations, neighbors, and coalitions. What people most earnestly gossip among themselves are about the members of the subcommunity one belongs to, and also about renowned people, *i.e.*, the people of generally high status in the whole community. Obviously, it makes sense that a person is interested in the subcommunity status of others in the same subcommunity as one's own, but not interested in some almost nobody in other subcommunities. A point to be recognized here is that in a rather large community, the tapering pyramidal status constitution that such a community should have hold implies that the same community-wide social status would have been shared by a very large number of community members except for a relatively high status few. Therefore, as far as the community- wide status is concerned, whatever ups and downs in status a person experiences should not concern others in other subcommunities who are most of the times engrossed in the issues of their subcommunity alone.

The status of those whose status are higher than the general populace, however, should have been the concern of all the members of the community, as the powers they wield may alter the destiny of the whole community. So it has been the rule that almost all the people in a community are interested in appraising the powers of higher-ups in their community, and the latter are often carefully watching, often with dread, whether they are not losing their status in the opinions of the general public.

Mental development and education of norms

At this juncture let me briefly sketch the growing up process of children in relation to the learning of powers and status within their community. A child of a grade school age usually live at least in two subcommunities. One is the family, and the other is a subcommunity of children. The latter is typically that

of classmates at school in contemporary communities. Schools for young children are rather a recent social innovation, started in Europe around the end of the 18th Century. Whether related to schools or otherwise, however, young children always have had their subcommunities. The subcommunity norms of family and of the peer group are both related to the general community norm, though the deviation from the former will be more pronounced with the
peer group, closer to that of the ur-bands, so to speak, and the children are supposed to learn various survival techniques in basic human relations.

It is therefore mainly in the family subcommunity where children are taught about traditional beliefs constituting the community norm, especial moral codes prevalent in the community, and a rough idea about the social status system currently maintained within the community, whom to respect and how much so, in addition to what type of people they may disdain.

The ruling class of the community, when such existed, would naturally have welcomed the youths of the community absorbing traditional beliefs, as the high status of the ruling class members generally strongly depended on the stability of the community norm. One of the popular techniques employed by the ruling class to stabilize the community norm is to encourage the youth to shape their belief systems in accordance with some 'legendary heroic persons' they provided.

Hero worship is an outcome of the devotion urge, the hidden purpose of which is to create a powerful group, a coalition or a community, by providing faithful devotees to a very able leader. Though a hero in legend cannot actually lead, the image of such a person can still stir up young minds, and what suits the ruling class is that they can modify legends so that legendary heroes can serve as pointers showing the correct direction, *i.e.*, the current community norm, along which the youngsters are to mold their belief system.

Hero worship, however, is a double edged sword for the rulers as the general public may find their own heroes other than the ruling class-manufactured model persons. If the attributes of such a spontaneously produced hero significantly deviates from the current norm, the hero worship may easily turn the direction of the community norm axis so that it points to this new hero figure, toppling the current rulers from its high dais. So rulers are almost always wary about the emergence of new hero figures, however large the person's past contribution to the welfare of community has been.

Now let me get back to the topic of growing up children. At an certain age, some of them may begin to realize the innate power base of their own, and begin to consolidate their own personal appraisal axis closer to their own power base, more or less independently of the community norm, generally freed from their juvenile hero worship. If the power base they realized as their own is the kind that is given a relatively highly appraisal by the current community norm, they may try to promote their status within the community by demonstrating their. If their personal appraisal axis is too much tilted from the community norm, not only they have little hope in promoting their status by demonstrating their powers, but also will feel rather unpleasant by the necessity in conforming to the community norm. They will then have to confront the three choices: either to curb their own inclination to conform to the norm, or to join some special subcommunity whose subcommunity norm is at least closer to their personal appraisal axes (such subcommunities tend to be more or less anti-social), or to leave the community and search for a community where their powers are more properly appreciated.

7.3 The first grand transition

The agricultural revolution that set up the first grand transition in the human history

I assume that there have be two outstanding periods of cultural transition in the history of the contemporary human species, Homo sapience sapience. The first the period following the agricultural revolution in around 10 thousand years BP, when, as far as the human life is concerned, artificial evolution definitely took over biological evolution, and the human societies started their long marches toward their civilizations.

It is of course not that all the technological innovations such as agriculture suddenly started to emerge in this period. As Tudge (1996) argues, the real evolutionary innovations, biological or artificial, generally begin silently without leaving archeological evidence. Archeological evidence becomes available only when the external conditions especially favorable to the innovations come to pass which make them multiply and flourish. So Tudge's speculation seems reasonable that the origin of farming could have started as a primitive horticulture at around 30 thousand years BP, the time of ur-bands. Probably not just agriculture. The seeds of social innovations such as the use of social rules as a means of governance, as well as artificial coalitions as social organizational units, might have existed in the time of ur-bands, but ur-banders did not have much need for them then as the group management capability of the urge system alone would have sufficed for communities of the ur-band size.

But something happened at around 10 thousand years *BP* and altered the external conditions so that a strong need was created to practice the agricultural technology on a large scale. What worked as the critical factor is hard to know. One can, however, make a reasonable guess. Note that in the era just preceding the agricultural revolution the world had been gradually convalescing from the scourge of the last glacial age Earth had gone through, *i.e.* Würm, glacial stage that put the terrestrial climate under its yoke for tens of thousand years. The weather ever turning clement then would probably have caused a significant increase in the human population in general, when a brief (meaning just a few hundred years) return of glacial climate hit them. When there was no place for the overpopulated ur-bands (still within the upper limit of ur-bands) to go where the natural resources were rich enough to sustain them, some of them would have considered to cultivate the agricultural technology they already had in a primitive level. This hypothesis is not mine, but I think it is reasonable because it is exactly what active copers should do given that kind of situations.

As archeological evidence show, the original farming attempts were apparently extremely labor-intensive and cost-ineffective ventures (Festinger, 1983; Tudge, 1996). Nevertheless, as their remote ancestors had demonstrated in controlling fire, the humans as active copers were a persevering lot, and some of them eventually succeeded in producing a rather large amount of grains. The success must have spread over many communities of the time, making them choose more or less sedentary life style, enabling them to concentrate on producing more extra food, allowing them to increase their populations beyond the limit of ur- bands, as the one of the limiting factors imposed upon the ur- band size, the available natural food resources, was thus effectively removed.

That, however, was not the only limitation albeit the most basic one. Excess food could have feed the increased population, but the urge system alone would not have been enough to regulate an oversized community many of whose members were mutual strangers. So a strong need should have arose for some

people to actively govern the community, and it was not just for maintaining general peace and order within the community, but also for organizing people as work force, since agriculture was a labor- intensive enterprise.

Organizing a community containing strangers should have needed a rather liberal use of verbally stated social rules, specifying for the community members what to do under what occasions. This did not mean, however, that these social rules displaced operations of the urge system altogether. On the contrary, social rules are useful only because they are supported by urge operations. Needless to say, social rules are useful only as long as people generally abide by them willingly. No rulers, however powerful, force rules upon unwilling people just by punishing around rule-breakers. The workability of social rules originate, in the first place, from the emotional attitude of *rule- observance* that people tend to develop for most of social rules, only inasmuch as they believe of their necessity for the benefit of the community, and once the majority of community members hold this attitude toward most of the major social rules, the need to prod people through the fear of punishment may be minimized.[24]

The rule-observance urge was not the only urge system operation supporting social rules whose number must have multiplied in the burgeoning stage of civilization. Anger of victimized against rule-breakers and guilt felt by latter would have worked as an effective deterrent equally well among well acquainted. So social rules patched up the gaps in urge system operations where their effectiveness was detracted by the presence of many mutual strangers.

That does not, however, mean that social rules are just gap- fillers. A better analogy may be given as the following: Note that the urge system is the very agent that makes people do things. If we consider people as if they were flows of water energized by the dynamics of the urge system. Then social rules may be compared to canals and banks which regulate this flow by inducing and restricting the currents. So by being judiciously used, social rules may function as hydrodynamic contraption for controlling the flow of the mass operation of the urge system. If cleverly constructed, therefore, a system of social rules might even create a great social power that the unconstrained urge system operations could have never achieved. And this is what the humans have been doing through trial and error ever since agricultural revolution. It had to be trial and error since no one actually knew enough about the operations of the urge system, and the 'error' parts of the process occasionally brought great tragedies to the humankind. And I have to emphasize that we, the contemporary humans, are again facing serious issues of what kind of social rules we should have in the new set of conditions given to us through the second grand transition, and we are about to do it again in a trial and error fashion as we are still quite at a loss in inferring how people would react to the new conditions and new rules. These are the problems to be addressed at the last part of this book.

Looking at the issues of social rules from the side of individuals, the imposed rules call for everyone to *self-control* their natural urge activities so as not to infringe them. The 'never-in-anger' rule of Canadian Inuits described by Briggs (1970) is a good case in point, which strongly forbid community members to *express* anger and act impulsively.[25] Now as extreme as in this case, many community norms contain similar interdictions, and ones who occasionally fail to follow them are, if not punished outright, seen with scorn, and from this comes the extremely wrong view of emotions as being irrational and silly. On the contrary,

[24]Note also that the intensity of the rule observance attitude can vary from one rule to another, depending upon the people's appraisal of the importance of each rule. Standards for such appraisals are also given as a critical part of the community norm.

[25] Briggs comments that Inuits at the time of her field work apparently thought that white people were childish because apparently they could not self-control these dispositions.

urges are the very engines that make all the humans move, and blames are to be more on the side of imperfect rules that cannot channel the human urge activities in more constructive direction.

Let me get back to the original context. As has been discussed, it was the great need of overpopulated communities that made the people in the age of agriculture to introduce social rules as a tool to regulate themselves. Creating such a tool was another manifestation of artificial evolution, and since this time on, artificial evolution overtook biological evolution to serve the basic needs of the humans as active copers.

The ruling body as an artificial coalition

The enforcement of social rules, especially organizing group works and punishing rule-breakers, should undoubtedly have required a great deal of power for those who specialized in managing these early farming communities. These people would have tackled this difficult issue of managing an overpopulated community by gradually transforming the 'office' of the chief that had already existed in the ur-band times into more elaborately structured, more or less rule-bound, system of the *ruling body*, an incipient form of government. Such a ruling body would have much resembled to an alliance coalition of powerful members of the community. The critical transformation that would have happened with the ruling alliance at some point of time was caused by the need of the overgrown community to have a stable top management which could not be expected of a natural alliance coalition. A natural coalition is a coalition of individuals, and as such, tends to be swayed by vagaries of individual fortunes; once a key person died or disabled, the alliance might lose its power of governance.

An artificial coalition is not a coalition of individuals. Rather, it is a system of positions which, when unoccupied, may be filled by anybody qualified. This *impersonalization* of social systems is the spirit of rule-bound societies that the first grand transition created. Note that rules apply, as far as their principles go, to everybody without caring who it is, while unconstrained urges operate always on the basis of who it is one is dealing with.

The ruling body as an artificial coalition would have gradually developed into a system that worked on the division of labor principle, consisting of positions with different jurisdictions, roughly corresponding to the later day head of law enforcers, the head of internal affairs, the head shaman, and the chief, *i.e.*, the head of all other heads, whose principal function was to create and revise social rules. These positions would generally have been occupied by suitably qualified people, as few could refuse nomination; joining the ruling body was the surest way to promote one's social status.

The ruling body needed high status to facilitate the people's willing compliance to the rules they make. Remember at this point the early argument that the upper bound for the high status increases linearly as the population of the community under the constant status mean assumption. Though this upper bound status is unattainable by any actual person, its increase eases the way for attaining a status much higher than possible in the past. So the ruling body members of a community in the age of agriculture would have gradually achieved ever higher status backed up by their high alliance power and consolidated by the ample chance of demonstration they must have had through their positions.

Positions alone could not insure them to keep their high status, however, at least in the early stages of rule-bound communities. Communities were still relatively small, and the general public could keep a close watch over the qualities of the works done by higher-ups, and if they mismanaged seriously, they might have lost their status by the withdrawal of public support for them, and consequently the members of

the ruling body might have been refreshed without the ruling body as an artificial coalition losing its structure.

The structure and the principles of artificial coalitions

Let me now discuss the basic structure of artificial coalitions. As the conceptual model for the following argument, I shall use a modern social organization rather than the ruling body in the early civilization, since we know much better of the former and almost none of the latter, and I believe that they share the same structural principles. The basic structural principles that govern artificial coalitions are rather surprisingly simple: structurally, they are just a *nested* version of the kernelled coalition, meaning that kernelled coalitional structures are embedded within a larger kernelled coalitional structure.

As stated earlier, an artificial coalition is a system of positions and not a system of persons, and its structural framework is constructed as social rules. Remember the reason given in the previous chapter for why the size of a natural kernelled coalition cannot increase beyond a certain limit, the limit caused by the control overload that the kernelled member of an oversized kernelled coalition must suffer. This control overload problem cannot be resolved by employing a nested kernel structure, such as by assigning subleaders to share the leader's burden. Note that non-kernel members of a kernelled close coalition joined the coalition as they were drawn to the personal attractiveness of the leader in the first place, and it would be difficult to make them refrain from soliciting a direct interaction with the leader. If the annoyed leader forbade some non-kernel members to accost him or her by some rigid rule, it means the coalition is no longer strictly natural.[26]

One way of putting the spirit of artificial coalitions is that it is a make-believe kernelled close coalition. Imagine that someone clever in the old times made a proposal to the others around, which in essence was the following: "Why don't we form a make-believe kernelled coalition? You be the leader as you like making decisions though you have little charisma. Then the rest of us will behave as if we were your true followers, insofar as you the leader of our own make-believe kernelled coalition, and whatever we do with our make-believe followers are our own business with which you are not supposed to interfere. Imagine what a great coalitional power we would create that way if we all follow the rules, and we may enjoy the benefit that come off the power thoroughly. Of course, the benefit enjoyment will be shared among us also according to the rules. You as the supposed leader will take the best. We subleaders the second bests, and so on."

That is about the gist of the basic spirit of an artificial coalition. Note the part that each member of such a coalition can be the head of his or her own artificial kernelled coalition, as it enables the whole coalition to take a *hierarchical* structure, whose size can grow, at least theoretically, indefinitely as the non-interference rule into the business of other subcoalition (which henceforth will be referred to as *sector*) to which one does not belong removes the size limitation caused by control overload. Let me take a simple count. Suppose that the head of an artificial coalition has ten direct subordinates, well within the range of control of one person. Now let each of these subordinates has his or her own ten subordinates, and each of the latter has his or her own ten. Adding one more level, the size of the whole coalition adds up to 1,111.

This is indeed a very large number. And note the efficiency such a coalition obtained. With a

[26] Such an artificial coalition could well have existed in the ur-community times, but what caused its multiplication in the first grand transition times was the necessity of having a coalitional structure with a large coalitional power such as the ruling body.

command given by the head of the coalition, the whole coalition may act immediately with only three levels of relaying the command, as in the way a military coalition often acts. It is true that a great efficiency always accompany a weakness. The weakness of a hierarchical artificial coalition lies in part in its vulnerability to the incompetence of some of its high position members. Suppose that just one of the ten subordinates of the head of the coalition neglects relaying the command of the head. Then about ten percent of the whole coalition paralyses. This is a common weakness of all hierarchical systems. The bodily neural network of advanced animals is a typical example of hierarchical system, and a large part of the body is paralyzed when the network was severed near the top of the hierarchy.

There are, however, ways and means to overcome this weakness in the case of artificial coalitions. Once an artificial coalition successfully turned it into a system of positions, for instance, wrongdoers and mismanagers can be replaced by better qualified new ones. Even the head of a coalition can be replaced if the coalition survived the mess created by a wrong head. So this impersonalization implemented by artificial coalitions has contributed in improving the viability of artificial coalitions, some of which have succeeded in surviving over countless generations.

To reiterate, this impersonalization of artificial coalitions is achieved by defining the rights and duties of the person occupying each position in terms of social rules, including who are under the direct command of a person, and what one can command. So the head of a military organization may give a command to fight the enemy, but the head of a business corporation is not allowed to command the employees of the corporation to take arms and attack the rival corporation.

At this point, let me emphasize the critical role of the non-interference rule, the one that enabled the emergence of artificial coalitions in the first place by removing the control overload problem from those in high positions of an artificial coalition. To discuss this issue a little more detail, an example diagram of the structure of artificial coalition is given in Fig. 7.8.

Insert Fig. 7.8 around here.

In this figure, only a part of a much larger hierarchical artificial coalition is presented. Each hollow circle designate a position, or a *post*. Line segments connecting circles represent admissible direct connection of posts along which most of the direct interactions (typically, giving commands, and sending and receiving information) between coalition members will take place. Each circumscribed area corresponds to a sector, and interaction lines run only within a single sector.

A sector generally consists of the post of a sector head and those subordinate to the head, showing a typical kernelled coalition pattern. The number of subordinates contained in a sector may be larger than the limit of kernelled close coalition, as the rule-constrained nature of the intra-sector interactions may alleviate the load of control for the sector head, and the number may be further increased, if necessary, by setting up a post like the sub-sector-head as shown in Sector *E* in the figure. Like in a kernelled close coalition, only sector head (or subhead) can give a command to the rest of the sector members, and the latter are supposed to obey such commands insofar as giving that command is within the sector head's jurisdiction.

Now let me discuss the non-interference rule a little more in detail. As mentioned earlier, this rule is the critical cornerstone upon which artificial coalitions stand. Despite its importance, however, note that it is seldom explicitly stated, at least as a written document, in the rules of artificial coalitions. The reason seems to be that it is pervasive enough to be taken for granted for the members of an artificial coalition, just in the same way as the pledges of natural coalitions, those of trustworthiness and of fairness, are seldom in the

conscious awareness of natural coalition members.

Furthermore, exactly like the pledges of natural coalitions, exceptions are allowed to this rule: one may attempt to interact with a person across sector boarders if the situation is grave enough to justify the attempt. It is of course very difficult to enumerate all emergencies, and that may be counted as one of the reasons why the rule of non-interference is seldom explicitly stated. There are, however, numerous examples in history in which non-interference was made law, especially against accosting the head of a mighty coalition, who as the major policy maker would suffer the most if the rule was neglected. Let me tell an example. In the times of Japanese Shogunate, one of the typical feudalistic era, the penalty was death for peasants to try to appeal to their lord, even when they were on the verge of starvation by mismanagement of their local governor. Interesting thing is that there was a special bylaw to this rule: if a petitioning peasant succeeded in reaching the lord's palanquin unstopped by guarding soldiers, the lord would at least read the petition even though the penalty was death to the petitioner.

Viewing from the major function of the non-interference rule, that of removing control overload from the duties of high echelon coalition members, the interdiction of off-line interaction seems necessary only for those aimed at a high post person by one in a low post. Nevertheless, an off-line interaction is generally frowned at, albeit less intense, either be it from high to low or sideways across different hierarchical branches. This indicates the existence of another reason for the prohibition of off-line interactions. And that reason obviously related to the emergence of unofficial interaction channels that might impair the systemic integrity of the artificial coalition.

On the background of unofficial interaction channels, there often is the issue of formation of natural coalitions. Not that natural coalitions always disturb normal operations of an artificial coalition to which the natural coalition members belong to. But forming a natural coalition, especially a close coalition, is a basic concern of the urge system, and its members are chosen on the basis of their mutual compatibility with a complete disregard to official structure of the artificial coalition they belong to. (Members of a natural coalition may belong to different artificial coalitions, and that creates similar problems.)

The measures taken by an artificial coalition to counter undesirable natural coalition vary a great deal contingent upon the purpose of the artificial coalition and the culture of the community within which it operates. There are various prohibitions against forming close coalitions such as in-house marriages, frequent shifts of employees' posts to squash possible natural coalitions in buds, but of course there exists no panacea for this problem. An entirely different approach is often employed frequently, the one that is called paternalism. Paternalism encourages sector members to feel as if they were a sort of a family members with the sector head as the make-believe family head. Needless to say, a family was originally a natural coalition, but acquired a great deal of artificial nature later on, and as such it often has served as a paradigm of successful merger of natural and artificial coalitions.

Paternalism as the spirit of artificial coalition management has been adopted in various times and in many cultures. As will be discussed shortly, it was the ethos of feudalistic times. Among the contemporary business worlds, Japan is one of the many which especially favor paternalism as the implicit management strategy for the reason that a successful paternalism heightens the coherence of corporations if it worked. To make it work, however, it also revives the issue of control overload, an extra work on the shoulder of sector heads, especially those of middle management, each of whom has constantly to show concerns on private problems of subordinates in order to look as if he or she were their big father (or mother).

This paternalistic tendency in Japanese management, however, seems to be declining, perhaps partly due to the fact the paradigmatic family model as an amalgamation of natural and artificial coalitions is

quickly disappearing from the cultural scenes of Japanese.

Artificial coalition as a versatile system

There are two more issues of artificial coalition to be addressed at this point. The first is about the large potential of an artificial coalition as a versatile system. The second is the artificial coalition as a source of power for those who occupy high posts of a large artificial coalition.

The characteristics of versatile systems were discussed in Chapter 2, in relation to the operational mode of the mind when it seeks an appropriate action plan to pursue the goal set by an activated urge. The 'action agents' described there in a mode of versatile operation given may be more substantiated by dynamic schemas and action schemas discussed in the previous chapter. Once the given situation is reconstructed in the IT Window of the mind by appropriate dyscs and action schemas, various dyscs representing the person's own action plan may take turns in the Window to try out its interactions with the schemas representing other agents in the given situation nearly autonomously under the supervision of the appraisal monitor. Whenever the appraisal given by the appraisal monitor was rather negative about the outcome of simulation played out by one of the action plan dyscs, another action plan dysc will take over, or the first one will modify itself through the use of appropriate action schemas.

The whole process is likely to be enormously complex. The spirit of versatility, however, is simple, represented by the presence of a sufficiently large number of alternative action agents, at least one of which may fit the given situation a person would normally encounter. And if no fit action agent is found immediately, they may modify themselves often autonomously by merging with other dyscs, or through application of suitable action schemas. During the whole process, in-house interactions will go on among schemas some of which are highly policy- oriented, and some more detail-oriented.

Analogous versatile features are easily seen with the mode of operation of a large artificial coalition like a modern business corporation. In the first place, such a corporation has many employees. Each of them is not only endowed with a versatile mind, more or less, but also specialized in issues of different domains. So in most cases, with most of global goals the corporation will set up, the corporation may be able to find specialists among its employees who can deal with, or if it does not, it would be able to hire those who qualify, or train some of its employees to suit the job.

Let me describe the mode of operation of a corporation in a little more detail. When a corporation faces a problem, there will be a meeting with top level executives who interact verbally, exchanging ideas and making proposals. When a policy is chosen and responsible departments established, the policy will be brought down the hierarchical channels, appropriate commands given, and there will be interactions up and down and sideways on all levels of the hierarchy concerned. And through all these processes, each employee will operate more or less as an autonomous agent.

Even this very brief sketch of the mode of operation of a large artificial coalition will be enough to demonstrate the tremendous potential versatility it possesses, and that is no wonder because it is a versatile system of versatile subsystems, *i.e.*, persons with versatile minds. The truth is, however, that only a trickle of this enormous potential versatility is actually in use, as each employee's contribution to the coalition is severely limited by the rules the corporation imposes upon them. These rules in use in today's corporations are to keep the corporate activities in order appear to be far from optimal, as most of them are little more than legacies of the old times, developed under an entirely different set of social conditions from what we have today. This is a marked indication of sluggishness of artificial evolution in the areas of social sciences

and technologies compared to other areas, the issue to be discussed at the end of this book.

Because of this not very adequate rules under which the current corporations operate, only a rather small portion of the potential coalitional control power of large artificial coalitions has been cultivated. Even this small portion, however, can be quite large with a large sized coalition, and once the agricultural revolution opened the way to increase community populations, large scale artificial coalitions, political, economical and militaristic ones, operated as protagonists in the unfolding drama of the human history.

Communities as semi-natural artificial coalitions

When the population of communities had gone beyond the limit of a natural coalition after the agricultural revolution, a community had become artificial, since it could have been managed only with the aid of social rules. On top of such artificial community there would have been a ruling body, an artificial coalition of a hierarchical type, as suggested earlier. The community, however, has never let itself be organized completely in a hierarchical fashion, because it has to serve its own functions different from hierarchical type artificial coalitions. Probably the most important function of the community is to serve as a pool of potential member candidates for other types of coalitions, natural or hierarchically artificial, that exist, or may be formed, within the community. So a community may be metaphorically thought as some sort of fluid wherein float various relatively tightly organized masses, occasionally exchanging bits and pieces with the ambient fluid, while new masses being formed and old ones disintegrated.

Usually, a community contains a rather large number of artificial hierarchical coalitions, and effectively every community member belongs to one or more of the latter. There is, however, only one coalition that every community member belongs to, and that is the community coalition, and as such, the community performs another of its important function, the appraisal of powers of all of its members to affix an appropriate social status upon each of them.

With regard to this status-appraisal process, note that being in a high post at some mighty artificial coalition will bestow one with a large control power. And note also that this coalition-based control power nearly exponentially increase as the person's post goes higher within the coalitional hierarchy. Just compare the number of persons under direct and indirect control of the person on top of the hierarchy with the number of the same under the control of one of the second level post of the same hierarchy. The latter is only a fraction of the former. In the simplified numerical example given above, the head of the coalition can control 1,110 coalition members, while only 110 are under the control of a person on the second level of the hierarchy.

It is not just the number of subordinates that counts in the control power accruing from one's coalitional affiliation. It is also the quality of these subordinates, *i.e.*, the powers these subordinates own that is important, as well as how much command privileges the person has over the subordinates. However, if other things are approximately equal, then the number of subordinates becomes critical in determining one's coalition-based control power. In that case, it is to be noticed that a large artificial coalition tend to produce a typical tapering pyramidal type power constitution. Since a large artificial coalition usually functions as a subcommunity, this tapering pyramidal power constitution will reflect in its subcommunity status constitution.

How this subcommunity status is transferred to the status in the whole community depends upon how the coalitional power of the artificial coalition is appraised within the community. The status of a general of a military organization will be very high within the organization, but how high his status in the

community depends upon how high the military power is appraised according to the community norm.

Incipient large status variance communities

Let me now return to the incipient artificial community whose population had gone beyond the limit of ur-community, not by design but by convenience of having more hands in farming, and by the availability of food to feed them all. Such an oversized community would have needed social rules for governance, and a ruling body as a powerful artificial coalition to enforce rules.

These social changes would have been very slow in the beginning; nothing like the rise of a mighty kingdom would have taken place in thousands of years since the agricultural evolution. At first, the lack of efficiency in the burgeoning farming technology should have produced little excess food to speak of. The artificial evolution, however, never failed to accelerate, and the persistent humans, once started, could wait out long hard times of the initial stage of hard labor and little return. So eventually, the persistence paid off -- the farming technology improved, community population kept increasing, so much so that some of the community members could have specialized in jobs not directly involved in food production such as masons, carpenters, weavers, smiths, and various other artificers.

One of the most remarkable outcomes of these new industries was that they produced *durable valuable objects* which people could have *owned* as personal possessions, and also handed down as *inheritance* to their respective offsprings. Needless to say, the propriety rights and inheritance rights should have been protected by appropriate social rules, primarily because they were in favor of the continuation of the existing order.

Through the works done in the primary industries such as farming, fishery, and animal herding, the humans produced a large amount of food to sustain large communities, and through the works of other types of industries they produced objects as the basic materials of *wealth* to be owned, accumulated and inherited, and also plundered. Note that these objects that constitute wealth included, besides directly useful objects such as houses, ordinary clothes, household utensils, also objects whose primary value source could not be directly ascribed to their practical uses such as those made of precious metals like gold and silver, and also precious stones. They have, however, important uses of another kind, *i.e.*, as *status symbols* as will be discussed shortly.

At this juncture, let me address the issue of the *status variance* within a community. I have already assumed that the community mean status will generally be kept constant, and that assumption still leaves the variance of the status distribution over the community members free. I have also mentioned that the upper bound of the peak status increases with the community population. The community with an increased population must have been controlled by appropriate rules, and the enforcement of rules required a control power beyond a single person. So a ruling body would have originally started as an alliance coalition of powerful community members, which would gradually have been established as the ruling body as an artificial coalition. As the community increased its population and the upper bound of the peak status hiked up, the ruling body members naturally tried to cultivate the possibility of elevating their own status, more by the necessity than by personal ambitions, since, the greater the status differential between themselves and the general populace, the easier would have become their community management tasks. Note that the status variance within a community would automatically increase insofar as the community mean status remained constant while the status constitution within the community was generally kept its tapering pyramidal shape.

So the initial stage that human communities gone through after the agricultural revolution may be

characterized as a relatively peaceful period of building up of community populations and a gradual organizations of them into large variance societies. This process occupied the period running approximately from 10 thousand BP through 5 thousand BP. It must have been a relatively peaceful time until 7.5 thousand BP, when the first archeological evidence of a large scale pillage and burning was found in western Asia. Probably, some communities could store enough amount of food to tempt some nomadic community to get it in an easy way. It took, however, another 2.5 thousand years before wars started in earnest (Festinger, 1983), most likely coincidental to the accumulation of *wealth* in communities.

During this five thousand years of relative piece, artificial evolution must have been steadily going on in many areas, improving farming and other technologies, producing various useful and artistic objects, organizing communities with further and further articulated divisions of labor, accompanied by suitable exchange channels among such divisions. As ordinarily being the case with accelerated artificial evolution whose new products often suddenly inundate the market, some of the communities flourished with material wealth nearly at the end of this period, especially those communities which were located in fertile lands, like vicinities of large rivers where abundant water and rich topsoil were available for farming. Such prosperity should naturally have attracted people to join the communities, providing the basis for producing further wealth.

Let me address the nature of wealth at this point. Wealth is a concentration of objects which most people desire to possess or to partake of the merit they present. The fundamental reason why people desire to possess them is obvious with some of the objects that constitute wealth, and that is their basic *utility*. This is true of these objects like food, clothes, house and land. The reason for most of the rest is *beauty*, or more in general, the esthetic value the objects present themselves. As attempted earlier, it seems impossible to define beauty in general terms, but at least, objects like precious metals and stones give us some hints. Although a part of them do have some practical utility, but the essential part of their value seems to come from the fact that they represent a rare concentration of admirable quality; not only they are pleasing to the eye, but also their quality appears to stay permanently unblemished if handled carefully. So there are something in the basic programming of the urge system that inexorably attracts people to approach them, the more so if these objects are generally hard to come by.[27]

Note that the actual values of these objects constituting wealth are built upon these core values. The most essential of these additional values comes from the fact that the owner of them can use them as a potent source of power because people desire to have them. So, by going back to the context of an early artificial community which became prosperous, its ruling body would have wanted a large share of the wealth by themselves, who were trying hard to build up their high status. And, most likely, they would have succeeded, as they were already powerful, more powerful than the rest of the community, and a greater control power always means a greater maneuverability of affairs of the community.

This does not, however, mean the powers to be at the time, or any other time, wanted to monopolize virtually all the wealth within the community. For it would have been their own downfall if they did, as the majority of the community squeezed to utter poverty would have presented no attraction to those outside to join the community. Also, a ruling body that greedy would certainly lose the support of its people, and without the support the ruling body could not have sustained its high status despite of their accumulated wealth. And most importantly, a wealth cleverly invested would have created more wealth, and where else a ruling body could have invested its wealth but in the community it governs? If the general public were

[27] Very often these two types of core values are amalgamated within single objects, like beautiful attires and awe-inspiring edifices.

allowed to possess some wealth in their name, possibilities of owning further wealth would have created incentives for exchange, and that is by definition value-generating economic activity. Gold and silver coins invented as tools to facilitate exchanges, albeit in much later time, were exactly in line with this principle; they were precious metals with high core beauty values, rare but not prohibitively rare for being circulated among the people. So even though the high status persons sucked up much of the wealth within the community, they had also spend a part of it to the effect of redistributing wealth within the community, and this wealth distribution process would usually have ended up in a sort of optimal balance that approximately maximized the production of wealth within the community given the external conditions. When that is the case people would generally felt it as a *fair* distribution.

7.4 The Times of War

The advent of the Times of War

When wars started in around 5 thousand years B.P., they spread nearly all over the world where some human civilization existed like a wild fire, and since then the humans have been constantly at it till the first half of the 20th Century, when two major World Wars flared up. Then in the latter half of the century the world has settled into a semblance of relative peace after going through the aftermath of the Second World War called the Cold War, and the peace and the accumulated effect of the artificial evolution then touched off the second grand transition of the human societal processes we are experiencing today.

Let me call this period of human history, from 5 thousand years BP to the middle of the 20th Century, *the Times of War*, as wars never completely ceased during this period. The time of 5 thousand years BP would have been the period when the risky venture of sacking the wealth hoarded in other communities became just cost-effective. The recognition of waging wars as a reasonable high-risk, high-return alternative for community action should have spread widely and quickly. It was probably first started by nomadic hunter-animal-herder communities by rich farming communities with a consequence of making the latter to develop their defenses; they could not afford to flee like ur- banders supposedly did when attacked as most of the things these sedentary people valued were connected with the land they lived. Those who succeeded in building up a fairly mighty defensive military forces by utilizing their accumulated wealth might then have taken a new view of their military power, offensive as well as defensive: Why not invade neighboring communities of lesser military power and make a quick acquisition of more wealth? This possibility might then have stimulated the neighboring communities to form an alliance for a joint defense. A chain reaction was thus triggered, and the human civilization had been stuck within the deadly trap of endless warring ever since.

This persistent warring should have created a strong selection pressure for 'communities' than for individuals, and the agent that responded to this selection pressure was artificial evolution instead of biological evolution. The workings of artificial evolution may be viewed in the following way: Note first that the persistent warring at the Times of War does not imply that communities were constantly engaged in actual fighting. Actual fighting is generally a wasting activity. So unless the expected gain by successfully winning a major battle was higher than the expected cost and loss, they would rather have preferred to keep a rather uneasy stalemate among themselves, or even an uneasy alliance. Whether in peace or at war, the Times of War was the Times of War because the possibility of wars should have been always in the forefront of the minds of people, especially, of those of the ruling bodies of communities.

So what each of them, the ruling bodies, was most strongly worried should have been to show 'weakness' in their communities coalitional power, which would have invited invasions, and invasions would cause a further weakening of their coalitional power even if they could defend themselves. The most popular course they took for not showing weakness would have been to imitate the principles employed by relatively stronger ones among the competing communities, *mutative mutandis*, the principles in organizing their communities, their armies, armories, combat tactics, as well as in more civic sides of their administration to make their communities as resourceful as possible. Since artificial evolution is more Lamarckian than Darwinian, this imitation could have been carried out relatively easily, often making neighboring communities closely resemble each other both in their societal structure and the military might.

This does not mean, however, that they were also innovative in employing new products of artificial evolution. Most of them were rather traditionalists most of the time, reluctant in introducing changes; they might have hesitated even when a new idea despite of its apparent advantage, whether the idea was about a material tool or a new combat tactics, because of the potential destabilization effect the change might introduce into the established way of their community upon which their enemy might pounce.

In spite of this general reluctance to changes, artificial evolution did keep its steady progress during the Times of War, and when it occasionally brought a wealth and power to some community, such a success would very quickly picked up and emulated by other communities to avoid beaten down by the successful community. So it cannot be denied that even conservative ruling bodies of communities in the Times of War had their function in the progress of artificial evolution, the function of playing the role of a ratchet in the process to make it go only one way.

Large status variance communities in the Times of War

The common denominator of virtually all major communities in the Times of War was that their ruling bodies tried hard to maintain the status variance within their communities large, and to make it even larger if it was possible to do so without disturbing the current order. The merit of having a large status variance within a community in the Times of War obviously came from the need of quick organization and quick actions of various kinds of group actions, especially military, and a large status variance helped obtain these properties of group actions, since the urge system guaranteed that people would obey commands issued from the higher status persons almost automatically.

Not that victory in inter-community conflicts was not warranted by a high status variance alone. What counted most in achieving victory was always the coalitional power itself, and the coalitional power of a community depended upon many factors such as the material resources and human resources the community had recourse to. But, as mentioned earlier, adjacent communities often found themselves being nearly balanced in these aspects, and when other things were nearly equal, commands in high status helped in many ways to turn the tide in their favor; consider the advantage of having soldiers who believed a mighty, sometimes almost divine, symbol of authority behind their back.

It has to emphasized here that it would have been no easy task for the ruling body of the Times of War communities to just maintain a very high peak status of the ruler, which was attainable only by keeping the status of the majority of community members rather low. In the first place, there had to be a general public support for having such an extreme form of pinnacles pyramidal status constitution. Only the prevailing conditions in the Time of War could have enabled for the to public swallow such a choice of community structure, because the survival of their community was the survival of themselves, and people

would not even been aware of the choice seeing large status variance hostile communities all around them.

Once a ruling body succeeded in building enough high status for themselves, they would have concerned most seriously with how to preserve the gained high status of theirs. For the purpose, they should have weathered frequently occurred crises posed by the demise of some important member of the ruling body, especially the ruler. If the remaining powerful members of the ruling body started vicious conflicts about the succession would considerably harm the integrity of the ruling body, and consequently of the community, a weakness which neighboring communities would not miss to take an immediate advantage of.

The *hereditary rights* of succession was a solution widely employed by the Times of War communities, stipulating by rules that only kin of the diseased ruler had the rights to succeed, and the closer the kinship, the higher the rights. Even though this did not completely eliminate succession conflicts, it at least contained the list of successor candidates within the relatively small members of the loyal family. The remaining uncertainty could also be removed by an additional rule specifying the priority order for the heir, like the one beginning with the eldest son and so on. Note, however, that by making the rules of succession more restrictive, one is also increasing the risk of ending up with a very unsuitable ruler. The actual succession rules would therefore have been determined by the balance of two kinds of risks, the risk of having succession troubles and the risk of having an unsuitable heir. Once the rules were set, however, later generations in the Times of War generally kept them as a part of their tradition, which often led them to a crisis of one type or another.

Social classes and status symbols

Confining by rules the successor candidates of the ruler's position within the close kin of the deceased would give each of these kin a significant control power, the kind of power I have been calling the lineage power. Since a high status generally accompanied such a power, the succession rules practically rendered status an inheritable commodity. Once such an inheritance was allowed to ruler's kin, there was no reason not to allow the same practice to lesser positions in the community, bestowing high-born children high status as their blood rights as well. Then, almost as a natural consequence of such a practice, a high-born married with a high-born, entailing status-wise horizontally layered structure to be built into a community made of *social classes*, the top layer of which may be legitimately called the *ruling class*. Since the social class system facilitated the preservation of *status quo* social system, it appealed a rather conservatively inclined administration which enforced it rather vigorously; only high-borns could keep a high status, low-borns were not to aspire to achieve high status, and marriages were generally confined within the members of the same class.

As mentioned above in relation to succession rules, all these measures of conserving *status quo* through inheritance rules contain the risk of poor utilization of human resources. This liability is quite obvious with strictly enforced social class system. Not only there is no guarantee that offsprings of great persons are also great, and potential powers and talents of low- borns will be wasted without being used for the benefit of the community. So the social class system usually provided some loopholes through which some exceptional talents in lower classes could be scooped up to a higher class, and if that was not enough, especially under crises of the community, drastic shuffling of class members could have taken place either by an internally instigated change of regime or under occupation of an external force.

At this juncture, let me pay attention to the issue of *status symbols*. Status symbols could have existed even in the ur- band times, but they began to play important social functions when communities

grew beyond the size limit of ur-bands, when many of community members became mutual strangers. The social status system, and the paying-respect urge functions underpinning it, could not operate properly if one did not recognize the status of the person one met. So it was natural that people tended to carry around kinds of objects that worked as status identification aids.

The need for status symbols would have intensified when the social class system was implemented, as, without status symbols, there would be little for distinguishing high-borns who got their high status by inheritance.

Status symbols are not always objects one carries. But personal adornments, especially those made of precious metals and stones are ideal for high-borns since they are inaccessible to poor commoners. So are rich and elaborately embroidered garments made of precious fabric. If a person in old times dressed up that way, riding a magnificent horse or a palanquin, accompanied by a few stout warrior guards, entering or coming out a gorgeous mansion, there would have been no excuse for any commoner's negligence in paying a proper respect to the person.

There are other types of status symbols than personal adornments which are often more effective because they are hard to fake: special ways of composing one's posture and bearing, special styles of speech, sophistications of various kinds, and so on -- any properties would have worked as a symbol of high-born if acquiring such properties took a long time and special environment which only high-borns could afford.[28]

As I shall discuss later, it is the conspicuous absence of these status symbols today that tells most eloquently how low the status variances are in the contemporary societies.

An admissively fair allocation scheme practiced in hierarchical artificial coalitions

Let me turn our attention here back to artificial coalitions once more. As artificial coalitions are extended forms of natural coalitions, the spirit of the pledges of trustworthiness and fairness that bind the members of the latter should be transferred to the former as well, at least to some extent, since without it artificial coalitions do not deserve the name of coalitions.

Let me begin by discussing the principle of fairness applied in the context of artificial coalitions, spotlighting mainly how the coalitional joint gain is distributed over its members. As mentioned in the Chapter 5, fair distribution is often a serious issue even of a natural coalition, and it is no wonder that it has remained to be a difficult issue with artificial coalitions.

Considering the nature of the issue and the lack of any explicitly stated principle of fair distribution, it is rather surprising that artificial coalitions, ranging widely in their types from military organizations at the Times of War to modern business corporations, have managed their distribution problems without causing too much disturbances and protests far more often than not. This means that there exists a principle of fair allocation which the heads of artificial coalitions intuitively followed, and there should have been a rather large margin in what people believed as a tolerably fair allocation as long as it did not violate a certain set of conditions. The principle I am suggesting to be it may be called a *modifiable status-dependent allocation*.

Let me start my argument on the well-known Adams's *equity principle* (1965). The essence of his argument may be stated, in the terms I am currently using, in the following way: A member of an artificial

[28] A word may be added here about profession symbols, objects carried by people of a certain profession: specially designed garments like uniforms, swords carried by professional warriors, and so on. These profession symbols often doubled as status symbols, as professional subcommunities tended to lay within a certain layer of social class. When such compartmentalization of community structure went very far, making even one's profession an inheritable commodity, a social system like Indian caste system would result, which is hard to shake once established.

coalition person feel his or her share of the coalition's gain ('outcome' in his terminology) equitable, or fair, if the person perceives that the it is *proportional* to the person's 'input' (contribution) to the coalitional endeavor, if they are compared with the others' inputs and the shares they are getting. Adams cautions that his statements are confined to how one feels about equity and little more.

Let me venture a little more, and consider an allocation scheme that most hierarchically organized artificial coalitions have utilized, the one whose fairness is reasonable enough not to evoke too much inequity feelings and accompanying resentments among the members of a coalition. Note first that there is no optimal solution that satisfies everybody, as contributions made by members in different departments of the coalitional operation are basically incommensurable except for some outstanding contributions and outstanding *dis*contributions.

Let me first address ordinary contributions. Most of the works done by members of a large artificial coalition are ordinary, and there are colleagues doing similarly ordinary works. Since those working in the same department on the same level of hierarchy usually form a circle of mutual social comparisons, any conspicuously unequal share distribution over them will arouse acute misgivings in those underpaid. Feelings are important. But since there could be no allocation scheme that satisfies everybody's feelings, what the administration of a hierarchical type artificial coalition should take a special care is to avoid 'acute' misgivings, the kind of misgivings which will certainly take place when colleagues of the same department are rewarded unequally despite the obvious approximate equality of their contributions to the coalitional effort. Note that this kind of inequities are easily detected because colleagues in the same department usually belong to the same social comparison circle. So the bottom line of a fair allocation is to maintain the basic equality in allocation for those engaged in similar works in similar ways, either the person reward be a clerk in a contemporary corporation who process papers or a soldier fighting at a battlefield in the Times of War.

The next issue of fair allocation is about shares to be given to the persons at different posts. Though contributions done by person in different posts are incommensurable, it is natural to assume that a person at a higher post in the coalitional hierarchy contributes to the coalitional endeavor that much more than a person at a lower post, since the former can wield a greater coalitional power than the latter. To be exact, these coalitional powers vested in a person at a certain post will be appraised as the local status of the person in the subcommunity of the coalition, an allocation scheme that distributes the coalitional joint gain more or less proportionally to the local status of each person within the coalition may be defendable as equitable.

A corollary to this reasoning is about the allocation of the coalitional joint loss. Artificial coalitions are formed to make gains by the use of their coalitional powers. So they will be disbanded if they fail to do so. But even a coalition which makes gains most of the time will experience occasional setback, and if there is no particular person to place the blame on, the responsibility of the failure should fall more heavily upon higher posted person than lower for the same reason of the greater power of the former. And if persons in higher posts try to evade taking the proper responsibility through the use of their powers of influence, it would certainly be perceived as unfair by the others.

Now let me come to outstanding contributions and discontributions. Any outstanding contribution as many others certainly see as such has to be rewarded specially mainly because, if otherwise, it will be perceived as an unfair treatment by many, not just by the contributor him- or herself, and will lower their morale. The reward may be of a form of special bonus, but more important form of reward will be promotion to a higher post in the coalitional hierarchy. A higher post means a higher local status, meaning a higher and more permanent increase in one's income. When there is no available higher post in vacancy, the

outstanding contributor always receives a sizable *merit* for the person's deeds. Though merits may have no corporeal form, and may exist only in the person's reputation, an accumulated merit will make the person priority in promotion when chance arises. Note that this merit-status link gives a more solid rationale for the local-status dependent allocation scheme. Note also that this merit system goes with nicely with the status-as-an-appraised- power of the person theory stated earlier, since the outstanding contribution a person made is nothing but a successful demonstration of the person's potential power.

An outstanding discontribution of a person to coalitional endeavor will also be penalized appropriately. The severity of the penalty will depend upon the nature of discontribution. When it is taken as an evidence of incompetence, the person may just be given a demerit (by discounting the person's accumulated merit), or demoted from the current post, or ousted from the coalition. The penalty will be severer, often immediate execution in the Times of War, when the discontribution is perceived as evidence of the person's disloyalty to the coalition. *Loyalty* to the coalition, or to the head of the coalition, is obviously the artificial version of trustworthiness in natural coalitions. Unlike trustworthiness, loyalty is often necessary to be inculcated in the mind of artificial coalition members as one of important moral codes, and its intensity often positively correlated with how fair one believes oneself being treated in the coalition.

Strictly speaking, the arguments given above about the allocation of joint gain applies only to hierarchical artificial coalitions. How to deal with an outstanding contribution or discontribution to the community requires some additional considerations, as a community as such lacks hierarchical structure, without posts to offer or forfeit. Before going into that matter, let me discuss a little about the major political systems practiced in the Times of War.

Feudalistic kingdoms

Looking at all the political systems realized during the Times of War at some time and in some place, there seem to exist two major clusters which I shall call *kingdoms* and *empires*. (Keep in mind that the terminology employed in this subsection is my own, and does not correspond to more rigorously defined terminology employed in relevant areas such as history, sociology and political science. I employed it only because I needed simple terms to explain my ideas in relatively short phrases.) Kingdoms and empires are both very large status variance communities with tapered pyramidal status constitution, whose highest status post may be referred to as the king and the emperor, respectively. Of course, I am using these terms here as abstractions, referring no specific kingdoms and empires whose historically known details are far beyond the scope of my argument. My interests lie mainly in sketching political structures implemented by the Times of War humans for the purpose of upholding a large status variance community.

The distinction I am making between kingdoms and empires lies mainly in the ability of governance of their ruling bodies. Empires are, in my definition, is a very large single community, governed by more or less integrated single hierarchical artificial coalition designed for the purpose of governance, with the emperor on top. Let me call this organization generically the *bureaucracy*.

In contrast to this rather unitary structure of an empire, the typical structure of kingdoms I am considering here may be more aptly called 'fractal,' as a kingdom, especially those in a feudalistic era consists of rather large number of much smaller units that I shall call *houses* in the present arguments. As schematically illustrated in Fig. 7.9, each of the triangular forms in the figure represents a house, which, at least in spirit, an extended family type artificial coalition. The whole triangle represents the king's house, headed by the king at the top. The king's direct control, however, covers only the hatched area, consisting of

the king's house in a narrow sense, in addition to the two lords, *A* and *B*, who are also heads of their own autonomous houses.[29] Even though these two lords depicted in this figure may be in allegiance with the king, they and the king are just in a sort of political alliance, and the king is not supposed to interfere with internal affairs of these lords' houses. So, for example, when the kingdom is at war with another, the king may just request these lords to join their armies with the king's at the battlefield, without specifying any executive details since these were within the prerogatives of each of the lords.

Approximately the same structure will be repeated in the house of each of the lords. Actually, any underling of the king or a lord except for those very low in the hierarchy of a house can be the head of his own house. This naturally makes the whole picture of an actual system of houses extremely complex, far more so than the simplified diagram shown in Fig. 7.9 suggests. Historians seem to apply the term *feudalism* only to extreme cases when the whole land of the kingdom, together with the peasants who farmed it, was split up into 'fiefs,' each of which was controlled by whatever a house, big or small, to which the fief was finally assigned. The genuine feudal systems operated in this manner are rather rare: the early period of Chou dynasty in China started around 12th Century $_{B.C.}$, the medieval Europe around 11th through 13th Century, and the relatively recent period of Japanese political system whose heyday was Tokugawa shogunate from the 17th to the 19th Centuries.[30] These are obviously only the wavefronts in which the feudalistic political system was practiced in its most extreme form. By relaxing the defining characteristics a little, we would see that most of the communities in the Times of War were governed by semi-feudal political systems of one kind or another. In other words, the feudal system in this loose sense, which I shall use in the rest of my arguments, had been a default political system which other systems reverted to when they failed to function.

The fundamental reason for this popularity of the feudal system may be found in the following two points. First, a community may acquire a very high peak status by building houses upon houses, high enough to govern a large community whose coalitional power may match those of the competing powerful communities. On the other hand, a feudal system requires the king (or whoever on top) relatively little governing capability. Note that the king needs to directly control only the persons within the hatched area indicated in Fig. 7.9, a task that may not demand an elaborately designed bureaucratic organization to accomplish.

These advantages of the feudal system are also its weaknesses if viewed from the opposite side. The relationship holding among the king and his lords was usually no more than a basically uneasy political alliance. The community of a kingdom might have need a very high status king, but it did not need a particular person for the king. So lords might have been willing allies of the king only for offensive or defensive actions of the kingdom, but they were competitors for the throne all the same, and competitors among themselves as well. It was, therefore, only the relatively superior power of the king's house over those of the lords that could have kept a relative internal peace, giving the king a hard task all the time. He had not only to keep his house relatively the mightiest, but also had to be engaged in politicking, brow-beating, cajoling the lords to put down their ambitions, and to stop their mutual squabbles. Note that this problem was not restricted to the king's house alone; all the houses had the same problem though maybe less in scale.

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[29] Only two lords are shown in this figure just for convenience. The number of lords in allegiance with the king would generally be more than two.

[30] In Japanese, this coalitional organizational unit I am calling the 'house' is called 'iye' whose literal first meaning is the same as house, *i.e.*, a dwelling. An elaborate elucidation of Japanese iye-system is given, *e.g.*, in (Murakami, 1979).

So generally speaking, feudalistic times were uneasy times beset by frequent wars, intrigues and betrayals; old houses fell, new houses arose, while alliances on various levels formed and broken. It is on this background of uneasy political situations that those people high in status tried especially hard to stabilize the *status quo* regime, constantly demonstrating their powers and emphasizing their blood rights, while campaigning on morale virtues such as loyalty and honor as the major ingredients of the community norm.

The loyalty of a person in feudal times were primarily targeted at the house one belonged to and the head of the house, and did not extend much further beyond, and that was for a good reason. If members of a lord's house were primarily loyal to the king, for instance, then the king would have a strong control power over the internal affairs of the lord's house, and such a breach of house autonomy was hardly tolerated by the lord.[31]

Community in the Times of War

At this juncture, let me touch upon the characteristics of community in the Times of War as an artificial coalition. Unlike hierarchically organized artificial coalitions, of which the house in a feudal system is a good example, a community consisted of a mass of people in residence of a kingdom or an empire, some of whom were house members but most others were simply the general populace put under the reign of houses or an empire. A community as a whole was seldom hierarchically organized, even though a social class structure could have been imposed upon them. When some artificial coalitions in the community, like its military, obtained a joint gain such as war spoils, the gain was not directly allocated to the general populace. On the contrary, the general populace were the major providers for the community expenditures, like the wages paid to retainers of ruling houses and the costs for their military expeditions, which they had to pay under various names such as taxes, levies and tithes.

This did not mean that the general populace were always on the wrong side of the bargain, and there always was some kind of a bargain between them and the ruling class. Note first that people had to live in some community, to interact with others, ply their trades and make profits. So if a community could provide them with general peace and prosperity, with comparatively reasonable taxes and levies, people would not grudge their support to the ruling class who could provide them with these qualities. Even if they could not get their shares of the coalitional joint gain directly, it could still be a fair bargain as they could get their share indirectly through the peace and prosperity of the community which a successful ruling class could bring to it.

On the other hand, if the ruling class was too greedy in accumulating their wealth and exploited the general populace with heavy taxes, or failed to protect them from various harms originating either from external sources like enemy incursions or internal sources like thieves and bandits, the residents of the community would first withdraw their supports from the current rulers, depriving the latter ot their very power foundation. When things got worse, there might be rebellions or mass exodus of people, from which would come none but the downfall of the current ruling class.

So the tasks the ruler of a high variance community in the Times of War should have dealt with were indeed formidable. The king or the Queen had to keep a very high peak status which, like the central pole of a huge tent, could support either an elaborate house system or a bureaucratic administrative machine

[31] Families were also shaped like a mini-house especially in feudal times, and the filial piety addressed at the head of the family, usually the father, was often one of the most strongly demanded moral codes of the children to follow.

as well as a military might, so that the coalitional power of the community was at least nearly on the par with neighboring communities. In order to keep that high a status, the ruler needed the power that substantiated the status, built upon all kinds of power bases available. Much of these power bases would be those the ruler inherited from the predecessor, but as the inherited power would have discounted somewhat, the ruler would try to build it up further for himself, absorbing wealth from the populace, while judiciously redistributing it back to the community to make it prosper. The prosperity of the community in general was always the most potent factor for the ruler to gain the people's support as the indispensable ground for his power and status. Furthermore, the prosperity of the community would have attracted more people to join it, and a larger population generally meant a greater power base for the ruler.

On the other hand, the more prosperous a community, the more tempting target of invasion it would have looked to the neighboring powers. So the ruler would have had to keep up its military power while fortifying its defenses, while confirming the loyalty of the lords in alliance with him, as mighty allies were also mighty rivals. These are, however, hardly an exhaustive list of what rulers were supposed to do. Some of the rest will be discussed below.

Honor and dishonor

The next issue to be discussed is that of *honor*, and the reason why honor was often considered as an exemplary virtue in many cultures of the Times of War. Let me begin with the source of the concept of honor. Remember that an outstanding deed done by a member of a hierarchical coalition would be awarded by a merit assigned to the person by the coalition as a token to testify the power of the person, and by accumulating such merits a person will usually be promoted to a higher post within the coalition, promising the person a comparably high local status and correspondingly larger share of the joint gain of the coalition.

When it is the whole community that is benefited by some person's outstanding contribution, a somewhat different procedure is needed to reward the person, as the community as a whole is not hierarchically organized. But the procedure must be something that assures for the person's the community-wide social status to the level which the person has proven him- or herself to deserve by the person's outstanding prosocial deed. This is where the concept of honor and a proper honor-bestowing ceremonies sponsored by the community, very often represented by its ruling class, come into the scene.

In the Times of War, such outstanding contributions to the community would typically have been those done at battlefield, either by a commanding general, an officer, or even a plain soldier, the contributions that were supposedly decisive in securing the victory. But military contributions are not the only kind of deeds to be honored. As seen more frequently in the contemporary societies, honors are accorded to a large variety of achievements, *e.g.*, to winners of important sports contests, to those who did remarkable works in science or literally fields (like in the case of Olympics or Nobel Prize), and so on, and the spirit of honor-according ceremonies remain always the same. And the spirit is to let the contributor's outstanding power be *officially demonstrated* over the wide public, not only to those who attended the ceremonies in person but also those who heard of them (in modern times, those who watched the ceremonies on TV). Since there are always a large number of people who love heroes or heroines, as targets of their admiration urge, the status of the honored person will be significantly elevated, especially because the people who are acclaiming the person's honor would undoubtedly give a high appraisal to the honored person's control power.

Some of the ruling class members might have felt a little reluctant in creating a new hero who might

become a competitor for his status. But often there was no choice; once a story of someone's heroic act was out, people would clamor for the person's honor, and expect a fair deal of the ruling class. If there was no choice, the reluctant ones might think, why not use the occasion for their own demonstration? So there would be all the dignitaries of the communities attending the ceremony with full pomp, occasionally grinning widely as if the honor was partly of their own. When the honored person's great deed was loudly proclaimed, it was often suggested, either explicitly or implicitly, that the virtues of the king and other dignitaries inspired the person to conduct the great act that was to the benefit of all the people in the community. After the proclamation the person would receive some token object such as a medal, a cup, a sword, or whatever, that could be used by the person thenceforth as the symbol of his or her greatly enhanced status. There might be some material reward accompanying the honor as well as a token of gratitude of the community to the person, the value of which for the person, however, would usually be far less than the value of status elevation.

Now let me turn to the issue of honor as a virtue, especially concerning the question of why members of the upper warrior class in the feudal times, such as knights and samurai's, were almost crazily sensitive about the issues of their own honor. The feudalistic eras were times when houses were basic structural units in the ruling class. So it was natural that a honor accorded to a member of a house, especially to the head of a house, was also considered as the house's honor, and as such was inherited as a part of the house's patrimony. Due to the status elevation function of honor, those houses would have prospered which succeeded in accumulating honor after honor over generations, and those which failed in doing so would have declined.

Indeed, this accumulated and inherited honor by one's lineage was to be considered as the real substance that legitimatize the birth rights of high status for high-borns. A high-born did not directly inherited a high status, but it was the large amount of honor accumulated in the person's house that made the person appraised as high status. There was, however, an implicit condition to make the inheritance valid, that the person had to live up to such a mounting honor. The person had to fight valiantly at a battlefield so as to demonstrate others that he deserved his house's name, and also defend the house's honor any time when someone apparently tried to belittle it.

The house's honor, therefore, naturally became the poignant target of intense pride of most members of a house, easily wounded by someone's slander, or by one's own foolish, *i.e.*, dishonorable, act. Many people sacrificed one's own life in defending the honor of one's house, through such acts as dueling or harakiri, as it was not only a person's own status that was at stake in such occasions, but one implicated other members of the house by one's dishonorable act or failure in defending the house's honor in a proper fashion. There is more than that. Suppose that the moral code binding the high-borns to defend their honors, and less and less of them became reluctant to risk their lives by defending their honors. Then the only substance that supported the inheritance of ancestors' honors would be gone, and with it gone, so would the social class system. In reality, however, a substantial abolishment of social class system came to pass only very recently in many parts of the world following the conspicuous reduction of the status variance within current communities.

A word may be added here about dishonor. As the antithesis to honor, dishonor would be imposed upon a person who did an outstanding discontribution to the welfare of one's community, and the dishonored person's status would have gone down significantly once the fact became a public knowledge. In the times when personal honors were closely linked with the honors accumulated by the house, a dishonor of a member would be a dishonor of the house as well. Note at this point that, though an honor could be

accorded to a commoner, a dishonor applied only to those of high social status, as commoners had virtually little status to lose. So a commoner who did some outstanding discontribution to the community, like committing a crime, would be simply penalized for the act. An upper class member would have been equally penalized, depending upon the legal system practiced in the community, but often the declaration of dishonor was thought to be penalty enough for honor-bound nobles, as such a person often chose to kill oneself, or to put oneself in self-exile, rather living with the shame and endure reproaches.[32]

Another aspect of dishonor to be mentioned is that the infliction of dishonor upon a person was usually done without ceremonies. Apart from the fact that such a dishonor would soon have become a public knowledge since the person must be of a high class, there apparently were nothing for the high class members to demonstrate about the dishonor befallen upon one of their class peers.[33]

The principles of modifiable status-dependent allocation

At this juncture, let me recapitulate the major rationale underlying the modifiable status-dependent allocation of coalitional joint gains that seems to have been employed in most of hierarchically organized artificial coalitions, both historical and contemporary. Its primary advantage lies in its basic justifiability. Note that a high status person generally possesses a large control power to match, and such a person is expected to make a correspondingly large contribution to coalitional endeavors, and thus would deserve a higher share of the coalitional gain than lower status persons. If such an expectation belies the person's actual level of contribution to the coalitional efforts, or the person has committed some obvious discontribution or disloyalty, corresponding demerits would accumulate on the person's file, leading eventually to the person's eviction from the coalition, or at least a demotion to another post of lower status. On the other hand, if the person did better than the expectation, corresponding merits given to the person would lead to the person's promotion. So with this addition of the merit-demerit adjustment procedure, the modifiable status-dependent allocation can be operated, generally speaking, in a justifiable fashion by the coalitional administration.

It is not just this merit-demerit adjustment procedure that is meant by 'modifiability' of the system. Modifiability is the inherent characteristic of a status-dependent allocation scheme, based on the basic indeterminacy in the value of social status, which allows a fairly broad room for manipulation in determining the exact amount of share a person of a certain status is getting. For instance, there would always have been a strong temptation for higher ranking officers of the coalition to get a greater share for themselves at the expense of low status members. Even before the advent of systems like labor unions, however, wise managers of artificial coalitions would have refrained from doing so, at least tried to refrain from being overly greedy, as the feeling of unfairness among lower status members would decrease the coalitional joint gain, either by lowering their work motivation or even losing them to other coalitions.

So a wise management of an artificial coalition would have been the kind which utilized this margin for maneuver inherent in the allocation system to minimize the complaints of unfairness, with a good ear to listen to voices of coalition members. The equality principle discussed in Chapter 5 will be employed as an

[32] Such an act itself was often considered honorable, and would have mitigated the damage done on the honors of the person's house members.

[33] Public executions were done as a demonstration of the powers of the ruling class, illustrating the public how severe would be the punishment to perpetrators of capital offense. As such, it often had little to do with dishonor discussed here.

auxiliary allocation principle to those who all do similar works, and who are similar in age and experience; the equality of their shares will minimize complaints of unfairness from them as they are quite likely to be mutual social comparison referents. Occasionally, a wise management also would have employed a *need-dependent* sharing as another auxiliary allocation scheme, assigning a little extra help to those who desperately needed them like those who were disabled, sick, or retired. Even during the Times of War, a judicious use of such an altruistic allocation, especially at the expense of high status members' purses, would have welcomed by the coalition members and might have contributed to increasing their loyalty.

The focus of my arguments made so far on the issue of allocation has been to demonstrate that the allocation schemes actually implemented by artificial coalitions, especially those hierarchically organized, have been, and still are, in line with Adam's equity principle, namely, to make the allocation justifiable as contribution-dependent for each member, at least on the long run. From that viewpoint, it seems obvious that the alternative allocation schemes, such as equality and need-dependent, can never work as the principal allocation scheme despite their usefulness as auxiliary schemes. I shall revisit this point later, and discuss why, since when the large status variance societies in the Times of War began to show signs of disintegration at around the 18th Century, vigorous claims have been made to put them as the major allocation scheme for the social wealth, and also why actual attempts to construct this 'utopian socialism' were destined to fail.

For the time being, let me hark back to the old Times of War again.

Emperors and bureaucrats

Now let me introduce another gross category of *empire* here which applies for a very large community, or *state*, in the Times of War, whose socio-political system showed a strong contrast to that of kingdom so far discussed. What I have been calling a kingdom may also have ruled over a large community, but it was generally divided into semi-autonomous subcommunities called the houses, and the head of a kingdom, generically called the king here, was no more than the head of the alliance coalition of major houses.

While the house system put relatively little demand of the capability of direct governance on the king and other major house heads because much of it was relegated the smaller houses nested in major houses, a kingdom was often burdened with internal strifes and wars, as house heads were often rivals as well as allies. Occasionally, it occurred that one of the resourceful major houses, led by the head who was a genius of military and/or diplomatic strategies, succeeded in subjugating neighboring communities and unified them into a single community to which the term 'empire' may be applied.

The person who built such an empire, the *emperor*, commanded a great power, and a very high peak status to match, as the successive conquests of neighboring communities heaped up honor after honor upon the person, with the greatly enlarged community in support of him as an extra power base. The top of the tapered pyramidal status constitution within an empire would be more sharply pointed than within a kingdom, especially because the emperor would abhor competitors. So even when some of the houses might be allowed to remain, the status of their heads would be greatly reduced.

The other side of the coin of this reign imperial style was that the emperor could no longer relegate the task of governance to more or less autonomous houses. Since it was beyond question for the emperor himself to govern so vast a community, he needed a very efficient tool for governance, a well organized artificial coalition specialized for governance and administration, *i.e.*, a loyal *bureaucracy* headed by the

emperor.

Bureaucratic organizations could have existed in major houses even in feudalistic times, but it was empires which badly needed an efficient professional bureaucracy, and once such a bureaucracy was established, it far outlived, as an artificial coalition, individual emperors, and often brought a great prosperity to the empire. Note that the first emperor who founded the empire was usually a person of a great competence, but he was still mortal. In order to avoid the crises to the integrity of the empire, the founding emperor was almost bound to start a dynasty with a generally well defined succession rules. Without succession troubles, however, the chances were that his successors were less competent than he, and could not rule as well as he. Still, many empires survived quite a long time despite occasional miserably pampered emperors whose minds were entirely elsewhere than wise governance, as a well established bureaucracy was almost self-sufficient. They just governed under the name of the emperor, and the people of the empire would not have cared either way as long as the bureaucrats did their jobs right.

Let me make a few conjectures about this apparent self- sufficiency of imperial bureaucracy on the basis of some pervasive characteristics we observe of contemporary bureaucrats in the world today. What makes bureaucratic governing organization of communities conspicuously distinct from other types of artificial coalitions such as business corporations is that the former has no competitor while the latter are always beset with competitors. Competitors create needs for an artificial coalition to keep its coalitional effectiveness, which often force it to reorganize its coalitional structure. In order to be able to do it, the top management of a business corporations has to have a good image of what the corporation as a whole is functioning, and it may also encourage, at least to a certain degree, for each of its employees to take an initiative for winning the competition, and will not grudge in giving a large merit who has done some outstanding contribution to the operation of the corporation, and the person thus merited may be promoted very quickly.[34]

The operational mode of a bureaucracy may be characterized by the negation of all these features of highly competitive business corporations. Once a well functioning bureaucracy was established, all that is required of them is to perform its functions as it has been. Under that requirement, it is no wonder that bureaucrats become traditionalists. In a way, a bureaucracy is somewhat like a huge machinery, like some old mechanical clock made of thousands of sturdy pieces; as long as these pieces keep functioning, the clock would continue keeping time without requiring its user's knowledge about its secrets, if no one meddles with it -- so children are forbidden to pry into the inside of the machine out of curiosity.

Probably that was why even an incompetent emperor could comfortably sit on the imperial bureaucracy doing nothing, and contemporary politicians who head various governmental bureaus as ministers do little more than assigning tasks to officials, without much concern about how they do them. So emperors and ministers come and go, the bureaucracy as a whole outlives them virtually unchanged.

This also explains why promotions in a bureaucracy appear to be decided more on the basis of fewness of a person's demerits rather than the merits achieved. It would be very difficult to do some *outstanding* contribution to a tradition-bound organization, while it is entirely possible for a person to do some outstanding discontribution. So when some post in bureaucracy needed to be filled, the candidate would be looked for who has accumulated the least demerit, *i.e.*, the one who has been most faithful to traditional ways.

This demerit-dependent promotion principle, however, is not to be thought as the whole truth,

[34] This does not mean that all business corporations operate in this way. It is well-known that some tends to operate in a very similar way to bureaucracy, especially those which are very big in size and nearly monopolizing the market.

though not wrong either. Remember that the imperial bureaucracy, and likewise other bureaucracies of a large scale, often virtually governed a large community which is bound to present them with numerous extremely complicated issues. Task of solving them, without overtly stepping out of traditional ways, would be extremely tough jobs, requiring top officials of the bureaucracy, excluding their nominally appointed heads, to be exceeding resourceful with various kinds of power bases. So a large bureaucracy would always have needed to recruit really capable youngsters regardless of their social classes. So imperial bureaucracies would have operated as a sort of funnel to attract able commoners for whom the imperial bureaucracy offered nearly the only chance for them to get literate, and eventually raise their social status without hindered by social class borders.

In order to be able to govern nearly independent of the emperor, the imperial bureaucracy should have needed every scrap of power to authorize themselves, and the most potent source for such a power must have been information. Just by the nature of their works of governance over the whole territory of an empire, they would have a convenient access to all kinds of information, and they might have passed on just the minimum necessary to the emperor and the nominal heads of theirs. All the rest they generally kept secret, especially about things going on inside the bureaucracy itself. If the outside world is kept ignorant about the inside issues, it would effectively prevent unwelcome meddling from outside sources. Not that everything goes smoothly inside; there would bound to be fierce power struggles among higher echelon bureaucrats, but even they would usually refrain from making any public demonstrations. A monolithic appearance of the whole bureaucracy is an important key to govern the whole community effectively.

So once an effective bureaucratic organization was established under a competent emperor, a relative peace could be maintained in the domain of an empire for quite a long time, like in the case of Pax Romana, even regardless of the ability of each emperor the community had. No system, however, could keep its effectiveness endlessly, especially a system as stiffly organized system like bureaucracy. Note that by its strict traditionalism, bureaucracy forfeited much of its versatility. Note that even under a prolonged peace, the prevailing condition in the community would gradually undergo subtle changes, creating new problems which could not be handled with the tradition-bound ways. So what bureaucracy typically does to cope with such problems is start a new bureau, and add whatever solutions the new bureau employed to the old set of traditions. In this way, a bureaucracy keeps growing for a time, but sooner or later, there would come a time when the overgrown bureaucracy becomes so cumbersome and cost- ineffective that it strangles itself, very likely triggering the downfall of the empire.

At this point, let me add a word about the imperial military. The imperial military may be considered almost as a part of the imperial bureaucracy, as the most of the principles under which the imperial bureaucracy was run applied to the imperial military as well. The better trained they were as professionals, the closer the resemblance became; the soldiers strictly followed given commands, and would not have sought personal glory. There was, however, one critical difference. The garrisons of the military, especially those stationed at the borders of the empire had competitors, *i.e.*, the enemies beyond the borders they had to fight. When some enemy grew its power, the imperial military could not afford to stay stickler to old traditions. Any soldier or officer who demonstrated their outstanding fighting ability had to be honored and promoted. So by necessity some of these garrisons often maintained their effectiveness better than the central government, and often became critical players in the political game when the central government was weakened.

Building-up the peak status for the ruler

As the reign of a ruler became large, whether be the ruler a king or an emperor, the ruler needed to raise and keep his or her status that much higher. This was not just the ruler's status- promotion urge-based ambition; it was more for the need to keep a proper tapered pyramidal shape of status constitution over the vast population under the ruler's reign. Only under a status constitution with a very high peak status could be housed various artificial coalitions of the Times of War style which operated mostly by a superior's commands were usually automatically obeyed by subordinates out of the respect to the former. In the past a great ruler was often likened to the sun, and this is a rather apt metaphor, as the ruler should stay high and shine gloriously so that even rebellious 'barbaric' people living near the border would be awe-struck by the authority of the ruler.

Caesar the Roman would be a good example in point. He might not have wanted to become an emperor if he did not expand the Roman territory so large by conquering the vast lands of Gaul. He obviously knew that Rome could not keep on reigning over the hugely expanded territory with its traditional oligarchy. Rome needed to transform itself into an empire, and he himself could be the only candidate for the emperor with his mounted honors through his repeated victories, properly demonstrated by the victory parades which put all Roman citizens in furor except for a few conservative senators. Despite his assassination, Caesar's plan was imperialization of Rome was virtually accomplished by Augustus, complete with professionalized army and bureaucracy (Kuno, 1996, 1997). It is really noteworthy that Imperial Rome thrived on since then even despite crazy emperors Rome sometimes had; Byzantine Rome even survived till the 15th Century, although at the end it was no more than another feudalistic kingdom.

Be they kings or emperors, the high authority of rulers had to be maintained often with a tremendous effort on their side. Sometimes they went on military campaigns solely to acquire more honors to consolidate their authority. Some of them tried to deify themselves, or deified their forebears. In Rome every emperor was deified posthumously. Louis XIV proclaimed himself the proxy of God, as the monotheistic Christianity as the national religion forbade his self-deification. These deifications were undoubtedly attempts to vest themselves with some charisma; as their status was closest to heaven or Olympus among all the people in the world, who would be surprised if they claimed to partake in some supernatural powers of the denizens of heaven?

With attempts of self-deification or without, rulers needed to demonstrate their superior powers to keep up their status, and nearly constantly so as otherwise the capricious public might suspect they were hiding their flagging power. One of the popular method employed for demonstration of their powers was to erect huge and magnificent edifices: pyramids, cathedrals, and palaces, as well as huge statues and portraits of themselves -- a tradition followed by some rulers even today. Also there were monuments in which their honors were deeply engraved so that the community members and their descendants would never to forget them. Some of them also organized ceremonies, sponsored public entertainments, and so on. If these demonstrative activities of theirs still appeared insufficient for maintaining their high status, they might often felt compelled to risk another war, thus fueling war frenzy throughout the Times of War.

Monopoly of knowledge as a source of power

The history during the Times of War the history may look a little repetitious as far as the political styles employed for governing communities are concerned. A mighty king often turned into an emperor by conquering or intimidating nearby communities. The glory of such an empire would usually dwindled in the

succeeding emperors' time, inviting its conquest by another empire, or reestablished itself in another form of feudalistic house system. Other political systems like republics, oligarchies, and mixtures of all these, were also tried. Still, empires and feudalistic house systems remained to be the most popular, perhaps because they were the most convenient political systems to maintain a high peak status for the ruler, the prerequisite for Times of War communities to remain a viable through a large coalitional power such a system could have produced.

By saying so, I do not mean that the historical processes of the Times of War were anything like circular, or oscillating between two poles, since one major aspect of the human civilization, the artificial evolution, inexorably went on in the single direction. For one thing, the incessant warring among communities provided a strong selection pressure upon the fighting technology, like the weaponry and its use, as better armed troops would have had a definite advantage over the enemy, when they were nearly matched in other aspects. Such advancements in making better tools were naturally not confined in the domain of weaponries; any innovation in tool-making has to be backed up by relevant knowledge as meta-tools, and the knowledge that has supported an innovation in one area may be applied in other areas. So improvements of weaponries in the Times of War would usually had stimulated improvements of, *e.g.*, farming tools, and more generally, tool-manufacturing technologies in much higher levels as well.

This advancement of artificial evolution generally contributed in making communities more prosperous, increasing their populations, and the ruling class of such a community could have built a mightier power base and higher status than before by absorbing much of the wealth thus produced. This advancement of artificial evolution, however, would have made the ruling class face a sort of dilemma here. In order to create the wealth as the boon of artificial evolution, they had to allow the common people, be them farmers or soldiers, use these newly available material tools, which would inevitably have made the common individuals that much powerful than before. On the other hand, in compliance with the constant community mean status assumption, the tapered pyramidal status constitution within the community with a very high peak status could have been maintained only by the existence of a very large number of low status common people.

Apparently, they resolved this dilemma by denying the common people access to knowledge any level higher than about the direct uses of these advanced tools. This could have easily been done by keeping them illiterate, by depriving them of chances of getting educated. Since the kind of advanced knowledge provided by artificial evolution could be preserved only through written documents, only those who had learned to be able to read and write could have access to the advanced pieces of knowledge such as those stored in royal archives and libraries. So by monopolizing the chances of being educated only to themselves, the ruling class could have secured the substantive power base provided by the possession of knowledge, enabling them to keep their status distinctly higher than those of common peoples.

This does not mean that emperors and kings, and other members of the ruling class, were all very knowledgeable. The actual handling of knowledge would mostly be done by professional intellectuals in the employment of ruling class members, and all that was required of the latter was to possess high enough intelligence to be able to give proper commands and proper questions to these professionals in the light of the given situation. Note here also the fact that some noble class persons acquired their honor, almost as good a one as a military kudos, by demonstrating their prowess in artistic use of words like writing fine poetries.

Issues of the rising middle class

During all through these periods of violent political events and wars, artificial evolution marched on, and most importantly created so much knowledge that it could no longer kept in the monopoly of the ruling class. Some of the advanced knowledge inevitably spilled over to the people who did not belong to the ruling class, the kind of people who may be broadly categorized as *intellectuals*, who pursued knowledge for the sake of gaining knowledge rather than being ordered to do so. Some intellectuals were under the patronage of one noble or another, but they could also make their living by teaching others who sought knowledge as well. In either case, the knowledge such a person accumulated vested the person with a considerable power of his own. Also, as communities became bigger and more prosperous, there might have appeared a fairly wealthy breed of *merchants* who did their business of trading across borders of communities, and therefore might not be entirely loyal to the ruling class of the community to which they were affiliated. Merchants would naturally have acquired knowledge through their inter-community transactions, the kind of knowledge not even possessed by the ruling class. Add to them another types of people who may be generically called *entrepreneurs* who produced a certain specified kinds of goods in an organized fashion, we have representatives of the *middle class* which had gradually rose in their own power, more or less independent of the powers of the ruling class.

The emergence and rise of the middle class were an inevitable consequence of overgrown communities which required some kind of social structure for the common people, and hierarchically organized artificial coalitions were perhaps the only effective means available to achieve such a social structure. Since a hierarchical artificial coalition generally needed local status differentials for its members, those high on the hierarchical ladder would be pushed up above those on low also in the community-wide status because of the power they could have wielded through their coalitions. They were of the middle class only because they did not belong to the ruling class, but the powers of some of them could easily have surpassed those of minor members of the ruling class.

The emergence of the middle class could have been either welcomed or frowned at by the ruling class. It was a boon for them in the sense that the middle class people contributed greatly new powers within their communities which they could easily tap. For instance, letting merchants make their wealth first and then collect a significant portion of the wealth in some form of taxation would have been much easier than collecting the same from the large mass of common populace.

On the other hand, the middle class ever gaining its power would have been rather irksome to rulers, especially those who were most eager in elevating their peak status. Imagine a tapered pyramidal form of community status constitution whose middle is fattened. Under the constant mean status assumption, the status that fills this fat middle has to come from somewhere, and the most likely source of this fattening status is the higher portion of the pyramid. If so, the growth of the middle class implies the pulling down of the upper portion of the status pyramid.

Note that the opposite is also true. Suppose that the ruling class of a community persecuted middle class people, and succeeded in depriving of their power, and thereby of their status as well, forcing them to join the lower class. The status they lost through such persecution should go somewhere as predicated by the preservation of the community mean status. Some of it may go downward to raise the status of common people, providing some common people the reason to join such a persecution if given the chance, but the effect of status elevation for common people would be minuscule because the effect would be diluted over the sheer number of them. On the other hand, the effect might work dramatically for the ruling class consisting of a far fewer people, shooting up the peak height of the status pyramid.

As discussed earlier, some rulers were anxious in raising their status by using nearly all possible means. Did they also persecuted the middle class? A few did, but others did not, even though most of them were eager to, *e.g.*, siphon up a part of the wealth of the middle class, which served for the ruling class the dual purpose of grabbing more power into their hands while paring off the power cached by the middle class. But they were usually careful in not overdoing it, or explicitly persecuting the middle class, because the act was equivalent to killing the goose that laid the golden eggs. Even if the act might temporarily shoot up the peak status of the ruler, the persecution of the middle class, even a part of it, would bring a serious damage to the normal functioning of the community, bringing down the coalitional power of the community. Note that social status is a relative measure normalized within a community. So however high the peak status of the ruler of a community might be, the community would become a fair prey in the eye of neighboring communities if its ruler sacrificed its coalitional power just to achieve the ruler's high peak status. So the persecution of middle class seems to be the last desperate measure when the ruler had a paramount need to elevate the peak status, and may be used as such only under certain special conditions.[35] As will be discussed shortly, such conditions took place only very recently, at the end of the Times of War, *i.e.*, the early half of the 20th Century.

Let me briefly touch upon here about the rise of breed of intellectuals, or free-thinkers, which flourished almost simultaneously roughly in the 6th and 5th Century BC in quite disparate parts of the world, represented by such figures as Gautama in India, Confucius and Lao-tse in China, and Socrates and Plato in Greece, whose teachings have moved the world history as major beliefs of peoples since then, signifying especially that artificial evolution had made great strides at about that time in providing abstract concepts in very high level, enabling some intellectuals to envision world models in unprecedented scales. It would not be coincidental that the emergence empire-builders like Alexander the Great (the 4th Century BC), Shi Huan-ti (the 3rd c. BC) and Caesar (the 1st c. BC) followed this period, those who undoubtedly had unprecedentedly large scale visions of the communities they were creating, irrespective of somewhat critical evaluations made about their deeds by latter day historians.

Shi Huan-ti is known as the book-burner, as he killed the followers of Confucius opposing his way of ruling, and burned the books they used. This is probably the first well-known example of persecution of intellectuals, even though apparently he did it for his irritation of them without an intention of elevating his esteem through the persecution. This event, however, is remarkable due to the sharp contrast it makes to the way intellectuals were treated in the era preceding him. It was one of the typical feudalistic times, in which quite a few feudalistic states were engaged in warfare, constantly shifting their alliances among themselves, while most of the major houses welcomed to have intellectuals as their *guests* -- actually, guests included talented non-intellectuals as well -- who were free to leave the host house any time they wanted. Some houses were renowned by their hospitality to guests, and intellectual guests answered to the hospitality by giving advice to the head of the host house, or extended services in the art they were talented. So how many able guests a house had was often used as demonstration for the power of the house. Under such circumstances, persecution of intellectuals were apparently unthinkable, which only would have made the house less in power while making its competitors gain in power, as persecuted guests would flee to the more hospitable houses. So Shi Huan-ti could have persecuted some intellectuals with impunity only because there was no place for them to flee to in the united empire of Ch'in Dynasty.

[35] I am excluding from my arguments other examples of lesser historical importance, those of some rulers who incidentally killed the goose in desperation or for greed.

The art of ruling

At this juncture, let me briefly touch upon the fundamental question of what constitutes the act of *ruling*. Putting aside infinite details of actual act of ruling, the most essential component of ruling may be considered to reside in the act of the ruling body, regardless of its political structure, of setting and revising social rules, or *laws*, that constrain activities of community members. As such, the system of laws enforced by the ruling body gives a certain semi-permanent structure to the activities done within the community.

The ruling body of a community can also issue official commands to certain members of the community, like commanding its military forces to attack a certain neighboring community. As in this case, commands usually put some community members on some specific task by constraining their activities more strongly, if only temporarily.

Analogically speaking, the ruling body of a community may be viewed as a designer and operator of the system called 'community.' If it does good works on both of these roles, this system will function smoothly and efficiently, and may be able to satisfy the needs of the community. In reality, few ruling bodies would have ever been so lucky and crafty as to deserve such a praising phrase, since there are innumerable difficulties inherent in designing and operating a large community system. Let me confine my arguments to the issues of design, as similar arguments can usually be made of issues of command as well.

Note first that people would normally obey new laws through their rule-observance emotional attitude by letting them know the new laws. Of course there are some exceptional people who are willing to break laws; when most people refrain from doing certain things because of the law against it, there usually are chance of making much profits by breaking them. This is the normal state of affairs in any community, and it is the task of the policing agency commanded by the ruling body to find and arrest law breakers for proper punishment according to the law.

The ruling body would be in trouble, however, when a large number of common people are against the laws it has imposed upon them. There are several cases for this to happen. The first case is that the new laws (including old laws turned sour by changing natural conditions like famine) impair too much of the people's basic rights, such as the right of subsistence, and the people resist to their enforcement. This is the obvious case of bad design, and the ruling body has two choices in the face of such a resistance of people: to change the laws or to enforce them by a brute show of its power through the threat of severe punishment for law-breakers. The former is the easiest, but its trouble is it would be harmful for the status of the ruling class if done too often. The latter alternative may work for a while but not very long, as it is the surest way for the ruling class to lose the support of the people.

The severely discontented people might try to leave the community if that alternative is available. Or they may turn into a protesting mob. Note that the common people are of little power individually in the Times of War, but a mob could become a tremendously powerful group by their sheer number, a real threat to the ruling body. If there was someone or some organization to provide a sort of leadership, such a mob could turn into a revolt or rebellion. In China many dynasties fell due to such mass rebellion, often with over a million members led by religious cult leaders of one kind or another. When such a rebellion succeeded, however, the resultant rules of rebels seldom lasted long because the leaders did not have the know-hows for ruling a vast realm of the former empire.

Such is what is expected of a bad design for rule. Note that even a good design could also meet a similar response from the populace, as it is not just laws that constrain people's behavior. Traditions are often as binding as laws, as they are a part of the belief systems of the people. They may choose their beliefs

over the laws when they contradict, especially if their respect to the ruler is not high enough. Though it is difficult to say whether a set of laws representing a social design is objectively good or bad, except for some really bad ones, a ruler who believes his proposed design is a good one, would be frustrated by meeting the people's opposition. So such a ruler tends to enforce the design with also a brute force for demonstrating its goodness, and when it fails to produce immediate results, may try to raise the authority of the ruler by piling up the ruler's honors through warlike means.

What I have done so far in the above argument is to roughly summarize an aspect of ruling which applies to most periods of the Times of War except its final period, when dictatorship and the rule by fear effectively came into being. The rule by fear is a political technique to turn each individual suspicious of every other, making it hard for the people form a rebellious group against the ruling body, the greatest worry of a ruler who wants to impose a social design disliked by the people. The idea itself is an old one, used occasionally by local dictators, but the reason why it created such a havoc in the first half of the 20th Century was because the advanced artificial evolution assisted its practice in an unprecedented scale. (Besides such assistance of artificial evolution in applying politics, it is noteworthy that few innovations have actually taken place in the area of politics itself. That may probably be because there have been comparatively few real practitioners in politics, and those who were in the business would have been too busy in engaging in their own politics to bring new ideas into it.) Before going into the things that transpired in the earlier part of the 20th Century, let me take a look at the 18th Century when the first unmistakable signal of the coming Second Great Transition took place, the transition that remade the human societies as drastically as the first transition did.

7.5 The second grand transition

Prelude to the second grand transition -- the dream of utopian socialism

The 18th Century was a quite remarkable time especially in Europe, where many events heralding the nearness of the end of the Times of War and coming of the new age, when the husk of typical political systems of the Times of War with their large status variance was about to burst. In France, the century began with king Louis XIV, who tried hard to establish his peak status in the typical feudalistic king style. He declared himself the God's representative on Earth, demonstrated his power by building the magnificent palace of Versailles, and fought quite a number of wars to accumulate honors. Even though he was not very successful in his war ventures, France prospered under his reign, and it was not just France; the whole Europe was made quite rich with the products of the accelerating artificial revolution, producing a large, powerful middle class.

As mentioned earlier, a large and empowered middle class distorts the shape of the tapered pyramidal type of community status constitution, bringing down the peak status, and that could have been one of the critical factors for the continual decline of the authority of Bourbon dynasty in France since Luis XIV, which finally led to the *French Revolution* in 1789.

Among the prosperous middle class people were many intellectuals of very high degree of the ICA (inventive conditional anticipation) capability, who dreamed about a utopian society in which, unlike in an old style political system of high status variance, people were basically equal in status and happily free from yokes imposed by despotic rulers. Many of them thought and preached that the key to lead to such an ideal society was in the power of reason, and sharing by everyone the knowledge obtained through the pursuit of knowledge *per se*, the movement of intellectual of the 17th and 18th Century known as 'enlightenment.'

Needless to say, the amount of knowledge accumulated through the advance of artificial evolution at the time was quite sizable, far beyond the monopoly of the ruling class, and effectively in the hands of the middle class intellectuals. A good deal of it was also seeping into the common people, partly because of the enlightenment movement but perhaps more of their own enthusiasm of being educated, now that the monopoly of knowledge by the ruling class ended. So since Maria Theresa, the Queen of Austria, initiated *compulsory education* in 1774 for her main objective of obtaining better educated working force that the advanced artificial evolution required, free education for children soon became a part of the common demand of the peoples in many places, and the practice spread widely, and contributed to a large increase in the power of the class of common people as well. The 'Declaration of Rights of Man and Citizens,' given in the edict issued by National Assembly right after the first uprise of French Revolution was the first explicit testimony of the increased power of common people.

The empowerment of the common people in addition to the same of the middle class would have easily toppled the ruling class in any large state of Europe, had there not been other factors operating as well. In the first place, despite the large amount of knowledge amassed by the middle class intellectuals, it failed to produce any good enough political substitute for old style ruling with honor-based authority. The gory bloodshed committed by their 'representatives' at the last stage of French Revolution apparently disillusioned the French people enough to let their urge of admiration, or hero worship, take over their zeal when Napoleon came up as a victorious military commander, transforming France again into another version of the high status variance community, an empire.

Napoleon, however, had to keep piling up his honor as an empire-builder by conquer after conquer, as he had no inherited honor to stabilize his throne, until his eventual defeat. So French Revolution failed to bring down the *ancien régime* immediately, but it was an unmistakable sign for the turning tide, that the abundance of products of artificial evolution, especially of the knowledge type, began to tip the balance of powers held among respective social classes, making it more difficult for the ruling class to maintain high status variance communities. The major impact of French Revolution may be seen in two points. First, it made common people realize that they could build up a large power even to topple the ruling body if enough number of them united. Secondly, it also made many people notice that ruling a community was an art hard to come by, an art that could not be attained just by dreaming some ideal way of ruling, particularly where old traditions still lived strong like in Europe.

It seems not too difficult to fathom the reasons why the United States of America, declared her independence a short while before the French Revolution, succeeded in establishing their democratic political system despite their political leaders shared a great deal with those spirits operated in French Revolution. First, they had no *ancien régime* to fight against; the political hegemony was in the hands of common people as they were effectively all common people who emigrated from Europe to the new world looking for freedom. As a new nation consisting of immigrants of various origins, they could freely establish whatever the founders of the nation did as their traditions. Unlike French, they had no need to contend with powerful, antagonistic neighboring states whose ruling class felt threatened of the new political principles. Furthermore, Americans had to be practical in building a new nation. While expanding into a vast continent with nearly inexhaustible resources, they had too many tasks at hand to pursue any overly idealistic dreams. Let whatever beliefs, political or otherwise, stay as a part of their tradition as long as they worked all right with them. In this way the American tradition was firmly set while the early settlers of U. S. were intoxicated with their newly acquired freedom, believing that the basic human rights were the equal rights given to everybody to chance one's life on whatever a course the person wished. Note that in this view, the government which necessarily constrained the people's lives to keep the general domestic peace and order was almost a necessary evil, preferably the better by being the smaller. In any case, the beliefs of the correctness of the American tradition was further solidified in the minds of U. S. citizens by the nation's continued success. So many Americans were simply baffled when they later started to preach their beliefs to the wide world, and found that many other nations did not accept them as a gospel.

In the meantime, most of other European nations managed to keep their political structures with large status variance in the traditional Times of War style, by making their respective ruling classes ever more powerful than before by quickly absorbing powers produced by artificial evolution, to whose progress was given a tremendous impetus by the industrial revolution started around 1760's in England. The direct beneficiary of industrial revolution was the middle class industrialists, but industries needed raw materials. So industrialists supported their respective ruling classes in their attempts of imperialistic expansion, annexing more and more new lands as their colonies. This they could easily do as they were far superior in the military might than those whose lands were colonized, due to the large gap in the level of artificial evolution between the colonizing countries and those colonized.

The period through the 19th Century and the early 20th Century may be summarized as the time of both glory and unease for the rulers of Europe. It was the time of glory since this rapid expansion of territories by means of colonization made many European countries virtual empires, and their rulers naturally grasped great honors that only empire builders deserved, and besides, they had accumulated enough power of their own to back up the high peak status with the wealth supplied both by the advanced

artificial evolution and by their newly acquired colonies. It was also the time of unease not only because of so many virtual emperors close by who naturally were engaged in wars among themselves but also because of frequent unrests and revolts by the common people who were then aware of their own power if they were united for a common cause. In fact, the 19th Century was also a time when trade unions and labor unions proliferated. As naturally expected, unions only met bans and harassments in the beginning, but gradually gained their legal recognition at the end in various parts of the world, incidentally saving capitalism from strangling itself by over-greedy industrialists.

Let me put a word in here about *capitalism*. Capitalism is an '-ism' only in contrast to other ideologies such as socialism, as what is borne under the name of capitalism seems none but the old social restraints the humans have spontaneously created for regulating the economic aspects of their social activities. The origin of economic markets is probably as old as the period when the humans began their economic trades among themselves. This old ways, of course, have undergone various transformations in accordance with changing conditions surrounding human societies most of the times spontaneously, always taking courses that are, in principle, those characterized by minimal social costs with maximal effectiveness. The emergence of trade and labor unions may be seen in the same context. They were born out of sheer necessity spontaneously, *i.e.*, not out of somebody's notebook of social designs. As such, they are to be viewed as another spontaneous transformation of capitalism (the old ways) to meet the social need of the times. In this sense, labor unions are a legitimate part of capitalism, despite the strong alliance the later day labor unions tended to show with socialistic political movements. Such an alliance was caused by their temporary sharing of the similar goal of raising the status of common people. But in spirit, labor union is foreign to the socialistic design. It is essentially a self-defense social organization spontaneously created by those who share the same trade. So it is no wonder that radical socialists, or communists, banned labor unions when they had established their political hegemony, in contrast to the prolifiration and prosperity of labor unions in capitalistic nations.

As a natural products of capitalism in the above sense, it is entirely within the possibility that labor unions spontaneously disappear under another condition of social change, and it seems a signal that role of labor unions losing its significance when their goals of raising the status of common people has been partially achieved in developed countries. But I am jumping ahead of the context. Allow me to hark back to the 19th Century.

Dreamers of a utopian society continued to dream on throughout the 19th Century, especially those who were to be subsumed under the name of radical socialists or communists. The failure of French Revolution taught them a lesson that just bringing down the ruling class alone would not lead to a successful revolution, but they were hardly disillusioned, and worked out an improved plan of a sort: first remove the evil-doers from the society, not just the ruling class but also those in the middle class, such as large land owners and greedy industrialists who were fattend by exploiting the common people. Once the revolution eliminated them, the then liberated common people would freely choose people's representatives whose duties are to rule the society according to the plan, premediated for establishing what they thought was an ideal society for the common people: proletarian dictatorship as the common people's utopia. When they were arguing these plans, these radical socialists would have naturally thought of no one else but themselves as the wise rulers, as the self-conceit is a vice intellectual dreamers most easily fall prey to.

Before discussing what happened when the plan was actually executed, let me first see whence had come the image of such utopian dreams. The motto of French Revolution, *liberté, égalité, fraternité*, or, liberty, equality and fraternity, is telling enough about the source of the image. Putting aside 'liberty,'

meaning the absence of upper class coercion, 'equality' and 'fraternity,' are nothing but the manifestation of the spirit of non-kernelled close coalition. A non-kernelled close coalition is, like a close friendship coalition, has no appreciable in- coalition status difference: that is equality. Also every member of a non-kernelled close coalition holds a high positive affinity index toward every other: that is fraternity. So the typical image held by utopian social reformers is essentially a non-kernelled close coalition of a society size. This is no doubt a beautiful dream, albeit a hopelessly impossible one to realize. As discussed at the very beginning of this chapter, a non- kernelled close coalition has a severe size limit, ten or less, which is unalterable as long as the humans remain creatures of the urge system, the human urge system that will keep constraining possible futures of the human society.

The origin of this dream of utopian human society as a largely expanded close coalition is actually very old, kept recurring in various forms. From times long gone, religious leaders often envisioned a society in the likening of an extended kernelled close coalition, the one with a god almighty as the kernel member whose glory filled the eyes of beholders with tears of admiration. Many of them were, however, aware of the impossibility of realizing such a society in the mundane world, and preached their disciples to live in hope to be chosen as citizens of such a utopian after-life society, while rendering to Caesar the things that were Caesar's.

Some revolutionary thinkers in the 19th Century, however, came to believe that the realization of such utopian society must be possible in this world. What they thought they needed was only a correct revolutionary strategy conducive to a firm establishment of a 'wise' government that ruled for the common people, or the proletarian class, as their proper representatives. They were so filled with righteousness, they thought any means, however ruthless, were acceptable to reach this goal. Undoubtedly, they must have thought themselves to be fit members of such a 'wise' government; who else could have been better candidates for the ruling class of such a society than themselves as its designer?

But note that the society they envisioned is none but the kingdom of god where the god is replaced by a wise government. A god can be the kernel member of a large kernelled close coalition, as a god is, by definition, beyond the limiting factor for the size of a kernelled coalition, the control overload. It was, however, an inconceivable arrogance for them to claim that a human government, however wise its members might be, could ever emulate god's omniscience and omnipotence.

The totalitarian dictators at the end of the Times of War

The last act of the drama of the Times of War began in 1914 with what would have been another ordinary war, had it not been for the advanced stage reached by artificial evolution at that time. The otherwise clever idea of German Kaiser of making allied forces and expand his empire met the opposition of another alliance that included many nations world-wide, and escalated into an unprecedented World War. What was unexpected by the original parties was that a war was no longer a business of just neighboring nations; the scale of global trade and communication greatly enhanced by the advanced artificial evolution then had already made every major nations in the world virtual neighbors and interested parties. Indeed, what pushed the originally neutral United States to join the alliance side, and tipped the scale of the war eventually, was German submarines indiscriminately sinking trading vessels including those of U. S. as well.

Submarines were not the only machines that joined the battle. Other war machines such as airplanes and tanks showed up in the battle field, and the battles were fought by a quaint mixture players, men and

machines, with heavy casualties for men. While people were still dazed, and some of them were rather excited, by this strange development in war technology, the world was shaken by the rapid emergence of two dictatorial empires, the Soviet Union and the Nazis Germany. By a hindsight, they may be seen as the last spasms displayed by then dying large status variance communities.

The Russian Revolution started in 1917, a year before the end of the war, by a coup attempted by war-weary sailors, an opportunity immediately taken up by radical social reformists such as Lenin as a chance to realize their long dreamed utopia of proletarian dictatorship. Lenin was undoubtedly an authentic idealist, who fought fiercely against every attempt at compromise, ruthlessly crushing obstacles to the realization of his goal, a utopian society ruled by a wise government. The problem is, obviously, that such a utopian society is a fantasy created by an arrogant mind -- there are no humans wise enough to play god. So instead of creating a utopia, what he did only paved the way to dictatorship, which Lenin apparently realized before his death, and shuddered who were succeeding his life's work, the persons like Stalin and Trotsky who were, unlike him, just ambitious realists.

Even if there had been no Stalin, the course that the pose- Lenin Soviet Union took would not have been much different, however. Thanks to the overly well-paved road built by Lenin, Soviet Union would have had little choice but to become a bureaucratic empire. With its middle class virtually gone, the government had to oversee nearly every minute details of the functions of an organized society as businesses of the government. Considering the limitations of individual persons, such a formidable task could have done only by a bureaucracy of a commensurable proportion. Luckily, Soviet Union had a hierarchically organized artificial coalition, the communist party, which could function as a core organization to fall back on; expand it by recruiting whoever of a talent, and agreeable to follow the Marxist doctrines conveniently interpreted as official rules, and the government might have been able to build a bureaucracy of requisite characteristics and of the size, in an amazingly short time. A bureaucracy should have no domestic competition, and therefore, every other party than the communist party was banned.

Nevertheless, it seems almost miraculous that such a convenient method had really worked. Russia which had been a rather backwater monarchic empire was turned into a mighty industrial power in a surprisingly short time. One of the reasons for the success was, as discussed earlier, that the bureaucracy could function as a funnel to attract talented youngsters, especially when there was little chance for them to demonstrate their talents and elevate their status. This condition was certainly met in Soviet Union in which only two classes were left after the former ruling class and dissident middle class were obliterated: the working class and the privileged class, *i.e.* the members of the party and of the bureaucracy.

Although this was a society that was quite an antithesis to the target striven for the original dreamers to reach, it did not bother Stalin as a realist, who kept pursuing his goal of building a mighty empire by brandishing powers available to him in his ruthless totalitarian style. He eliminated many of his political rivals by having them either executed or sent to labor camps in Siberia. For the purpose of keeping his peak status extremely high, he had no shortage of wars whereby honors were gained. Having won the desperate battle with Germany in the Second World War, he maintained the so-called Cold War with the U. S. always keeping it on the brink of breaking out into a hot one, the nuclear armageddon, and while doing so he succeeded in earning many credits on the arms race with the U. S., including the competition in their respective space programs. He and his party bureaucracy also monopolized knowledge, and kept the general public in ignorance concerning the affairs of the world outside its territory, by deploying the notorious information-shield that was given the epithet of 'iron curtain.' Note that the operational principles of the iron curtain were just an immensely magnified version of the personal Festingerian defense mechanism. It

censored the information inflow so as to minimize its harm upon the prevailing beliefs inside, while keeping the façade to the outside that it still contained the basic utopian dream of Lenin.

One of the most remarkable dictatorial ploys Stalin employed would be found in the 'rule-by-fear' he applied to his people, party members not excepted. The principal political effect of the rule-by-fear policy aims at is to prevent people from forming of any sizable subversive coalition against the current regime. The policy will generally be executed in the following way: Let everybody fear of one's nightmarish fate to befall upon oneself, if one is ever suspected of having a subversive intent. Expand the definition of a subversive to any person who knowingly fails to tell the secret police of a subversive the person knows. Then the secret police may accost almost anyone and tell the person: "We know you are a subversive. But you may be exonerated if you keep alert and let us know who is uttering subversive ideas. You sure will meet us again if you don't do it quickly." In this way the secret police could deploy a vast hidden network of grapevine with little cost. Besides its actual threatening value, the rumor the existence of such a secret spying network alone would be quite effective. If everyone knows that there are hidden spies among one's neighbors, or even among one's family members, no one would dare to mouth a subversive idea to another, and if everybody keeps his or her silence, no united opposition could be formed against the current regime, even if most of the populace are full of grumbles. As such, the rule-by-fear is an old ploy employed by many dictatorial rulers as far as its basic principles are concerned, but it was only with the help of the advanced information management technology of the 20th Century that Stalin could have implemented it so systematically and ruthlessly.

The rule-by-fear of essentially the same nature was employed by another remarkable dictatorial figure, Hitler. He came out rather quickly as a political figure in the war-beaten, economically and politically troubled Germany. His used as his major power base the supports he garnered from the common people and from some industrialists. The latter wanted to use his as their tool, but he was ingenious political manipulator in using whoever tried to use him. The common people, or the *Volk*, were rather enchanted by the future Hitler painted in his oratory, built upon his super-nationalistic claim of the racial superiority of Teutons, and their destiny to bring a grand glory back to their country by the wise guidance of their leader, or the *Führer*, Hitler himself.

Note that the task of elevating his own status as a dictator as well as his people's as befitting to a superior race could not be accomplished without forfeiting some others' status in a large scale, as the community mean status had to remain constant. So he employed the totalitarian rule-by-fear ploy especially against Jews as the target for persecution.[36]

The persecution of Jew obviously served multiple purposes for Hitler. First, by depriving almost completely all human rights of Jewish people, he created a social class of under- people with almost zero status, elevating the status of other Germans automatically. Also much of the wealth and the status thus seized from the Jews contributed to pushing up Hitler's peak status. Note also that many of the persecuted Jews were of the middle class, which included many noisome intellectuals who would have protested loudly against the Nazi regime if he had let them.

Hitler had a few definite disadvantages compared to Stalin in implementing his totalitarian rule. For one, there was the geographical location of Germany in the middle of Europe, without Siberia to exile people to. So many Jewish and other intellectuals who opposed to Nazis regime succeeded in fleeing to the U. S. and later became staunch fighters against Hitler's cause, although great many Jews were left behind in

[36] Owell's well-known allegorical novel of 'Nineteen Eighty Four' catches the spirit of the rule-by-fear in a totalitarian regime, and may be seen as depicting either the Stalinist regime or that of Nazis carried to a possible extreme.

powerless misery, only to be slaughtered later. This geographical location and the educational level of average Germans, much higher than average Russians at the time, made it quite impracticable, even if he so wished, for Hitler to employ a tactic similar to what Stalin did with his iron curtain: aligning his people's beliefs with the official Bolshevik doctrine, and shielding these beliefs from outside influence.

Hitler, however, would not have much minded having such handicaps. His super-nationalism did not have much doctrinal content to begin with. The claims like the Teutonic superiority and Hitler's wise guidance could demonstrate their righteousness only through actions, and actions he loved to take. First, he succeeded in consolidating the people's supports by effectively solving the unemployment problem through creating new jobs, by means of rearming German military and constructing super-highways. He also presented them Volkswagens for their convenience and also as the symbol of their now supposedly elevated status.

Then came the part of demonstrating Teutonic superiority by actions. What would he be, as the great leader of a great race, had he not act like a mighty emperor, acquiring honor after honor by glorious conquests? So he started to annex neighboring territories by browbeating them with threats, eventually plunging him and his country into the Second World War, and Hitler took it as if it were a chance Hitler had long waited for to realize his dreams.

And probably it really was, since he was one of the typical arrogant dreamers who, in their beliefs, were destined to fulfill their dreams by taking extremes of chances. Hitler apparently envisioned a world in which the people were properly stratified into layers according to their race-dependent status: Germans came on top, other Aryan races followed next, and Jews on the bottom who were eventually to be exterminated as the source of all evils. And Hitler himself, in his vision, naturally shined like a sun on top of them in awesome glory.

So he had to wage wars in any case since the Times of War mentality told that only those victorious in major wars could deserve such a glory. In the first stage of this War, Hitler was certainly glorious as his Wehrmacht invaded neighboring countries like flashes of lightening, victories that must have looked in the eyes of Hitler and many of his soldiers enough to convince the whole world of the correctness of Nazis' claims of Teutonic superiority. Hitler then started his next part of his program of establishing a 'new order' in the world, meaning a world cleansed of virmin, *i.e.*, the Jewry.

I do not know if Hitler had any other particular political reasons than his abhorrence of Jewry for committing this atrocity. I am, however, at least sure that Hitler's shrewd political mind was well aware of the fact that the persecution of minorities as scapegoats seldom hurt, generally solidify, the supports of the populace, when they were captivated in a supernationalistic frenzy.[37] This is a mortal danger that always lurks behind supernationalism and manipulating politicians.

The end of the Times of War and the coming of the second grand transition

The second World War triggered by Hitler soon became almost a showcase for vicious war machines created by the artificial evolution in a very advanced stage, leaving few in the world unscathed by the effects of the war, and in atrocities of war tens of millions of lives were lost, combatants and non-combatants alike. And on its very final stage, the war technology spawned its final abomination, the atomic

[37]Following the heels of Mao, Pol Pot in Cambodia simply massacred the middle class which, by his definition, meant all but Khmer Rouge party members and peasants. This obviously the worst of the bad dreams that characterized the aftermath period of the Times of War served no purpose except having left the country still grovelling miserably for

bomb; the cloud of its detonation spread over the sky of Hiroshima looking exactly like a monstrous question mark upon the future of humanity.

This was the moment when the Times of War effectively ended after its five thousand years of bloody history. Not that the humans stopped warring entirely then and there. But all that happened after this moment are to be thought as a part of the aftermath of the Times of War, because the looming scare of a world- wide nuclear warfare and the possible annihilation of the human species as its consequence had come to fundamentally alter the way people looked at wars. It may seem that the spirit of the Times of War lingered on quite a while after the Second World War, since the so-called Cold War was fought by the remaining two superpowers, the U. S. and the Soviet Union. These two countries, being ever incompatible due to their antithetical political philosophies, *i.e.*, capitalism and communism, glared at and threatened each other by showing their readiness to push the button of the fateful first strike. Despite the harsh words they exchanged, however, it became gradually clear to the people in the world that the scare of holocaust would eventually stay their hands from their respective buttons. As a result, a new generation of people emerged in many places in the world who were born and raised never experiencing a war threat looming ominously on their heads, a new breed of people who did not care about wars or war-related control power dimensions.

The emergence of these new war-free generation, combined with the fading memory of wars in older people, then began to tilt the community norm axis in many major communities from highly war-relevant dimensions to more war-irrelevant dimensions. As discussed earlier and illustrated in Fig. 7.4, such shift in the direction of a community norm axis tends to cause the fall of *established* authorities. Gone first were authorities of royal and noble houses whose high status depended mostly on inherited honors which their ancestors originally acquired in some old style wars. The force that brought their downfall was already operating when war machines showed up in battlefields as impervious actors to old human honors, the force that eventually transformed many of their palaces and mansions into hotels and museums for the convenience and elucidation of the common people.

It is not just royalties and nobilities who fell in status. Authorities of any kind in the old times followed suit, and not just because the significant tilt of community norms. The most important reason for the fall of authorities was the enormous rise of the control power in the hands of common people. Common people were already much empowered in the 18th Century mainly due to the knowledge spilling over to them, as so much of it was created by artificial evolution. The trend had kept up since then, and when the Second World War ended, several things happened at the same time to further accelerate this trend of empowering common people.

One of the direct consequences of the falling authorities was disintegration of old colonial empires. When the people of former colonies wanted their independence, the declining and war- weary governments of old empires did not have the willingness or the military power to spare to suppress such movements. The former colonies thus obtained their independence rather easily, however, had then to go through difficult processes of building up their own countries, since their economy often depended so heavily on exporting raw materials as they did in their colonial times that they had little modern industry of their own. I shall address the issues of the Third World, many of which are former colonies.

The ending of the War left behind huge munitions industries in the winning side almost intact. While some of them kept operating in the arms race during the Cold War, others needed to find new merchandises to manufacture, and the market to sell them. The rapidly advancing artificial evolution solved the first part of the problem with technological innovations whose occurrence became almost a daily affair

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recovery.

then, and the common people solved the second part by offering themselves as the market of these new products. It was especially this fact that the common people had become the major customers of manufactured goods, the amenities of civilization, that heralded the advent of the *Second Grand Transition*.

Actually, quite a few things happened simultaneously at about this time, and one cannot draw a causal diagram in a single directional fashion. But let me give a largely simplified picture of what happened. The fall of authorities described above caused the automatic elevation of the status of the common people. Since in the traditional economy one's income was roughly proportional to one's status, the workers in industries would have claimed much more strongly than before a raise in their wages. Managers of industries who were naturally hesitant in making concessions, however, found that their business would prosper if the workers spent more of their income in purchasing their products.

Incidentally, the principles of manufacturing digital computers were worked out in the U. S. during the War, and when more powerful and practical computers became available, they opened a completely new vista in machine-making, allowing artificial evolution to make another huge jump ahead. And people loved to have these gadgets with minute computer chips built-in, both in their households and offices. So the market for industrial products grew, as the number of common people as customers was huge. On the other hand, the common people themselves, at least those who lived in technologically advanced societies, were inundated with material riches to a degree unimaginable in the times of War.

It was not just material riches that fell in the hands of common people. Advanced computers created world-wide information networks through which a large amount of information constantly flew across the world without any appreciable delay, and various media provided the people with the access to most of such up- to-date information. Education was also made open to the general public, and most of the common people indeed got educated so that they could have a better choice of jobs offered in the modern society.

Considering all these things now in possession of the common people, the material abundance, higher education and almost free access to information, it is quite apparent that the common people who are denizens of the technologically advanced modern societies today are quite powerful, powerful enough to have raised their social status close to the respective community mean status. As the status of the former upper class people has also fallen to near this level, the common people are no longer 'common;' what is left is virtual a single class of people who may be called just the *people*. The most important implication of this is that most of us are now living in communities whose status variances are drastically reduced; for the first time after five millennia of the Times of War we live in communities of very small status variance. This advent of small status variance communities is what heralds the coming of the *Second Grand Transition*. Remember, however, what we are experiencing today is just the first stage of the transition, in which much of the heritage of the Times of War is left as traditions, and few of us have even an inkling of what will be awaiting our posterity in the second stage of the transition and on, like none of those who succeeded in making agriculture a working venture in the first stage of the first grand transition would have imagined the coming of the Times of War.

Small status variance communities

Before going into further arguments on the implications of this second grand transition, let me first corroborate my assertion concerning the smallness of the status variance in contemporary societies, especially of technologically developed types, although the one like me who remembers well what the pre-war societies were like would need no corroboration. In the Times of War, there always were some who

commanded virtually absolute obedience, and there were authorities of every variety. Not to mention loyalties and nobles, government clerks were quite authoritative. Students were hushed by the sight of a professor, and grade school teachers were allowed to give physical punishments to unruly pupils. Guild masters, judges, clan heads, presidents of companies, and many others were awed, and wielded in fact great powers in their jurisdiction. The head of a family, generally the father, also had a considerable authority to command over other members of the family. Some of these authorities may still remain, but what actually remains is a mockery compared to the status they once held.

What is most telling about the fall of old time authorities is the disappearance of status symbols. One may still find some if one looks close enough, but existing status symbols are no more thin shadows of what once existed. Top politicians in most nations of the world, presidents and prime ministers, all wear ordinary suits no different in appearance from those people wear, and their demeanors are also quite ordinary except when they are performing their official functions in some ceremonial occasions, making a striking contrast to the old time rulers with their characteristic pomp and regalia. In many nations judges have done with their traditional wigs and gowns. Even living in a luxurious mansion does not automatically command people's respect. One may feel an envy to such a person. Note that envy is a natural emotional response aroused by a social comparison between oneself and another luckier one, and social comparisons are done among basically equals. Also look at portraits of males in high social status in the early part of the 20th Century. Many of them, like the German Kaiser or university professors of the time, look quite dignified with their affectation of an upturned handlebar moustache. Imagine someone in a similar social position has employed the same affectation, and we will mistake him for a comedian. When there could be no high status that substantiate it, a high status symbol looks funny for its mismatch.

I am just claiming that the status variance in current societies is small in comparison to the old societies, and not that it is zero. Although one may dream about a zero variance society in which everybody is equal in status, such a society cannot exist as long as the human urge system keeps goading people to compete for status. And individual control powers vary from one person to another.

Let me push my speculation on the nature of the current small status variance societies one step further. I counted above as one of the major causes of the reduction in community status variance the tilting of the community norm axis away from war- relevant dimensions. But toward where is not certain as there will be a great many war-irrelevant power dimensions. Probably just because of this multiplicity of war-irrelevant dimensions, individual personal status-appraisal axes might have moved toward diverse directions, loosening up the cluster of personal status- appraisal axes which once formed a fairly tight bundle around the community norm axis. Then these scattered personal status-appraisal axes may not gravitate to each other and form a new well defined community again because there are nowadays too many people in each community for any one member of the community to directly interact and affect their beliefs. As a result, the distribution of personal status-appraisal axes within a community becomes quite nebulous, almost without a structure except that one may be able to discern quite a few local subcommunity clusters.

This does not mean that the notion of community norm axis is rendered meaningless. Given a proper multi-dimensional system representing control powers, one can compute the community norm for each nation, and American norm, French norm, Japanese norm, and so on, may all be different, because each nation still has traditions to share among its members. The point is that these norms no longer have their binding power they once commanded. Because the people whose personal status-appraisal axes cluster around the community norm are far fewer than to be a majority in the community, those persons whose beliefs are not close to the community norm need not feel compelled to conform, and they would have little

difficulty in finding the likes of them within the oversized community. This I believe is the major reason why moral codes, usually shaped around the community norm, have lost their binding power they once had, and why the contemporary cultures in most of technically advanced nations are regarded as multi- valued.

Capitalism versus communism

Let me make a very brief overview of the socio-historical processes that have taken place since the end of the Second World War till today. These were rather turbulent days interspersed with many localized wars, domestic disturbances like the Cultural Revolution in China, and disorders at universities that spread over most of technologically advanced countries in late 60's and early 70's. And on the back of all that, there was the Cold War between the Soviet block and the U. S. and her allies till the former disintegrated at near the end of 80's.

Among the localized wars in this period, the Vietnam War is the one most noteworthy as it illustrates the ethos of the time most eloquently. For one thing, it was spawned as a hot spark of the Cold War, the legacy of the Times of War. On the other hand, it demonstrated how far removed the people's minds had already been then from the Times of War mentality. It was this people's disenchantment with the glory in wars that finally made the U. S. withdraw its military from Vietnam more than because the war was indeed inglorious.

Let me take up as the significant midway pointer of the second great transition the disturbances at universities that began in late 60's. Many university students rallied against the established authorities nearly simultaneously all over the world in technologically advanced *capitalistic* nations. Note that these student unrests are in principle a miniature form of revolution, and a revolutionary group mood is formed when a mass of people perceive a certain weakness in the current authority, and feel that their joined power may have a chance to give a fatal blow to the weakened current authority. The outcome of such a revolutionary attempt mainly depends upon whether the general public share the same cause with the revolutionary group. If they do, they may succeed as in French Revolution, since the amassed power of a large number of people, infused and intoxicated with the challenge and the power demonstration urges, could indeed be awesome, as the humankind has been historically demonstrating in various contexts.

In the case of universal student unrest now in question, there are a few remarkable points to be noticed. First, they took place in most of technologically advanced capitalistic countries, where university students were quite well-fed, privileged youths. What was common to all these capitalistic countries was that they were all in a fairly advanced stage of the second grand transition, undercutting the status of authorities and pushing the personal status-appraisal axes of many people to tilt away from the old community norms. The question then was toward which direction should they tilt their axes.

As for the students who protested against authorities at that time, it seems natural that they found as the ideal pole to align their axes along in communism since the authorities they were against were all capitalistic authorities. So they shouted slogans of some versions of Marx-Leninism, but the point to be noticed is that most of them were neither pro-Soviet nor pro- China; the majority of them even fought against factions of themselves of the latter kind. The most likely hypothesis is that they were new versions of the traditional utopian dreamers who, by perceiving weakening authorities, thought to have seen a chance of bringing them down. University campuses are naturally easiest place to rally an eager mass of people, and they were elated when their first target, the university authorities, generally showed so feeble a resistance to their accusations -- their authorities were already almost gone.

There was, however, no real chance for these university disturbances to develop into a real revolution, as the general public found no cause to join them. In these capitalistic countries, people had been steadily getting more power and status. There was no reason for them to jeopardize the current prosperity for the sake of an old utopian dream whose practicability had never been guaranteed.

The final blow to those who still kept this utopian dream was given by the disintegration of the regime of Soviet Union in late 80's. Against all hope and pretenses of theirs, Soviet Union turned out to be no utopia of any kind, but a country governed by an overgrown bureaucracy in a totalitarian fashion. The inherent flaw in any state bureaucracy is, as mentioned earlier, its tradition-bound inflexibility entrenched by the lack of any direct competitors. As times go by, even a bureaucracy that worked effectively in the beginning may generally become unable to adapt itself to the changing external conditions. Considering the exceedingly fast speed of change introduced by the accelerating artificial evolution, it was certainly inevitable that the regime of Soviet Union was dragged down by its bureaucracy turning unwieldy.

So it is wrong to refer to this event with a simplistic summation as a victory of capitalism over communism in the economic competition. As I have been arguing, capitalism is a self- adjusting natural system, changing itself according to the changing human needs. Whatever a doctrine behind it may be that of Adam Smith: leave the system to God's invisible hand, or minimize interventions by individual persons into the workings of the system. As such it could contain any explicit motive to compete with another system. On the other hand, the regime of Soviet Union was created out of the minds of some utopian dreamers who thought in their arrogance that a few individuals could rule a nation with their wise guidance. Such an arrogance naturally turned sour, and the regime defeated itself because the dreamers could fine no other way to rule than creating a mammoth bureaucracy.

This incidence contains a hard lesson to be learned, especially by utopian dreamers, intellectuals who tend to find too simplistic, arrogant a solution for their good intentions. For instance, there have been people who claim that we should have a World Government which rules over the unified Earth, now that the almost unified Earth Society is in the making. I am not against the idea, but am also appalled by it. What if we did have such a government before we have found a better system to govern than the traditional bureaucracy? A World Bureaucracy, truly without a competitor, could turn the world into any kind of nightmares, the details of which may need no elaboration.

By saying so, I do not mean to imply that we can trust our future in the hands of the natural wisdom of capitalism as a self-adjusting system, as capitalism only follow the course directed by the current needs of the people, and as a natural system, 'future' is never really among its concerns. And, in my view, the current capitalism has obviously been taking a wrong twist which would jeopardize the future of the humankind.

The growth-dependent economy

The accelerative nature of artificial evolution rests mainly on the positive feedback loop between knowledge and control. When a tool allows one a better control of the world, one may obtain a better knowledge of the world, which will in turn further improve one's control of the world, and so on. There is, however, one more major agent pushing the acceleration forward, and that is the economic system now called capitalism, especially its market mechanisms. The effect of this third agent became noticeable as the common people became generally well to do and created a large market for manufactured products since the onset of industrial revolution. The larger the market, the greater would be the profit for the manufacturers, a part of which would be reinvested in increasing the production, hiring more workers, who in turn would

have contributed in further enlarging the market. At the same time, another part of the profit would be used in research and development, further stimulating artificial evolution.

This effect of market mechanism of facilitating artificial evolution has been magnified enormously in the time of second grand transition when most of the people in technologically advanced nations was made so powerful as to be able to purchase many products of very advanced artificial evolution, and their status became so homogeneous as to operate customers of almost the same type of merchandises. So markets grew and productions grew, and capitalism as the self-adaptive system organized its operations completely to maintain a constantly growing economy. And this growth of economy is accelerated, as naturally expected from its close tie to the accelerating artificial evolution, and the expectation is attested by the fact that many economic indicators such as GDP employs the percentage of yearly growth rate of production in a nation that is supposedly to stay approximately constant.

It may seem that there is nothing wrong with a growing economy, as it implies ever greater prosperity to the people to whom such economy belongs. But nothing as good as that could be real without matching sacrifices made somewhere else. Before going into this issue, let me take a brief overview of the conditions of the world today in a little wider context.

7.6 Contemporary societies and their problems

Putting new wine in old bottles -- how contemporary societies are run

The transformations that the second grand transition have brought to bear upon the lives of people in technologically advances nations are quite profound, insofar as we just look at their material side. Most of the citizens of these nations live in historically unprecedented luxury: well-built residences, many of them air conditioned, filled with electrical and other wonders of technology. By being relieved from much of the drudgeries that was forced upon the people in the past for living, the modern people could be engaged in the kind of activities which were no more than sheer figment of dreams in the past, like talking, or exchanging information, with almost any person in the world, and meeting with the person vis-a-vis if need be, by taking a trip that usually takes no more than a day.

Especially because of these technological developments in communication and transportation, distance has become less and less hindrance for persons to form personal and official ties across community borders, establishing extremely complicated causal relations among the events of the world. Some incident, if that is significant enough, may shake the world in almost no time at all. To put it another way, communities in the world is on its way of fusing together, to form a single community that is to be called the Earth Society.

Still, there seems to be a long way for the humans to travel before any real unification of the world communities takes place, and this is for the better as we are not ready for it yet, without an inkling of what a proper social structure should suit such a society. As a matter of fact, the second grand transition and the low status variance communities that ensued hit all of us quite unprepared. Not amazingly, people met it with their characteristic unconcern, just waiting for a new, better social system to naturally emerge, meanwhile making do with whatever parts of old systems that still seemed to work under new conditions with a few patch works here and there.

What is wrong with the habitual ways of our ancestors to wait for unsettling social conditions to settle? As far as the human economic activities are concerned, the natural adaptive mechanism incorporated

within the old way of our doing economic transactions, whose name now is capitalism, seemed to have done its homework all right so far. It has even absorbed some spirit of socialism as well, in awareness of what utopian socialists would attempt to do in desperation. Many capitalistic countries, especially European ones, implemented social welfare systems as a part of their national income allocation scheme so that the spirit of need-dependent allocation was represented in the scheme. Furthermore, the People's Republic of China, after learning hard lessons from the damage done by Cultural Revolution and the failure of Soviet Union, trying gradually to revise its economy toward capitalism. Taking into account all these, it may seem as if the world-wide consensus were established for letting capitalism run its course freely, and its self-adjusting mechanism would eventually would take care of all problems.

There are two major reasons for thinking why the strategy would not work this time of waiting out for the self-adjusting mechanisms generally built in most social systems, capitalism included, to function properly as they seems to have done in past occasions. First, the conditions the contemporary societies are put under are so drastically different from those in the Times of War that using systems developed in old times is, borrowing words of caution from New Testament, somewhat like 'putting new wine in old wineskins,' as old wineskins leak however diligently one patches them up. Secondly, the processes of the second grand transition are accelerating, changing things so quickly now that it would scarcely give sufficient time for the natural self- adjusting mechanism of social systems to set in properly.

Capitalism, amazingly, seems to be free from this first problem of being outmoded, probably because its origin would go back even earlier than the Times of War. People would have begun their exchanges and trades as soon as the first grand transition enabled them to possess objects worth trading, and the people in the Times of War kept on trading and other capitalistic activities in spite of encumbrances presented by steadily going on wars. So it is more than natural that these activities added a further vigor when major wars were out of the people's sight.

The second type of difficulty still holds for capitalism, and it is possible that there remains little time and means to bring it back on its right course when people find out something being seriously wrong with the contemporary capitalism. In my opinion, capitalism has adapted itself so well to the conditions of the times and people's wish to gain more amenity of civilization that it has been pushed off-course and is now treading a rather dangerous path. Since the issues of capitalism are rather unique, let me discuss it a little more in detail.

More about contemporary capitalism

The growth-dependent economy mentioned earlier, characteristically seen with domestic economical systems of technologically advanced nations, is none but a telling evidence of the self- adaptive nature of capitalism. As the common people of each of these nations grew more powerful and gained more purchasing power, they created a large market for new types of products that incorporated technological advances, causing domestic industries to expand. The expanding industries needed to hire more people with higher wages, and the people welcomed the growing domestic economy which produced their prosperity and adorned their households with technological wonders. Complying with such wishes of the people, capitalism adjusted itself to suit this situation, whereby making growing domestic economy as a norm rather than exception. As a result, each domestic economic system had become fine tuned to the pace of its constant growth so much so that a prolonged failure in growing, even a stable economy of no growth, could seriously upset its normal operation.

The premise that the domestic economy of one's nation could keep on growing endlessly is obviously too good an assumption to be true. However, once a domestic economy was tuned to it, the nation had but to try to keep up the pace. One of the most serious problem inherent to the growth-dependent economy is that it has to keep expanding its market for the products of its industry, besides preventing the existing market of its own from saturation. A domestic market, however large it might be, would sooner or later be saturated with major products of the domestic economy; in other words, what if each family already owned a TV set, a family car, and the like? Unless the manufacturers somehow revitalize the people's appetite for buying more, the market would shrink. The only remedy for this saturation problem is to produce, insofar as it is possible, new and more attractive versions of these products, and entice the people to buy them by discarding the old ones. The producing side has presented little problem so far, as the rapidly advancing artificial evolution has accommodated the request with ease, producing attractive new versions of almost every kind through innovation after another. And people needed little prodding for buying them as they loved to do so as long as their incomes were increasing with the growing economy. It was, however, the first time in the long human history that the consumption *per se* was regarded almost as people's moral obligation.

While vitalizing domestic market this way, the growth- dependent economy of a nation also demanded its market to expand to foreign markets by exporting its products. The consequence was a severe competition, as other nations naturally wished the same. Although such a competition contributed to a further growth of economy by further stimulating the advance of each nation's technology, it could not do much for the expansion of markets of technologically advanced nations as a whole, since the size of the whole pie, the aggregate market, remained the same. So the governments of these countries all turned their heads toward underdeveloped countries: "Why, here we have markets we have been looking for!"

Let me touch upon at this juncture the relationships between so-called developed and underdeveloped countries. The trade relations between these two groups of countries are very often the former exporting industrial products in exchange for the imports of raw materials from the latter. So the latter have been functioning as a market for the products of the former, but not much, since the purchasing power of underdeveloped countries remains far lower than those of developed countries. In fact, the wealth differential between the common peoples of these two groups of nations markedly increased since the Industrial Revolution started to accumulate wealth in Western countries, while the underdeveloped countries were mostly colonies of rich Western countries, who were deliberately excluded from industrialization. When the second grand transition came, now abundant wealth in developed countries were more or less equally shared by their peoples. The sharing, however, did not extend much beyond national borders. It is ironical to observe that the same process that brought an approximate equalization of material wealth within national borders magnified the wealth differential between developed and underdeveloped nations to an unprecedented level -- note that a couple of centuries before, such differential did not exist. Everywhere in the world, the common people fared just barely above the subsistent level.

One may see here the reason why national borders still stand firm in this time of internationalization. They are somewhat like lock gates in Panama canal; they cannot be opened without causing a great damage to the economies of the concerned nations unless the general wealth level of the countries concerned are approximately equalized.[38] It is, therefore, the right thing that these underdeveloped nations are now trying hard to build their own industries, and developed countries are extending some assistance to these self-help

[38] A good example of gradual dissolution of national borders in accordance with the degree of wealth equalization may be seen in the socio-economic experiment the EU is now conducting very cautiously with its member nations.

enterprises, even though such an assistance is often backed by a rather predatory capitalistic motive of developed countries to expand their markets.

Even if now underdeveloped countries have succeeded in the difficult task of building up their domestic industries, and developed countries partly satisfied their need of expanding their markets, I must warn that the growth-dependent economy that capitalism is now molding itself is a blind alley course. There is quite a few obvious wrongness to demonstrate it. The first question is about the source of the wealth that the growing economy brought to the people of developed countries. The more the economies grow, the more of the finite natural resources of the Earth is consumed with an accelerated pace. Despite the strong warnings raised against such a prodigal consumption of resources (Meadows, *et al.*, 1992), people are responding to them rather obtusely. On the basis of such an optimism probably is their unconscious expectation that, like *deus ex machina*, the advancing technology will eventually come up with a solutions to any problems of physical materials when the situation has become serious enough, just as it produced in the past synthetic fibers and synthetic rubbers and the like. Let me temporarily disregard that these synthetic materials also use other types of natural resources, and accept even the remote possibilities like a supply of inexhaustible energy through nuclear fusion or an efficient use of solar energy, including a technological breakthrough for recycling ever mounting industrial waste. Because even all that would not save the growth-dependent capitalism from its wrongness.

Suppose that every nation in the world is industrialized, and still strives for growth of its economy. Since the aggregate world market can expand only by increasing its population, the extrapolated image of the future of the human society is a cheerless one: a tremendously bloated up human population in which every person is clamoring for more material prosperity, a picture that reminds me of one of the eight major scenes of Buddhists' Hell.

Of course, the time will come far earlier than such a final scene when developed countries are forced to stop growing, and the earlier it is, the less would be the harm done. But we do not know how to do it. Suppose that one of the major developed country has ceased its economic growth for a certain period of time, either intentionally or by meeting a difficulty in doing so. Then hue and cry will be raised from among its people, as the smooth operation of its socio-economic system must have been well tuned to a constant growth. Take, for instance, the social welfare system, now practiced by most of developed countries. While the average income of people is increasing with a growing economy, they may not begrudge some portion of their increased income being used to help those needed. But when the economy stopped growing for some time, the fixed cost for running the system would become a heavy burden on the government's budget.

Furthermore, the close interdependence of the global economy will tends to make one nation's flagging economy contagious to the economy of others, and there will be a serious international pressure toward the nation to rebuild its economy and put it on the growing course once again. So just as Ducas' sorcerer's apprentice had to watch his abomination kept multiplying as he did not know what spell to cast to stop the process he started, we are apparently helpless but to watch capitalism marches on its growth-dependent course hand in hand with accelerating artificial evolution.

Now let me get to the root of this problem. Capitalism as a self-adjusting system of an ancient origin for people to conduct their economic activities, always ready to serve people's collective wishes, if the means is available to do so. People have been wishing to obtain material prosperity for a long period of time, and capitalism always obliged. People did not get much rich until recently, only because the available means were relatively poor. But when the second grand transition created an enormously potent means to provide material riches, capitalism blithely took it up, and kept supplying people with abundance.

So why don't we stop wishing more? Don't we already have enough material wealth? But no such stopping mechanism is incorporated in the human urge system, since our remote ancestors did not need them when the urge system evolved. They needed to augment their control powers as that meant survival, and that way the human urge system acquired the power-augmentation urge, and whatever material objects that served to augment their powers, they wanted to keep them. And when they remained useful, they wanted their offsprings to inherit them. So when the first grand transition began with the Agricultural Revolution and began to produce many such objects worthy to possess, the proprietary rights and the inheritance rights became a part of the tradition, the rights that still stand as main pillars of capitalism.

As discussed in the early part of this book, the evolution of the human urge system as we see it today has practically been completed before the first grand transition when Homo Sapience Sapience emerged into the scene. As such, it has no built-in regulative functions against certain human activities in foresight of civilization. In fact, the people who had toiled in hard conditions to succeed in their agricultural venture would have had not an iota of inkling that they were thus creating civilization, let alone that the civilization would soon plunge into the Times of War. They were just driven by the active coper spirit, without knowing where their activities would lead them to.

At this juncture, let me remind the reader how a group of humans as active copers generally operates. There always will be a few, the breed of explorers, who are high-risk takers, ready to explore some unknown land, unrevealed realm of knowledge, or undertake some speculative venture. First, most of others would just watch what would happen, and naturally many of them meets disasters, but some will succeed, bringing back some wealth, or a news of fertile land beyond. Then many of the others will follow the lead of these successful explorers, and when everything seems to be all right, majority of the rest will follow, even pushing the explorers, while occasionally sniggering the remaining few die-hard skeptics.

Essentially the same process would have taken place when the humans started agriculture in the time of the first grand transition, and is being repeated in the current second grand transition. We seem to be in the period that the majority are gladly following the path to prosperity shown by explorers of the modern times, scientists, engineers, pioneering entrepreneurs, and so on, without a ear to listen to cautious words of some skeptics, and also without an inkling to where they are going. What could stop this rush toward prosperity would be an unexpected disaster found to lie on their course, and the real peril of such a potential disaster of today is the swiftness of its coming, leaving us little time to prepare for retreat.

Let me add another word of a cautionary about a dangerous twist capitalism is exhibiting lately. Note that the breed of 'explorers' are big stake gamblers by definition. They often put their life or fortune, or both, at risk by getting something very valuable to themselves, and that something often turned out to be very valuable to the humankind as a whole. Even many of non- explorers who cannot put themselves involved in such a stressful gambling can still enjoy gambling of a small scale, the genuine gambling, and they would have done so ever since the token money was invented, without having much to do with the major course of events in the human history.

Note that in the past, an entrepreneur of the explorer type who invested a sum of the person's capital on an uncertain venture, like on the cargo of a trade ship going to a far away land, had to leave the capital frozen for a certain period of time before the outcome of his gamble was learned; a fortune would be made if the ship returned, and lost all if otherwise. Still, a certain percentage of the trade ships were due to complete the round trip, bringing prosperity to both lands, and the capital thus invested accomplished its proper role of money as the necessary lubricant of economic activities.

In this example, the investor had to wait out a long time before knowing whether his investment

paid off or not. Recently, however, capitals have been largely liquidized, not bound to any particular targets very strongly, enabling investors to withdraw their capitals, with a short notice, from some domestic market. The withdrawn capitals then may be reinvested in some other market in the world. This liquidization of capitals is one of the outcomes of the development of global information network, and also of the natural affinity of money to digital information processing -- money being nothing but tokens of digitized social values. This possibility then created for large scale investors chances of gambling of an unprecedented scale, making any market of any locality of the world as the target to stake an amount of liquidized investment capital on. As a result of such gambling style investments, a nation may find that, even with a slight sign of malfunction of its economy, much of the money invested in its domestic market suddenly disappears, making sure a sign of disaster always leads to a real disaster.

So capitalism happily married with advanced information technology now seems to be converting the world economy into a global casino, where tremendous amounts of money flash across the world from hand to hand, with a speed so fast that leaves few long-time ventures sufficient time to build up and mature.

Artificial coalitions of modern times

Now let me move on to discuss how artificial coalitions are faring in these days. Artificial coalitions prospered in the Times of War as half artificial and half natural units of social organizations. The artificial part depended on their make-believe nature, mimicking the spirit of kernelled close coalitions. Posts were defined by coalitional rules so that each sector of an artificial coalition supposedly operated as if it were a real kernelled coalition, although the coalitional rules stipulated that such relationships among members of each sector applied only when the legitimate coalitional activities were concerned. This restriction enabled an artificial coalition to take on a hierarchical structure without an inherent size limit.

The natural part that Times of War artificial coalitions came from the utilization of large status variance prevalent in the Times of War communities. The operation of an artificial coalition would certainly have been easier if a sector head had a distinctly higher status than his or her direct subordinates, as the commands given by the former would have been obeyed by the latter without much ado. So the hierarchical ordering within an artificial coalition would have been tried to keep a close match with the status ordering in a larger community. In order to gain that matching appropriate status symbols and the moral code that put loyalty on the list of top virtues would be liberally used.

The coming of the second grand transition has deprived artificial coalitions of the utilization of this community status differential, as post-relevant authorities are effectively gone in the current small status variance society. The artificial, or the contractual, part may still stands good in the current society; subordinates follow orders given by superiors as far as the coalition is faring well and the orders remain within the defined regions of coalitional activities. As a result, we see in the current society some artificial coalitions still thriving, some barely functioning, and some doing poorly. Let me pick up a few representative types of them, and consider what factors are responsible for their successes and failures.

Apparently, the most successful type of artificial coalitions today are business corporations. As the protagonists of the ever growing economy of technologically advanced countries, there are many extremely well-to-do business corporations operating, without exception, in the international market, attesting the making of an almost borderless Earth Society. Needless to say, not every business corporation is that successful. Their fields of operation, be it international or domestic, are grounds of fierce competition. Losers are ruthlessly eliminated from the field, but new ones are formed to fill the vacancy immediately.

It is undoubtedly this very strong selection pressure in the business world that keep artificial coalitions of the business corporation type hale and thriving. Most members of such a coalition are aware of this competition, especially the high ranking ones; if one of them is incompetent as the coalition member, he or she would be replaced by a more competent one. This rule applies even if the person is on the top of the coalitional hierarchy -- it applies especially to the top. So even the top ranking person of a business corporation would have little personal authority in the business world where the competition is the toughest.

So by virtually eliminating status variance, artificial coalitions of the business corporation type acquired a quite genuine versatility -- agents being replaced as the given situation commands. I am, however, not suggesting that business corporations of today is an ideal form of organization to run the small status variance contemporary society. The competition is made too fierce, and prosperity and decline visit business corporations too quickly, for them to employ any really long term policy, and that is due to the overly swift changes of the business environment brought by the accelerating artificial evolution.

Other types of artificial coalitions are faring not so well as business corporations. Bureaucracies of most nations appear to be managing just barely. Apparently, they are rent by two opposing forces. On the one hand, losing the position-dependent authorities that once kept its hierarchical structure functional, they had to adhere to their tradition even more strongly than the past, making them more rigid, and less versatile. On the other hand, the ever changing social conditions require them to handle new issues, to which the only response they are ready to make is to establish a new department to handle it. So unless politicians control it judiciously and rejuvenate it constantly, the state bureaucracy would simply become more fattened and more unwieldy.

Unfortunately, the politicians we have today elected by democratic procedures generally fall far short of such a level of competence. Even if they are really competent, however, the burden of maintaining bureaucracy always in shape would be too heavy a burden for them to shoulder. Therefore, it is imperative for us to come up with some new social system that replaces the current bureaucratic system, a system which is versatile enough to meet the challenges that the rapidly changing social conditions keep casting us. I shall give a little thought to this issue at the end of this book.

Now let me take a look at some other artificial coalitions. In the Times of War, families acquired a great deal of artificiality. A family functioned as an artificial coalition had a rather large number of members and a clear hierarchical structure among them, generally headed by a male elder. Family as such was regarded as the basic building block of a community, and many larger social systems were often molded in imitation of a patriarchal family. When the authority of the head of a family became no longer maintained by the onset of the second grand transition, the family as an artificial coalition effectively reverted to its original form, the family as a natural coalition. Although many social constraints still remain as a legacy of the old times, a family has become once again a coalition based on a natural matrimonial coalition, formed and dissolved by the will of a couple, and the children born in a family are usually allowed to choose their own courses of life when they grow up.

The type of artificial coalitions which probably suffered most from the loss of authority are schools. Elementary schools and universities are relatively free of troubles. Teachers of elementary schools, especially of lower grade, can generally assert their authority because of the obvious power differential that exists between teachers as adults and pupils as children. In universities most students are adult enough to understand the contractual nature existing between themselves and professors. The greatest difficulty in education seems to arise in between, during the period of secondary education, when teachers have little advantage over students power-wise, while many students lack motivation to learn.

Despite of the large variety seen in educational systems of various countries, it may be generally said to be rather strongly tradition-bound, whose spirit is the one that handed down from the Times of War, together with the term 'compulsory education' which Maria Theresa started in the 18th Century to create educated labor force. The common people had no objection to that as they also wished to be educated. So under the consensus of the ruling class and the common people, the tradition of school education was established and almost sanctified, carefully guarded by a great deal of statutes, making educational systems hard to adapt to changes in social conditions.

What seems most wrong with the current educational systems is that teachers are usually just handing out sections of knowledge as they have been doing for a long time. Once, schools are nearly the only place where people could learn these sections of knowledge, and students could appreciate being educated in schools. Today, however, knowledge is everywhere, accessible by anyone if one is so minded, and this fact deprived schools of their once privileged position as the only gateway to knowledge. It is not that students would voluntarily access to such knowledge if it is not taught at school; it is the devaluation of the types knowledge taught at school that reduce their motivation to learn. More and more students nowadays go to higher educational institutions because they or their parents can now afford educational costs, and the costs are thought to be paid by diplomas students get, as the level of one's school education still seems to work as an important dimension of the social norm axis against which one's social status is appraised -- even how small the status variance has become, there always remains some status differences.

Schools being used this way, however, is indeed a great waste of potentiality they have, as the contemporary societies have a great need of the type of people who can *use* knowledge for constantly cropping up social problems of new types in a versatile fashion. In order to have such people in numbers, we need schools to teach how to tap various sources of knowledge that are there in the world, and how to *think* imaginatively by using the knowledge they gained. The schools of this kind, however, cannot be obtained without first freeing schools, especially the secondary education and up, from the yokes of traditional educational statutes, and then introduce competition among schools of comparable levels. If students are given a free choice among various types of new schools, they would choose the one that seems best to draw and nurture the potentiality they possess, and those schools which do the task best will win the competition.

Problems of the contemporary democracy

Democracy was occasionally practiced in the past, typically in ancient Greek and Roman city states, where their citizens did not want for any particular person to monopolize political power. It subsequently became unpopular, primarily because the slowness in making political decisions through debates was a decisive demerit in the Times of War. Furthermore, communities grew in size made democracy, either direct or representative, rather impracticable. As time drew closer to the end of the Times of War, democratic political systems gradually made their comeback, especially as the common people gained their political power and the society became organized enough to allow large scale elections of political representatives. Therefore, it is natural that, when the major war threats were gone, democracy became accepted almost world wide as the only legitimate political system of today.

Nevertheless, something is going wrong with the way democracy is popularly implemented in many nations, and it is coincidental with the global downfall of authorities. Note that in the past, each of those who were engaged in politics -- emperors, kings, high government officials -- had the halo of a very high social status on their back, which almost automatically commanded obedience and respect of the rest of

people. Perhaps, the same principle would have worked in the early period of the current representative democracy; each of the representatives really represented a majority of the constituency, and could have wielded necessary political power and status conferred by the person's support coalition.

As the second grand transition proceeded and all authorities declined, however, the same fate visited politicians in democratic regimes. Nowadays, voters seem to vote just because voting is considered as a civil duty, and hardly regard the elected as their representatives. Not only people do not pay much respect to them, but they often grumble about the qualities of politicians they get, no matter where they are in the world.

A word may be said in defense of present day politicians. Maybe they are no worse than the past time politicians; without status to back them up, how could they perform their functions properly, and their functions are toughest of all, of governing a nation by controlling straight-jacketed bureaucrats. But because of the supreme importance of their functions, we need politicians of excellent qualities, and it is undeniable we are not getting them under the current system of democracy implementation.

What is most seriously wrong with the current system is that being a politician as a profession is not attractive enough to draw many potentially capable people to voluntarily running as political candidates. To be a politician generally means hard works, high responsibilities, little stability in the position even elected, and an enormous cost for campaigning. There still is some status gained by being a successful politician, but far lower than in the past; is the status of a politician still worth taking all the troubles? Quite a few appear to say yes to the question, but many of them are unfortunately not the kind of persons on whose hands we want to place the responsibility of governing our nations.

The type of persons we need most are those who can cope with difficult issues presented by quickly changing domestic and global social conditions, by taking a broad, unbiased views of the world, grasping the essence of problems arisen, and setting the course of actions of the nation correctly in a long term basis. This may seem a qualification difficult to satisfy, but the population of a nation is nowadays large enough to include quite a number of such people, and those who are capable might be prodded to activate the demonstration urge for their potential political power under the right conditions.

The actual conditions, unfortunately, are not right. As described above, there are hurdles awaiting any such attempt of demonstration of political prowess, hard enough to daunt anyone who can see them clearly. The worst of which may be the instability of the position of a politician. A politician who loses the election also loses a great deal more than the person's seat in the house, and election usually comes up every a few years. So it is no wonder that the mind of a politician is usually preoccupied by matters like how to win the next election, how to please the sponsors who supply most of the person's campaign cost, besides how to survive in the political infighting among the person's fellow politicians, when we expect them to concentrate on matters of the state. These problematic aspects are obviously caused by system dysfunctions of the current implementation of democracy, which worked once but no longer because of the considerable transformations our societies have undergone. As such, they are correctable if the politicians currently in office determine to do so, even though making them do it is almost as difficult as finding a good solution for the system innovation.

All that, however, is still not the whole problem. Supposing that we had good capable politicians in office, could they really bring their abilities into full play? More specifically, can they control bureaucracy? Nominally, or contractually speaking, politicians should have an upper hand over bureaucracy. But politicians are often no match to bureaucrats in matters that require professionally knowledge, and little help is expected in this issue from the not very high social status of the former.

This implies that the reform of political system and the reform of bureaucracy are not separate

issues, and a new politico-administrative system has to be designed with a common set of principles. Such a claim may appear utterly preposterous, but it is not really so, as the progress of the second grand transition, especially the accelerating artificial evolution, has made the time far gone when state issues could be debated by local representatives who were coached by bureaucrats on how problems had been solved traditionally. Although neither current politicians and bureaucrats would take initiatives for a complete renewal of the system, sooner or later they would have to face the fact that they could no longer capable of handling social issues properly. In such a crisis, the dissatisfied people would tend to apply a violent course of action, unless they were given a vision about an alternative system of governance of nations and the world capable of handling new problems under new social conditions. If they had such a vision, people may wait before having recourse to violence for someone to work out practical details that brings reality to the vision.

Let me present below a very crude sketch of one such vision without details, one that actively make use of advanced technology, and one that is not utopian, because the humans as active copers are denied having a utopia, and on every course that promises a utopia lies a doom.

7.7 A vision of new society that functions as a meta-mind

Basic ideas for a meta-mind society

The gist of the idea I envision of the future human society may be summarized as that of making the society, be it a nation or the world, function according to principles very similar to the ones that run our personal mind. As discussed in Chapter 2 and 6, the human mind is characterized by having a well designed versatile structure. When a person is looking for an appropriate action plan under a certain urge representing the need of the person at the moment, various action agents are activated in the conscious part of the mind each of which represents a specific action plan, especially those action agents drawn by their relevance to the given urge, or by the affordance of the given situation. Then, if the situation allows the time, mental simulations will be run for each of the proposed action plan by using appropriate dynamic schemas representing the self and the situation. Then whichever action plan that demonstrated itself to be the most successful in achieving the desired goal designated by the urge will be employed and executed.

By virtue of having great many different types of action agents and elaborate dynamic schemas representing them, a person can cope with a wide spectrum of situations, in a strong contrast to the contemporary artificial intelligence each of which can deal only with a very limited type of situations. Considering this versatility exhibited by each single person, the *potential* versatility of a human society composed of millions of people with different types of versatility should be stupendously large. If a society is properly organized so that at least a fraction of this potential versatility can be utilized, there would be few social situations this society cannot successfully cope with.

The proposal I am going to make to realize such a versatile society is to create a society which functions as if it were itself a mind -- a *meta-mind* that consists of a large number of individual minds. The versatility of a society would be guaranteed if it could utilize different abilities of its individual members as if they were action agents of the meta-mind. Let me sketch below a rough outline of my idea about how such a meta- mind society could be created.

For a society to function as a meta-mind, it has to be able to recognize the 'situation' it is facing, and to let its citizens know what the current societal situation is, because only then some of them may be able to

act as the societal action agent, offering their propositions for the proper societal action to be taken. The meta-mind society will need an agency taking care of this task, which may be called the *caretaker agency*, corresponding to the 'appraisal monitor' in my model of the personal mind. Note here that what is indispensable for a society to function properly as a meta-mind is the existence of an vast information network on which information flows very quickly and bilaterally, not only between the caretaker agency and each of the citizens but also among the citizens themselves. Assuming the existence of such a societal hardware is obviously within the possibilities of a near future, as it is no more than a simple extension of the internet today, just easier to be access and utilized by everybody. In addition to this network, the caretaker agency has to possess a very efficient computer system capable of handling a large number of parallel tasks. Such a computer system will also be no novelty in the times under consideration, and many citizens besides the caretakers will possess similar systems.

Let me emphasize here the indispensability of quick information exchange between the caretakers and citizens for a meta-mind society. If it takes time for the caretakers to apprise the citizens of the societal situation and obtain the latter's responses, the urgency of some of the situations will force the caretakers to make decisions without consultation with citizens. Then the caretakers would have to become a government, assisted by a bureaucracy. But the caretaker agency I am going to discuss is not a government, as it never governs. The caretaker agency has to have quite a few subagencies, but they are different from the contemporary bureaucratic agencies as they would always have competitors, as will be discussed shortly.

A class of the subagencies of the caretaker agency are *observer agencies*, which, in correspondence to the sensation and perception mechanisms of the personal mind, collect and collate information concerning internal and external affairs of the society, and send it up to the caretaker agency for it to determine the situation it is currently in. The pile of observation reports, however, has to be properly interpreted to define the situation, as it does not do so by itself. The nature of this 'interpretation' can be inferred from what the personal mind does with the input from the perceptual processes. In the situational cognition of the personal mind, a situation implies a configuration of mutually interacting objects including the self as an objects, and all these objects are alive, be they animate or inanimate, in the sense that they are all about to change their states in the next moment. In other words, the situational cognition always involves an anticipation of what is going to happen.

In the context of the model of the mind presented in Chapter 6, this implies that the situational cognition of the personal mind is done by the appraisal monitor by way of fitting a proper set of interacting dynamic schemas (including the self-schema) to the incoming information. Since dynamic schemas (or, dyscs) are dynamic, they automatically produce the anticipation of what is to happen next.

If the meta-mind society is to emulate the personal mind, the caretaker agency has to be able to perform the same function only in a much larger scale. This means that the caretaker agency has to possess a large repertoire of dynamic models of major agents, humans or natural objects, whose actions may affect the societal processes -- dynamic models comparable to dyscs in the personal mind, but no longer personal as they have to be produced as a joint venture of many people who are in charge of creating them through careful researches. Let me call these dynamic models of social agents the *collectively created dynamic schemas*, or *C- dyscs* for short. For the realization of a meta-mind society, it is critical for the caretaker agency to have a large stock of workable C-dyscs in its computer system. I shall consider the issue of how to create them at the end of the present argument. For the moment, let me simply assume that they already exist.

Consider a simple example. Suppose that a part of the observation reports refer to a social event that

activates C-dyscs that includes *A*, *B*, and *C* in such an interactional pattern as "A group of people *A* is in conflict with another group of people *B* over the use of water of the river *C*, whose water level is low due to the sustained dry weather," if crudely expressed verbally. Once a part of the social situation is represented by relevant C- dyscs on the caretaker's computer systems, they will immediately start interacting with each other according to the rules embedded within each of them, thereby indicating what will occur immediately after, besides themselves presenting a good, meaningful pattern of the that part of the given situation.[39]

As soon as the current societal situation is properly represented, it will be broadcast through the network together with its anticipatory outcomes, accompanied with proper visual images and verbal commentaries. It is somewhat like a 24 hours news service, and the interested citizens may submit their opinions on them as the network is bilateral. In the meantime, new reports will trickle in from observation agencies, which may confirm or disconfirm the officially anticipated situation. Any discrepancies thus found must be remedied by means like resetting the states of some of the activated C-dyscs, introducing new C-discs, and the like, thereby producing a new C-dysc representation of the current social situation.

Up to this point, the activity of the caretaker agency corresponds to the operations of the appraisal monitor done on the WW (world-watch) window of the personal mind discussed in the previous chapter. Remember that the appraisal monitor simultaneously engages in simulational activity conducted on another window, the IT (imagination-thinking) window. The appraisal monitor's operation on the IT window is first to transplant the contents of the WW window to the IT window, and then run the dyscs free and fast under whatever an action plan of the self-schema, without waiting for the anticipations to be confirmed. The outcomes of such simulations then will help choosing a most promising action plan given the current situation.

Essentially the same simulations could be carried out by the caretaker agency using its C-dyscs, and it has a definite advantage over the mental simulation in carrying out this simulational future projection, as the caretaker computer system would be able to run many simulations in parallel using various different *societal action plans* proposed by the citizens of the society.

The actual execution of the employed action plan is done by
various types of action agencies under the supervision of the caretaker agency.

Direct participatory democracy of the meta-mind society

Let me now shift the focus of arguments from the caretaker operations to the citizens' participation in the processes of the meta-mind society. The typical way of such citizens' participation is to offer to the caretaker agency a social action plan, an alternative to the one currently under execution. This they can do any time about any aspect of the social activities, but, since each citizen's interest may be diverse, the caretaker agency may draw their attention and encourage their making proposals especially when either the current situation, or the anticipated situation, or the outcome of the mainstream simulation, falls into the

[39] The situation in its entirely is multi-layered even in the case of personal situation. A person may be recognizing what is happing around the person, while worrying about the trouble one of the person's children living in a distant city happened to be involved. And also on another layer of the mind, the person may be wondering about what stock he should invest the money on. In the case of a society, the number of situational layers will be far greater than the personal mind, and the degree of mutual interrelationships among the layers will be more complex. But the caretaker's computer system has one great advantage over the personal mind such that it can run many tasks in parallel, while the personal mind, especially its conscious operations, has to run around different situational layers serially due to its limited cognitive resources.

category that may be designated as *'problematic.'*

Problematic situations are those situations which suggest that the current social action plan might not be the most desirable one. In the case of the personal mind, a problematic situation is that which activates a new urge. Should the meta-mind society also have corresponding *social urges*? I think it should, primarily because urges make people comprehend the essence of the issue presented by such problematic situations. Remember that the major function of an urge when it is activated is to set the urge-specific goal to pursue. If the goal is positive-valued, the person is urged to achieve it, and if negative, to avoid falling into it. When the person is already engaged in a goal-pursuit (or a goal avoidance) activity incompatible to the new goal, there occurs an interruption problem to resolve, whether to switch the current goal-pursuit activity to the new one or to stay with the old, as discussed in Chapter 3.

One of the greatest merits for the personal mind of having a large repertory of built-in urges is that a person can choose an appropriate action plan very quickly by making use of the redundancy existing between situations and goals. In the kind of wild environment in which the humans lived when the genetic urge program had been evolving, being able to make appropriate decisions fast was often the most critical factor in warranting survival. There is no reason for these benefits do not apply to the social urge system once it is properly established.

There us a large advantage a social urge system could have over the personal urge system based on the fact that social urges are *designable* programs, and as such they can be modified and improved. As I have been discussing through this book, the personal urge system is very well built, but it has the shortcoming of irrevisability as biological systems generally are (unless, of course, a biological evolution takes place or one artificially tampers with the genome). So we cannot revise the human urge system today even though some of its operations have become unfit for today's environment with its high civilization and large population, the factors completely absent in the times when the urge system was evolutionally molded.

So let us assume that a fairly well designed social urge system exists in the meta-mind society which automatically ring an alarm when the situation, current or in the future, runs into one that is earmarked by the system. In response to this interruption, the social urge activated will show the goal to be achieved (or negative goal to be avoided), and the citizens are encouraged to offer proper action plans in the face of such a goal. Then the caretaker computer will immediately run simulations on proposed plans again in parallel fashion, and may be able to find out very quickly which ones works best.

A very good aspect of this social urge system is that the computer on which it is run is free from the disturbing here-and- now effect caused by an intense urge activation. Suppose that either the current situation, or the simulational outcome of the current social action, shows an impending disaster befalling the society, making most of the citizens in fearful panic. As long as there remains some who could propose some action plans, the computer itself can keep on running, cool-headedly, as it is not hampered by the limited resource problem that causes the here-and-now effect to the human mind, and may be able to demonstrate that one of the plans brings some *hope* in the future of the society, with a calming effect on many of the citizens.

Now let me hark back to the topic of citizens proposing action plans, These plans will be tested through simulations, and I mentioned above that the plan that is 'best' will be chosen for execution. The concept of 'best,' however, implies a value judgment, and in the meta-mind society, the right of making value judgments should always be in the hands of its citizens, and, thanks to the advanced information network, they can easily make their value judgments whenever necessary on any subject.

The problem is how to aggregate citizens' value judgments as they may disagree more often than not.

Voting and the majority rule are too simplistic to employ in the meta-mind society. Consider the personal value judgment, which is made, according to my model of mind, through one's mood-state at the time of decision. But the content of one's mood-state which is formed by aggregating inputs from various mental and bodily agents operating at the time when the person is contemplating a certain subject is always far richer than unidimensional value judgment. For instance, the mood-state that obtains when one is thinking about the possibility that one's hated rival is going to be promoted. The evaluation of such a situation would of course be negative, and the negativeness would be enhanced if the person is feeling a pain in the stomach, but the mood-state created by the hate and the envy and the stomach ache contains a greatly more information about the state of the person's mind and body than just how negative the value of the imagined situation is.

Under a similar spirit, the caretaker may let a part of its computer process verbalized opinions submitted by the citizens for each subject issue, and produce a multi-dimensional the *social mood-state* formed about the issue in accordance to some predetermined formula. The social mood-state thus obtained for each issue will then be fed back to the citizens in an easily comprehensible, such as graphic, format so that the people may be able to revise their opinions until the outcome settles. When a collective value judgment is needed for a certain issue, it may be derived from the relevant social mood state again according to a certain predetermined formula.

Let me call the part of the caretaker computer that takes charge of this opinion aggregation the *mood-state machine*. The quality of the outputs of this machine, however well programmed, may not be able to reach a level comparable to that of the personal mood-state as long as its inputs are limited to verbal reports. On the other hand, this machine may outdo the personal mood-state generation mechanism in its parallel mode of operation; it can produce social mood-states on widely varied subjects simultaneously, subjects such as the outcome of simulation run under each separate set of constraints, each social action plan proposed, the quality of the operation of each social agency, including the caretaker agency itself. This ability of the mood- state machine of gathering evaluative opinions on diverse subject simultaneously is certainly its advantage over the personal mood- state generation mechanism which can work only serially, and sometimes with a great difficulty at that. When one's mind is under the here-and-now effect with the mood-state full of envy- hate about one's rival, say, it is far from easy to switch the target of attention to one's dear child for feeling the mood- state of loving care.

In the arguments made so far, I have considered participation of individual citizens in the operations of the meta-mind society. The unit of participation, however, need not be individuals. For instance, team of individuals with different specialities may be able to work out a better plan for the social action, and may be encouraged to do so. Another type of citizen participation in the meta-mind society of the critical importance is that of providing all social agencies, including the caretaker agency, with 'competitors.' In the meta-mind society, every information going in and out of the caretaker system is open. So any outside artificial coalition with a sufficient information processing capacity, an easy enough condition to fulfill in the times of the meta-mind society, may try to overdo operations of some formal agency, thereby challenging the latter. Whichever of the two, the challenger and the challenged, whose performance seems to best the other in the public evaluation would be recognized as the formal agency from then on.

Some other issues of the meta-mind society: in lieu of conclusion

Obviously, there are a great deal more to be discussed of the meta-mind society than given above,

but let me close my arguments on this subject by bringing up two issues in a context broader than the meta-mind society: they are the *hard shell* of a versatile system and the *C-dysc technology*.

I mentioned earlier that a human society could have an enormous 'potential' versatility for the reason that each citizen of the society already possesses a versatile mind. Now let me extend the context of argument to any potentially versatile system, and consider what are the critical factors that turns potentiality into reality. A potentially versatile system is a system that contains diverse, more or less autonomous agents, which the system may use either singly or jointly to handle the situation the system faces. The basic spirit of a versatile system is that each agent, or a team of agents, may apply spontaneously for being used for the task, and the final choice of the agent(s) to be in charge is made through a sort of competition among those which applied. One of the critical factors, perhaps the most important one, that determines the degree of versatility of a system is obviously the set of rules which the system uses to setting the stage for competition: first, encouraging all the potentially able agents to apply, and secondly, judging which of the applicants are the most promising for the task. There are auxiliary rules, but let me call the aggregate of all these rules the *hard shell* of a potentially versatile system. The hard shell is 'hard' in the sense that the rules must not be arbitrarily altered, although some allowances may be made about some parts of the hard shell to improve themselves through learning.

The urge system is the major part of the hard shell of the mind as a versatile system that cannot be altered. The belief system is the part that is amenable to change, although it tends to get harder with age. On the whole, the hard shell of the mind may be regarded as an example of a good design.

In comparison to the mind as an almost established versatile system, the hard shells of contemporary societies as potentially versatile systems are generally awfully misdesigned. When the hard shell of a modern nation is negligent in recruiting capable individuals as responsible officers in the society, most of the nation's potential versatility are wasted. If the nation's hard shell rules are rather ambiguous and allow those in socially responsible positions to warp them for their personal ambitions, the nation could be turned into a totalitarian dictatorship with almost no versatility. Note that the potential collective power of the people of most modern nations is quite strong, strong enough to resist any attempt at dictatorship if they were given enough time to rally against such an attempt. The danger of dictatorship still remains nevertheless because a person in a certain high social position could make things happen very quickly by a deliberate utilization of advanced modern technology without giving people time to realize something wrong is happening in their society.

Needless to say, the hard shells in use in most of the modern nations are both quite inefficient and ambiguous. The inefficiency in recruiting capable persons for responsible positions may be typified by the hard shell of bureaucratic systems which rather suppresses free competition among their agents instead of encouraging it. The ambiguity is exemplified by the behavior of politicians who are always hard at warping rules for their personal benefits -- fortunately petty benefits in most of the cases.

What my arguments about the meta-mind society given above intended was to demonstrate that a possibility exist for creating a society with much better hard shell where bureaucracy is dispensed with. The realization of any such society depends primarily upon whether one can work out a proper hard shell of a society which is not only efficient in utilizing the potential powers of held by its citizens, but also unambiguous enough to preclude its abuse by someone overly ambitious. Once a good hard shell is established for even a relatively small society, there is a good chance to expect that the hard shell of the same type would also work for as large a social system as the Earth Society.

At this juncture, let me put in a long term view about the possible human society, a warning against

any presupposition for it to attain an equilibrium type utopia, one that is often used to describe a heavenly paradise. First about a really versatile Earth Society. Once the humans could attain such a society, if they ever could, it would certainly be a nice society to live in. By being able to fully tap the diverse control powers possessed by individuals and their coalitions of a vast number of its citizens, there may be few social problems they could not solve, certainly free from many irksome issues troubling the contemporary societies like how to do without constant economic growth, how to do without global population increase, how to preserve natural resources and the natural environment, and so forth.

However, even the citizens of this versatile Earth Society may not be able to find a solution to achieve an equilibrium society as long as they remain as active copers and keep the same urge system we have today. They may be able to curb most of the ill effects of urge operations by finding suitable social outlets for them, but the operations of triplet of urges, curiosity, challenge and dream realization, which constantly pushing artificial evolution forward, could not be stopped as their operations are unidirectional. So even though they may slow down the speed of artificial evolution somehow, it still will keep producing new products, new ideas, and so on, constantly destabilizing the society. How would they deal with this constant destabilization factor is of course their problem -- at least it appears to me that their society is at least not as boring as a heavenly paradise where the eternal peace prevails (Toda, 1982).

Unlike these people in the future, we, the denizens of the contemporary world, can hardly afford to be amused by these destabilizing effects brought upon our society by artificial evolution, and we are hardly as resourceful as our future offsprings. If we keep the advance of artificial evolution unchecked, one of the most obvious dangers is that someone might feel difficult to resist the temptation of using advanced tools of war when such were produced by artificial evolution, and we have not yet come up with any social means to prevent such chances from ever occurring. Do not trust that the people would learn from history, as each new generation is born the same as they were in the times of ur-bands or the Times of War. History as stories only stirs up the curiosity of new generation people, and the urge of experiencing history directly may often be far stronger than the warnings it gives them.

There seems to remain only one way for us to choose. As urges themselves are unalterable, what we can control are social factors in a broad sense, such as beliefs, social values and the like, with social institutions and structures to match. Whatever the proper social factors are to be, note also that you cannot force them upon the people, as they would accept only those which their urge system tells them to. Finding not just proper social factors but also right ways to realize them requires a great deal of knowledge in the area of social sciences, and we should acquire it rather rapidly. This may seem an impossible task, but I think it can be done, because the time is ripe and the conditions are right.

Needless to say, the advances in the area of social sciences has been very slow in comparison to physical sciences and technologies, causing the progress of artificial evolution to be almost exclusively affairs in the domain of the latter. This is not because the humans have lacked interests in the nature of themselves and of their societies. On the contrary, they have been talking and debating about these subjects endlessly since when there existed not even a scrap of physical science in the human knowledge system. The reason for the slowness in making headway in social sciences is not the lack of enthusiasm. It is in the first place because of the extremely strongly organized natures of the humans themselves and their societies, and we did not have powerful enough tools to make conceptual models for them except natural languages. Doubtlessly, natural language is a great tool of human invention, whose flexibility is so large that we can describe and discuss almost any system, from gods to atoms. This enormous flexibility of the natural language, however, has gained at a certain sacrifice in precision. Note that the great upsurge of artificial

evolution in the physical domain in relatively recent years are mainly due to the fact that to those who are working in that domain is made available, in addition to natural language, some precision tools such as mathematics and computers, which worked wonders in dealing with relatively weakly organized physical systems.

The reason why I mentioned that the time is ripe and conditions are right for social sciences to make a grand leap now is that some of these precision tools, especially computers, are now powerful enough to handle models complicated enough to approximate social agents. Memory capacities of computers are no longer a hurdle to clear to deal with models of strongly organized system like social agents, and now some computer software is sophisticated enough to represent real world situations with good enough images to accompany. Indeed, computer games are one step ahead of social scientists, as social agents are often playing major roles there. So there is no reason why researchers in the social domain should not utilize computers as precision tools, in addition to natural language, for building models of social agents as well.

The line of approach I am going to propose here may be called the *C-dysc technology*, as it is, in spirit at least, to create a technology that may lead to C-dyscs used in the meta- mind society. Its major purpose is to produce, through simulation, anticipations of what is to occur when some number of social agents are interacting in a certain situation. I shall not elaborate any details about this proposal because that may be just repeating my arguments given so far in this book. What I have been attempting to do is to demonstrating that the human mind and the human society can be represented in models whose level of approximation is good enough to be run and tested on a computer.

An important reminder for researchers to pursue this line of approach is that they should not go after finding truth, as self- conscious truth seekers are easily sidetracked by insignificant details. What one could aspire to accomplish in this area are at best really good approximations that enable one to predict what is going to happen in the human society. If predictions are not too off the mark, correct even once in every ten cases, having them is far better than having nothing as we are today. That is one of the reasons why I named the proposed approach as C-dysc technology rather than C-dysc science. Needless to say, what are regarded as truth in empirical sciences are all only good approximations, for which no contradictions have been found yet, but they are bound to, eventually. But the human mind and the human societies are too complicated systems to be described contradiction-free. So the evaluation standard for researches in this field should always be what approximations are good and what bad, and that judgment would usually be made easily through successes in predictive simulations.

I would be more than happy if this book could help entice some of the readers to this field, especially those who are of the 'explorer' type, since their successes will gather many followers. Considering the great need of people for having a better understanding of things happening in the contemporary world, and their enthusiasm to back up the need, a few breakthroughs in this area may even turn the major direction of advancements in artificial evolution, making its forward movement more balanced, with a quite important side-effect that the scientists working in the physical domain would be engaged in their researches with an awareness of their social impacts as well.

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Appendix: Basic concepts of the urge theory

The basic tenet of the urge theory is that the operations of human *emotion* contain the key to discover the basic principles under which the human mind functions. The everyday notion of 'emotion,' however, is too equivocal to provide a good working material, as it encompasses a very broad area of human mental functions which require separate treatments even though they are interrelated. The urge theory uses three major emotion-related categories of mental variables: they are *urges*, *mood-states*, and *emotional-attitudes*.

An urge may be considered as an inborn mental program, which, once activated within the mind, exerts a specific type of control over the mental activities characteristic to the urge while it remains activated. Take anger, for instance. The anger urge will be activated when a person interprets the given situation in the following way: another person has given harm to the person by breaking a rule which, according to the person's belief, should be abided by this other person. An urge, once activated, will set a goal the person is to pursue by the person's activities. In the case of the anger urge, the goal is generally defined as seeing to the rule-breaker being properly punished for the rule-breaking act.

Every urge as an activity program has its *intensity* parameter whose value determines the executive mode of the urge-based activities. The value of urge intensity depends upon a few factors that may be subsumed as defining the 'seriousness' of the urge activating situation. For instance, the intensity of an anger urge will be in proportion to the harm inflicted upon the person by the offender, and the higher the anger intensity, the severer will be the level of punishment set up as the angry person's goal.

One of the critical assumptions made by the urge theory is that the human urge system is a mental software evolved to facilitate survival of human individuals. The urge system provide each person with a general guideline for what to do, when the given situation calls for actions, external and/or internal. A good software in this sense naturally facilitates survival. There is also an important auxiliary assumption about the evolution of the urge system. Considering the time scale for any major biological evolution to take place, the urge system of the humans in the pre-civilizational period would most likely be virtually the same as the contemporary humans'. This also implies that the evolution of the urge system should have proceeded toward maximizing the survival benefits in the type of environment in which the pre- civilizational humans lived. This pre-civilizational environment is characterized by its two prominent aspects. First, it must have been a completely wild environment without a trace of civilization, and secondly, the same environment must have contained many other humans to live and interact with, since the ancestral hominid should have been a group-forming species, as all great ape species were.

Let me call the specific survival advantage each of the urge programs must have given to a human individual at the time the *hidden purpose* of that urge; it is 'hidden' because there is no need for the person acting under the urge to be aware of the deeper level implications of the urge. One of the purports of the urge theory is to identify this hidden purpose for each of the urges, and the answer should be sought in the characteristics of the environment in which the evolution took place, *i.e.*, the wildness of the environment and the group-forming nature of the people. The hidden purpose of the anger urge, for instance, may be found in its function of administering suitable punishment to rule breakers, as maintaining the binding power of the group rules that regulate their intra-group interactions should have been of critical importance for survival of the group members.

Once an activated urge sets a goal, a suitable *action plan* has to be found to achieve the goal. The procedure employed by the humans (not excluding animals) for selecting an appropriate action plan is the one that typically illustrates the *versatility* of higher order living organisms in coping with diverse environmental situations effectively. Imagine the difficulty a person would meet if the mind had to serially search a suitable action plan across the vast domain of memory where action plans are stored. What the mind does instead is to lay out in consciousness the situational constraints and the goal to be pursued, and make qualified *action agents*, each representing an action plan, or a part of it, automatically pop up into consciousness from memory.

What the mind does with these volunteered action agents also depends upon the situational parameters such as the time pressure. When the situation does not allow a delay in action, whatever action agent that popped up first may be executed immediately. The volunteered action agents would be examined more closely if the given situation allows it, especially about the possible consequences of the actions proposed. In the case of the anger urge, one may often refrain from committing an aggressive action against the offender when a strong counter-aggression may come from the latter.

One may wonder if a frequent abstention from administering punishment to a rule-breaker might not nullify the hidden purpose of the anger urge. The urge system, however, is prepared for this contingency. Another category of the major urge system variables, the emotional attitude, exists mainly for the purpose of compiling effects of each urge operation, successful or otherwise, and an aborted anger urge may enhance the person's emotional attitude of 'hatred' toward the offender. A person's emotional attitude toward some target object is actually the urge-related aspect of a schema a person develops toward the object, animate or inanimate. In the case of an aborted anger, the intensified hatred may tend to evoke a strong anger when the schema of the offender is activated in the person's mind even without further provocation, and the implied possibility of a desperate aggression of the person toward the offender may be deterrent enough for the offender to refrain from any further offense.

The third basic category of the urge-related variables, the mood-state, plays the key role in all the operations of the urge system, since it is the ever present indicator of the person's subjective state, simultaneously providing the evaluation of that state on a positive-negative scale. It is the intensity of the mood-state that actually triggers various urge programs, including the case when an urge activation directed at another person is caused by the person's emotional attitude toward the latter.

The characteristic of the urge system as a survival-oriented mental software in the wild environment is typically shown in the way an activated urge controls the person's attention. When the urge intensity is relatively low, one's focus of attention is rather widely distributed over diverse targets, and that is a rational thing to do because unexpected things may happen anywhere and any time in the wild environment, as the low urge intensity implies that the currently engaged activity is not much important. On the other hand, when the current urge intensity is relatively high, one needs to concentrate so much more on the relevant target objects. With an extremely high urge intensity, the concentration of one's attention should become sharply confined only to a few directly relevant targets.

There is nothing irrational in this attentional concentration itself. Problems could arise only because the urge system tends to make one concentrate on targets that exist in one's current 'situation,' dismissing everything that is not in the context of *'here-and-now.'* Note that this is not a wrong strategy in the wild environment where important objects almost always exist in the here-and-now world. What the humans introduced into their world in the name of civilization, however, has impaired the validity of this assumption, as civilization is tantamount to bringing into the human environment organizations of one kind or another,

and long chains of causal relations thus introduced into human lives have a tendency to locate important objects in times and places far removed from the context of here-and-now. So when a contemporary person activates an intense urge, the chance is high for the person not to take into account these remote issues despite their importance, but to act impulsively often with dire consequences.

This 'here-and-now' effect seems to be the major reason why there is a prevailing commonsense belief that emotion represents irrational part of the mind, since the label of 'emotion' or 'emotional' is usually attached to an urge operation with a high intensity, likely to trigger the here-and-now effect. It is, however, rather rare that one's urge intensity goes up to that high a level, and the rationality of most of the urge system operations that held in the wild environment still hold in the civilized environment we live in, insofar as the urge intensity remains in a moderate domain.

The way in which the urge system has been evolutionally molded strongly reflect the fact that the humankind is a group forming species. Indeed, the hidden purpose of most of urges involves some social element in it, the anger urge being no exception. Let me consider here only a special class of urges each of which tends to drive persons to form a *natural coalition* for the purpose doing various things together in a cooperative fashion. Natural coalitions may be classified into two types: *special-purpose coalitions* and *close coalitions*. Members of a special-purpose coalition usually cooperate only in a certain type of activities. A naturally formed special-purpose coalition may be represented by a natural *community*, whose members cooperate when a large group action is needed, typically when the survival of the community is at stake. Note that community members have to live nearby so that they may be able to join forces in emergencies, even though each of them may usually spend their times in their own ways. Such is the nature of the group as a community, whether be it of animals or humans.

Unlike special-purpose coalitions, a close coalition is formed in a presupposition that its members cooperate almost in any kind of activities. Close coalitions may be represented by *lovers' coalition* and *close friendship coalition*. A close coalition with its unconditional cooperation would create a great coalitional power for it to wield, if it really works. For such a virtually unconditional cooperation to work, however, it is prerequisite that the members of a close coalition are *compatible* to each other as if they were parts of a single system. Because of the difficulty in finding such compatible partners, the urge system urges one to assess other persons one happens to interact with in terms of their potential compatibility to oneself, and the outcomes of such assessments are represented by emotional attitudes toward others on the liking-disliking dimension. When one believes to have found a person who is really compatible to oneself, a *love* urge or an *affiliation* urge may be activated so that a close coalition may be formed.

Close coalitions are also classified into two types: *kernelled coalition* and *non-kernelled coalition*. A kernelled coalition will have a member called the *kernel member* who takes leadership in coalitional activities, and the other members will hold the emotional attitude of *devotion* to the kernel member. In contrast, all members are virtually equal in status with a non- kernelled coalition.

Each of these natural coalitions has a definite size-limit, and any coalition that goes beyond this size limit is bound to be an *artificial coalition* discussed in Chapter 7.

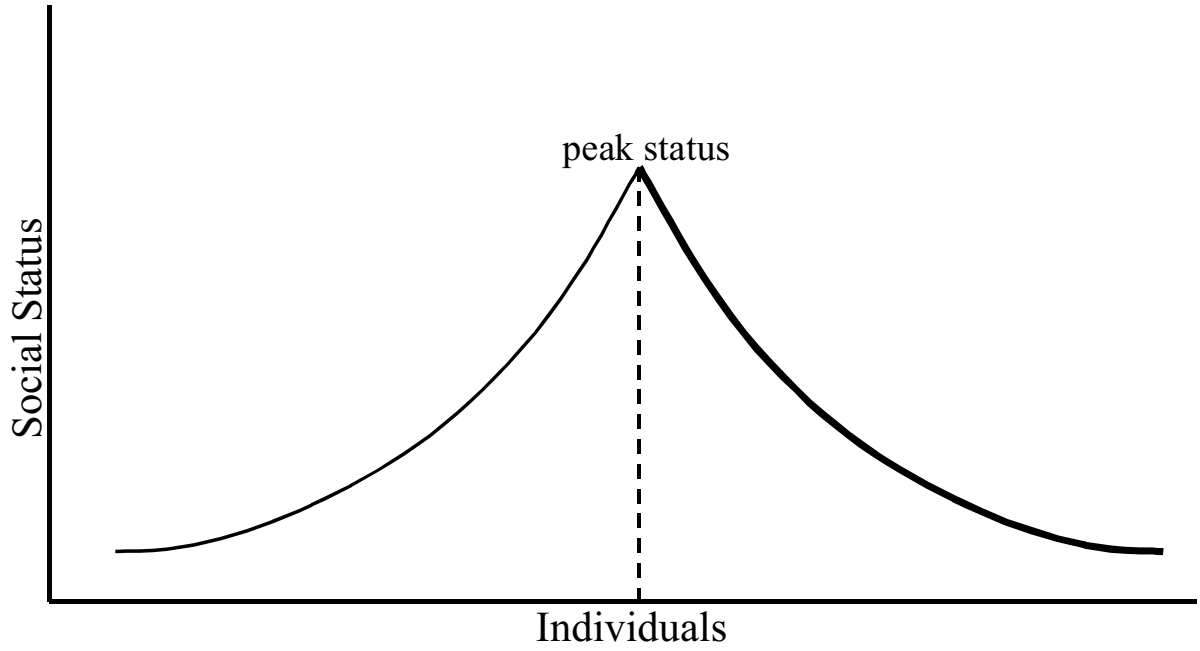

Fig. 7.1 The right side half of this graph shows a typical status composition within a community where community members are aligned from left to right in the descending order of status. The peak status corresponds to the highest status achieved within the community. The left hand side of the graph is just a mirror image of this status composition shown on the right hand side, to create together a roughly pyramidal shape which may be called a 'tapered pyramidal' status composition. In the following arguments in the text, this redundant representation of community status composition will be used because of the familiarity this shape.

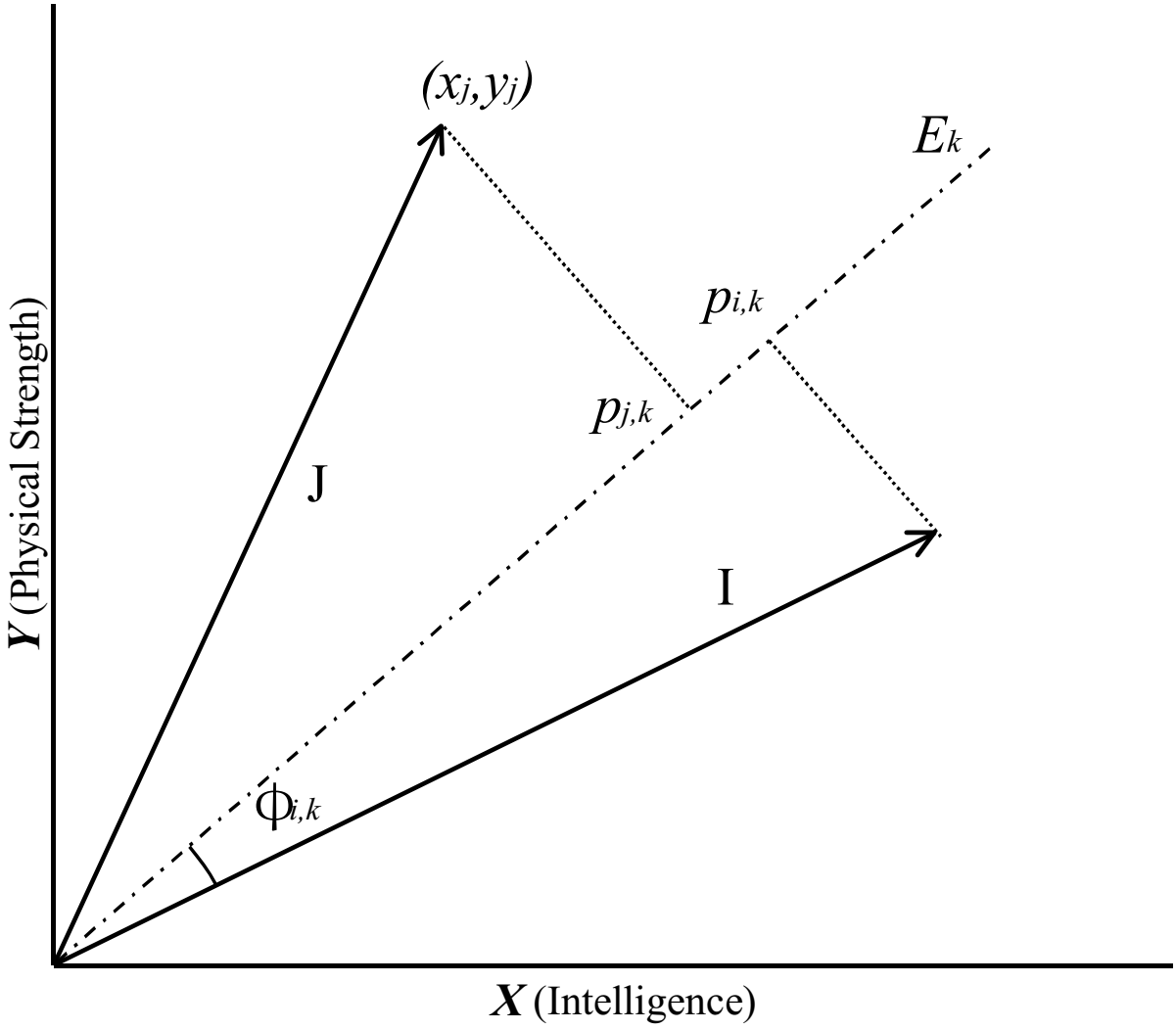

Fig. 7.2 The power vectors of two persons, **I** and **J**, located within a two-dimensional vector space spanned by the *Intelligence* (***X***) axis and the *physical strength* (***Y***) axis, are appraised by another person **K** against **K**'s personal status-appraisal axis, E_k .

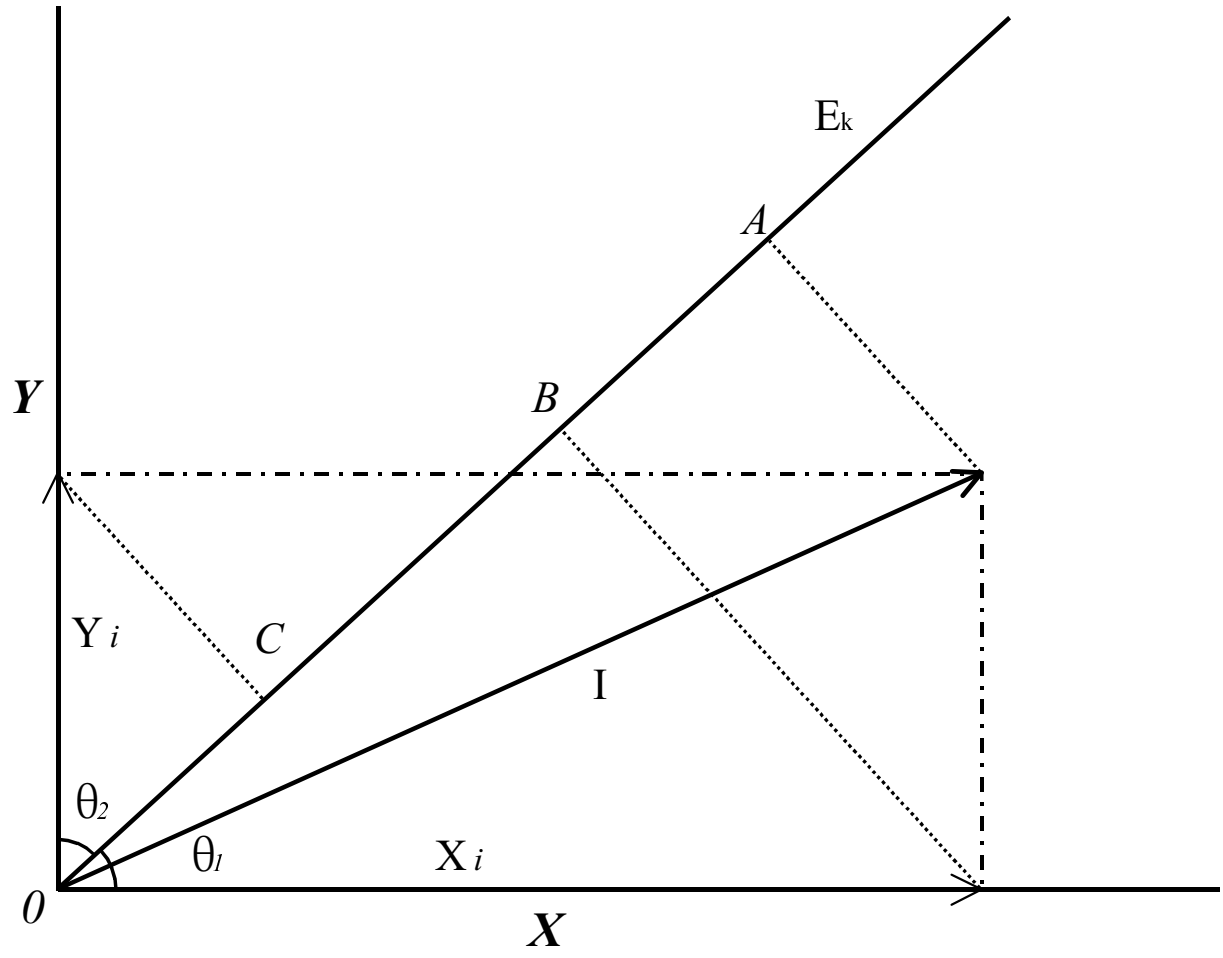

Fig. 7.3 The power vector I may be appraised by *K* either directly (*A0*) or by first decomposing it into two component vectors, Y_i and, X_i and then adding the appraisals of these two component vectors (*B0* + *C0*). Both produces the same result.

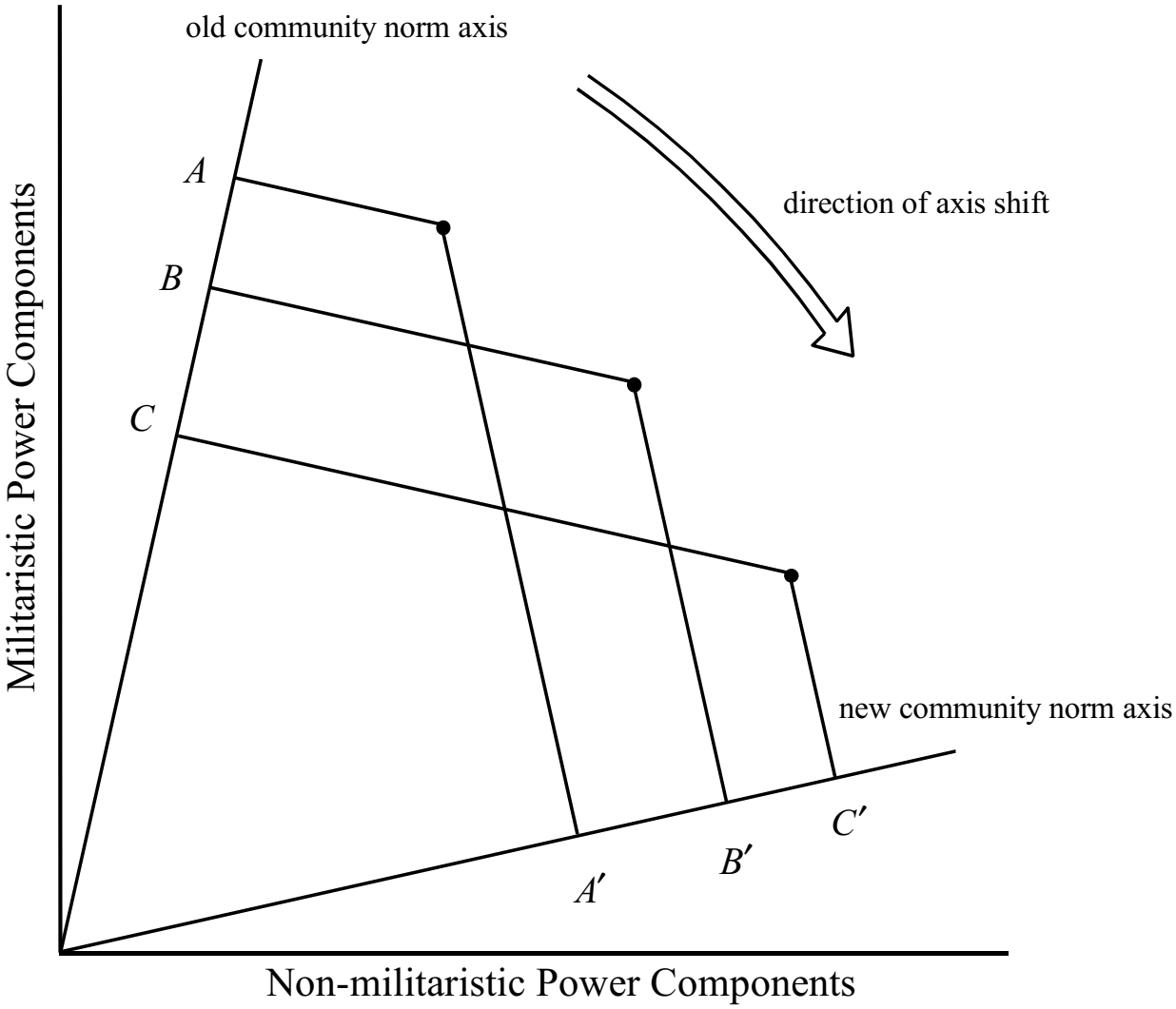

Fig. 7.4 As the community norm axis undergoes a rather drastic shift from the one that appraises highly the power components serving the community's military engagements to a new one that emphasizes non-militaristic power components, the order of social status of some of the residents of the community, like those represented by *A*, *B* and *C*, may be reversed by becoming *A'*, *B'*, and *C'*, respectively.

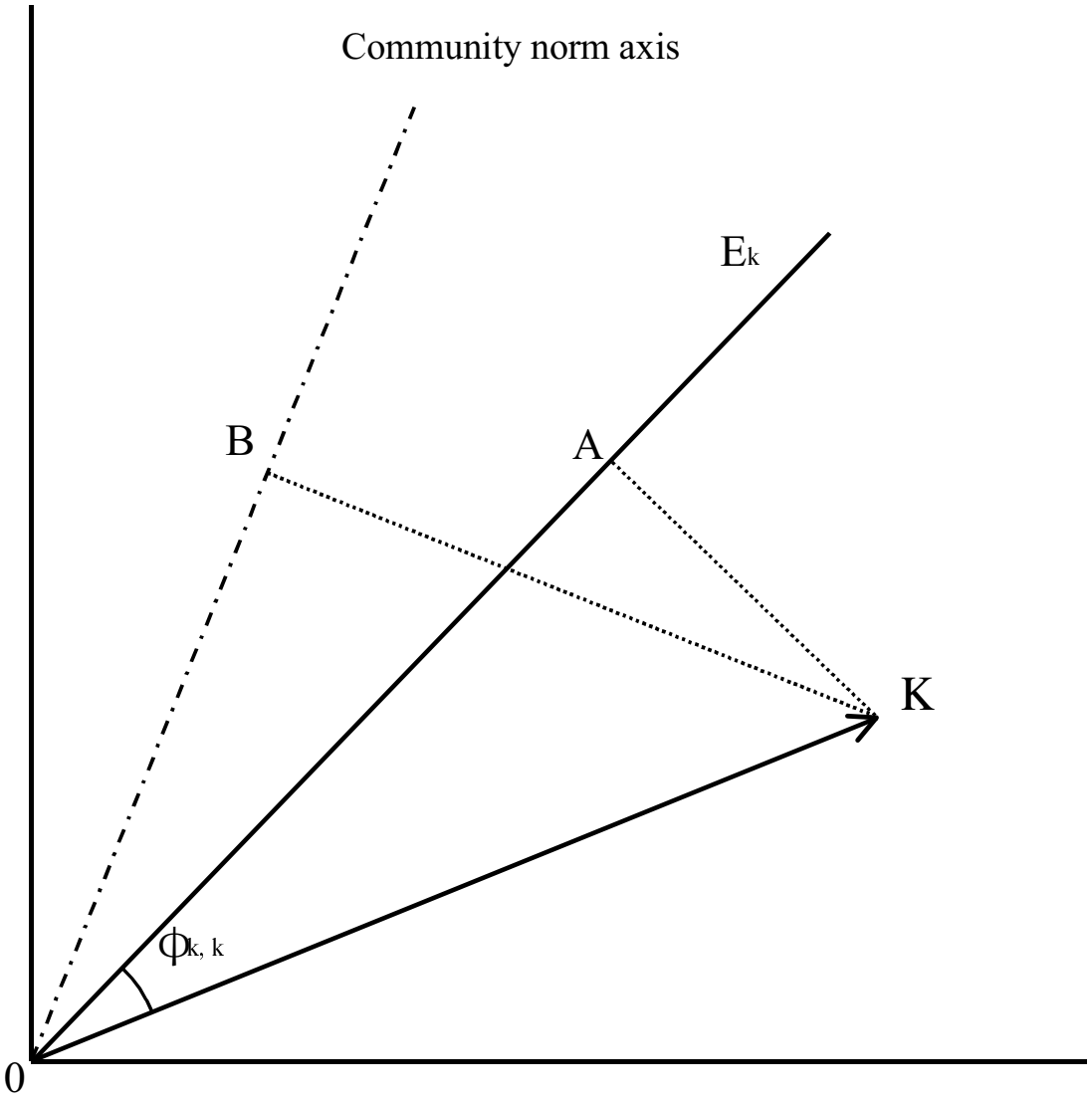

Fig. 7.5 One's self esteem, *0A*, is generally higher than one's social status, *0B*. Note that, given the power vector **K**, **K**'s self esteem will be maximized by setting E_k for $\phi_{k,k} = 0$.

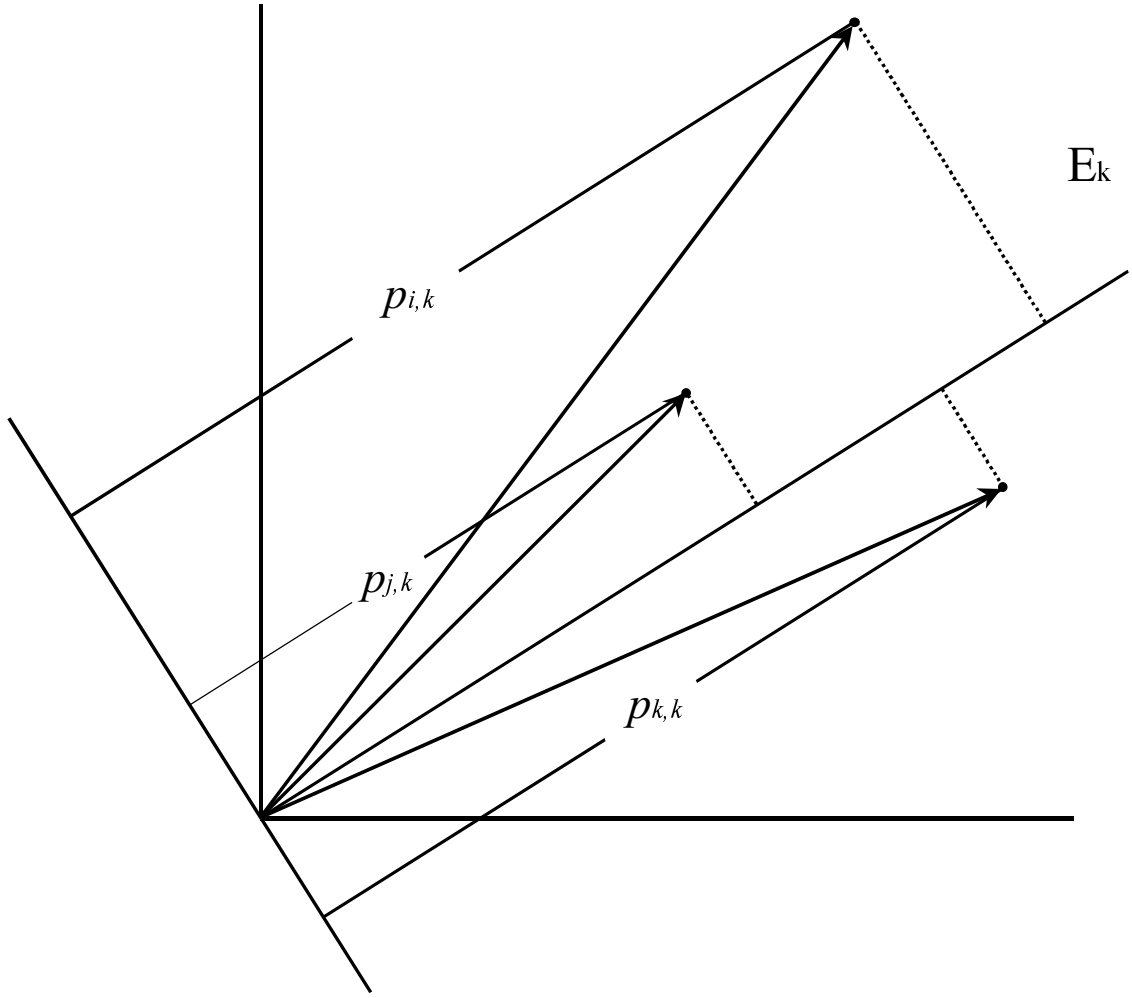

Fig. 7.6 Examples of K's self esteem and K's personally appraised status of two other persons, I and J.

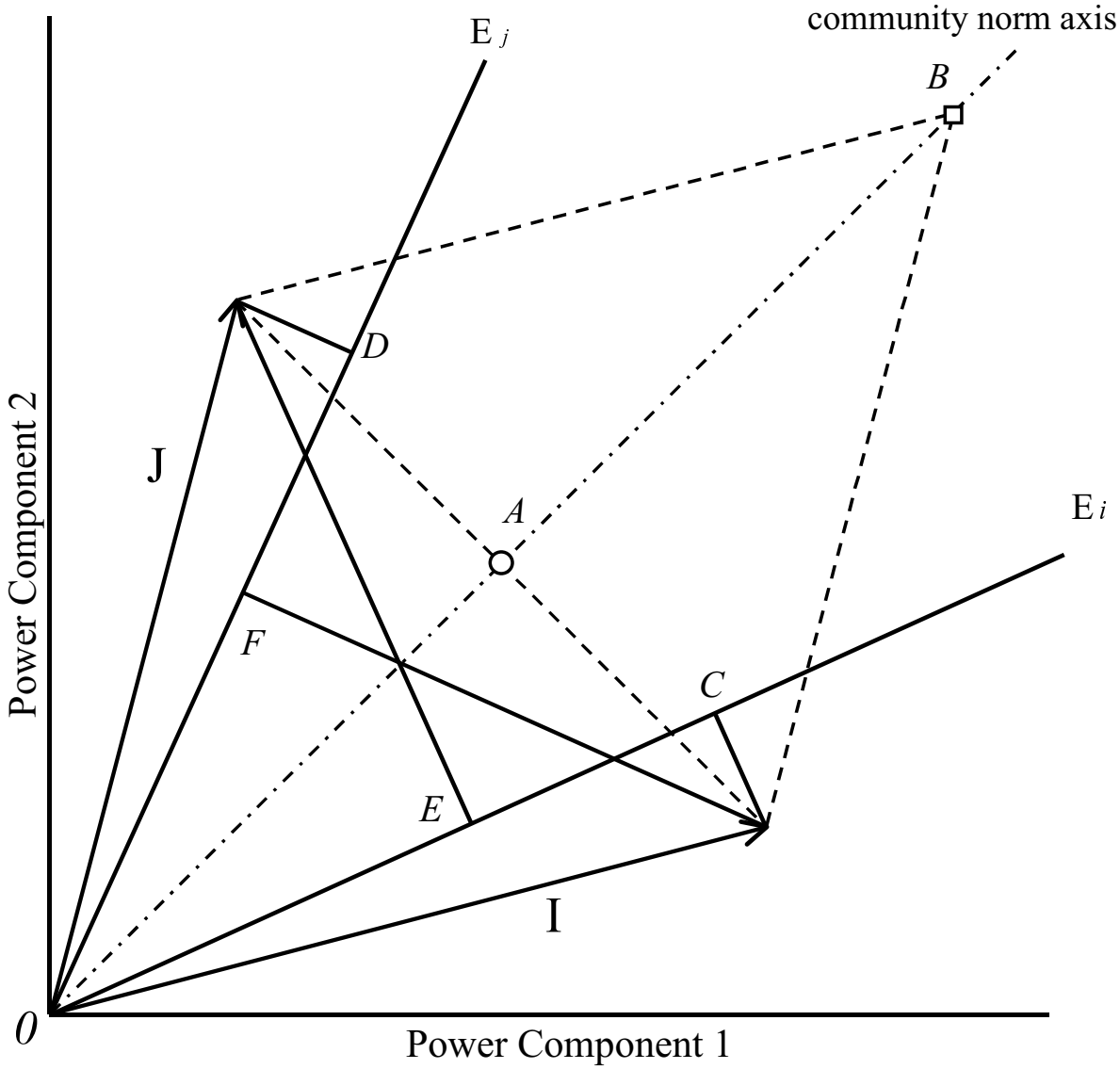

Fig. 7.7 I and J are nearly of the same social status (*0A*), but their respective major power components rest on different dimensions. If each of their personal appraisal axis runs relatively close to the person's own power vector, it happen that they both hold contempt toward each other. Note that each of their self esteems, *0C* and *0D*, is larger than the person's personally appraised status of the other, *0E* and *0F*, respectively.

Such a pair of persons, I and J, need not, always be in conflict, however. They may form a close coalition or an alliance, and the coalitional power may go as large as represented by *0B*.

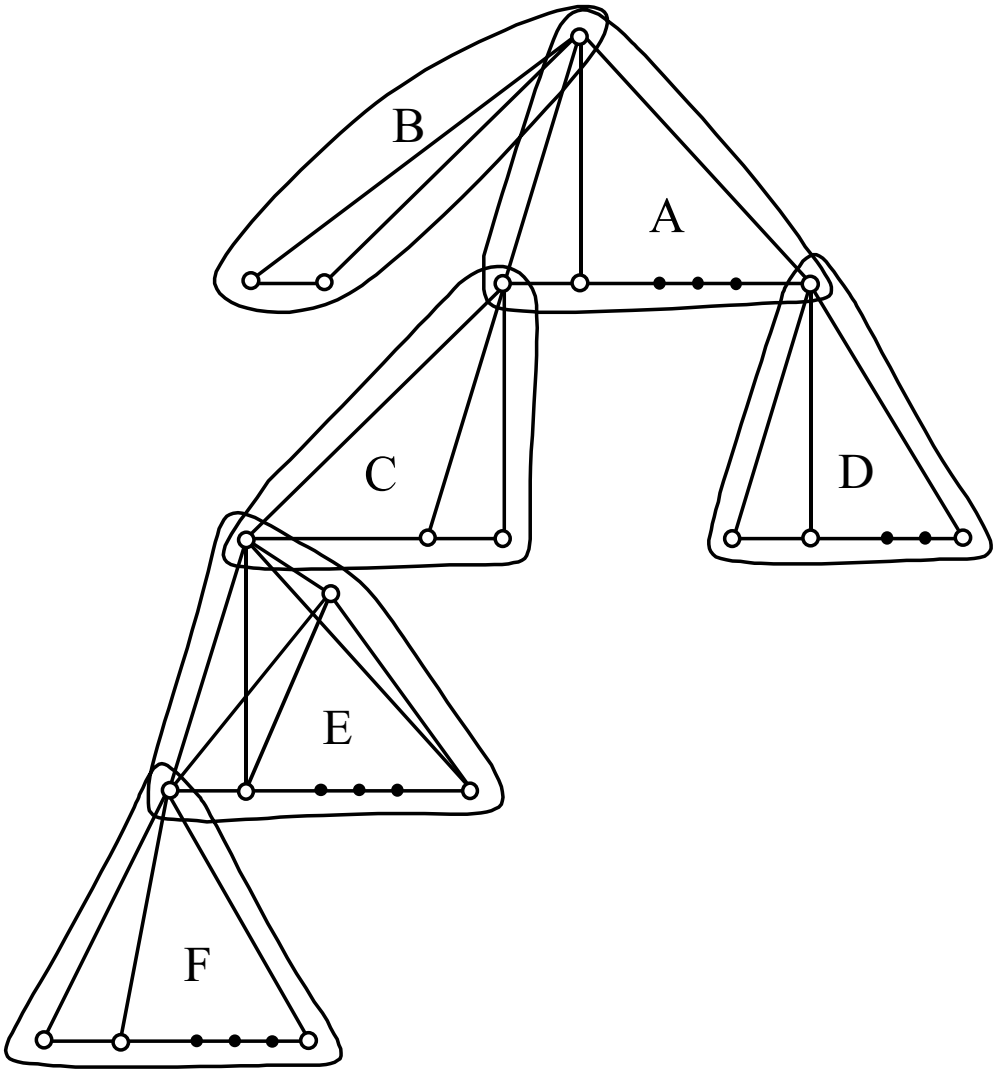

Fig. 7.8 A partial representation of a relatively large hierarchical artificial coalition. Hollow circles signify posts, and each line segment connecting circles indicates the presence of a direct interaction channel between the occupants of the connected posts. Circumscribed areas represent sectors. All posts within a sector are generally connected, although commands may run along these channels only in the direction from higher posts to lower. Interactions between persons whose posts are not connected by a direct interaction channel is either prohibited or at least frowned as a breach of the taboo against unauthorized interaction.

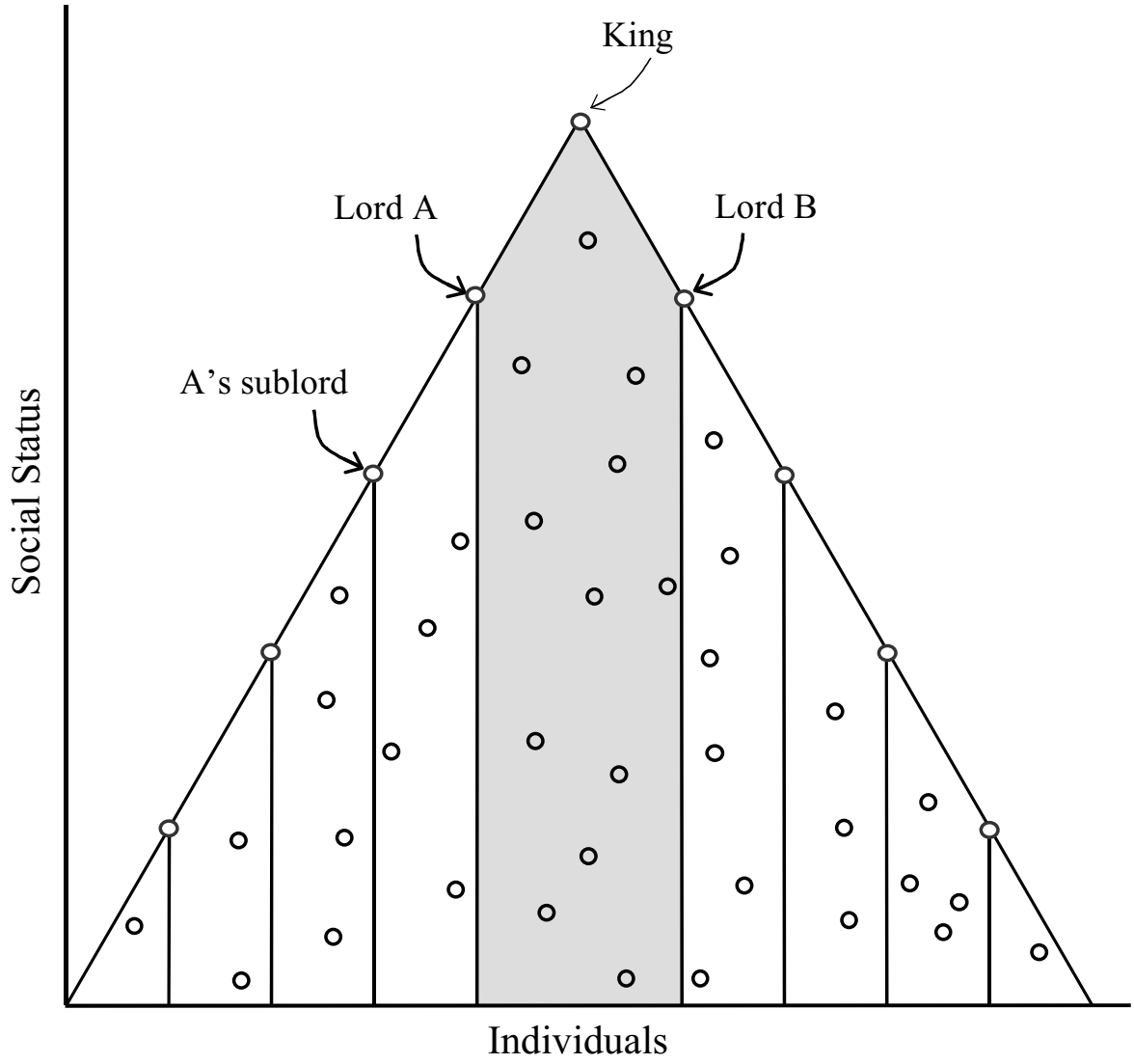

Fig. 7.9 A simplified schematic representation of the 'house system' popularly employed in feudal and semi-feudal times. Every triangular segment to be found in this figure represents a 'house,' and the apex of each triangle represents the head of that house. Small circles indicate that there are individuals of various status within houses. When the apex of the whole triangle represents a 'king,' the whole triangle may represent the governing body of the com munity headed by the king, but the king's control extends only over the central column (the gr ay area) which is the king's house in a narrow sense, as well as over the heads of other major houses, the 'lords' *A* and *B* in this figure, allied to support the king.