Amity and Enmity

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Two Archetypes of Social Existence

An Interdisciplinary Study

III

Rudolf Starkermann

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Content

Foreword

Volume III is a collection of topics expressing fundamental psychosocial behavior in mathematical terms in addition to those already presented in Volumes I and II. The endeavor is again not to create a new science, but merely to prove that daily selfevident occurrences can be explained with mathematical means, saying that they are bound to natural laws.

By looking with open-mindedness into our daily doings we can - concerning the survival strategies - observe a close relation between our own psychosocial behavior and the animal world:

Amity is friendship with the purpose of supporting each other within the clan, for the preservation of oneself and for the clan's subsistence.

Enmity, on the contrary, is the intention to exploit, or to conquer, or even to eliminate other beings by increasing the potential of existence of firstly oneself and secondly of one's clan.

Speed and power are the two fundamental driving factors in both situations, in amity and enmity, within the direct environment.

In order to preserve one's environment, amity and enmity can be extended from the family size to fellow citizens of a cultural, or a political, or a religious circle. Such extensions generally happen if destructive danger for the own environment is anticipated or is already existing.

However, there is a tremendous ramification into finer and more subtle interpretations and characteristics of such basic statements as there are *speed* and *power.* Although some refinements were found that can be formulated mathematically such as *anticipation, perseverance, different magnitudes of feedback control, and of feedcross features between beings,* one has to be aware that only small interacting systems with only a few parameters can be investigated without losing comprehension. Or larger systems have to be monotonously structured with reduced parametric

combinations. Otherwise the diversification becomes overwhelming. Very interconnected systems become immediately so numerous in their different characteristics that our brain reaches its limits in trying to evaluate their behavior. It can be observed, for example, that in higher complexities, subsystems can become autistic and show an autonomous behavior. That is, they influence their environment but cannot be influence by the environment onto they have effect.

Every reader is aware that such differentiated characteristics we try to formulate mathematically in our journey through amity and enmity cannot yet be measured quantitatively. Our endeavor is based on a hypothesis originally derived from the purely technical world where calculation is not only possible but an unconditional necessity. This technical functional complexity that lead to our hypothesis is depicted in the Appendix III of Volume I.

In the technical world notions are clearly defined and their magnitudes can be measured. Not so in living creatures. The ability to put a scale on feelings, opinions or manners seems - for the time being - a horizon that cannot be reached and perhaps never will. This might be so because, whilst we work ourselves deeper into nature's phenomena, the evolutionary process continues.

The technical world, however, that provided us with our model, is not to be regarded as something apart from nature or even more apart from humanities where there are supposed to be souls and spirits, and where there are ethics and morality and even religious concepts with assured gods and angels. Nature knows no ethics, no morality, and there is neither spirit nor soul; there is matter that functions in time; and this functioning obeys unavoidably the appropriate natural laws. However, to find such natural laws is the very crux.

The technical and the biological research world can be considered as a continuation or extension of nature via man or as a low level of secondary evolution. Cloning might be one example of this doing.

Philosophers likely consider our views as pragmatic and for that reason vehemently reject such train of thought. But we hope to be on a down-to-earth track and think that our soul and spirit are merely a functioning of our body. Such functioning needs matter to house and carry out the function. And time is needed in order to transport the functioning information. But unfortunately time cannot be taken out of functioning matter, because these two phenomena cannot be separated from each other. And because we cannot store and not reproduce time, soul and spirit and also conscious awareness remain for the time being enigmatic. But we know that when functioning stops, spiritual systems turn over into biomass; the spirit and the soul and the whole social behavior vanish. Some biological characteristics of any being, however, will continue to live on if the bearer reproduced himself together with bearers of the same species before they both stop their immanent functioning.

Continuous functioning cannot be stopped in the state of living. If a being's heart stops, gravity takes it to the ground where it becomes food for another being. So far, we came to the contrary of the religious belief of an eternal soul.

Living beings have to fulfill two conditions encumbered by nature. They have to reproduce during the very short earthly „eternity" and afterwards they become food for other beings that go the same way to their *end*. Grass - we like correctly to believe - dies soulless. But so do we, the pride of creation, if this is the case with grass (eternity and endlessness, infinity and boundlessness reach beyond our imagination).

There is one world we live in with its one nature that includes everything that exists. It is as if there were, figuratively spoken with the terms of a simple mathematical fraction, one huge denominator - the total world - that hangs as a weight on the numerator of everything that happens. And this world-weight not only drags this numerator in a determined way, but also reduces its importance to almost nothing.

Although the world is incomprehensible for us, we should try to be open minded and not split the cosmos into small bits and parts so that they then can be perceived with the small size of our temporary and individual brains. And we should attempt not to limit our perspectives toward individual cultures and faculties that developed over centuries, where each one is fenced in within its own hedge. The individual faculty should not protect so greedily its own district and hunting ground and should not throw discriminating dirt over the fence into the garden of the other side - as this is extremely the case in religious beliefs these days - and always was.

We better should widen our dose of tolerance. But we don't - or perhaps we cannot or - perhaps nature does not want us to be able to? It seems that interdisciplinary thinking is still unattainable. Might be that we need another quantum of evolution in order to overcome the old Latin saying: *damnant quod non intelligunt*: they condemn what they do not understand.

Why is it so demanding, so difficult, to comprehend our reality in its enormous diversity? Reality is time functioning matter of which the course can be determined only with time functional knowledge. And this kind of knowledge must be described with cause-effect-cause events that happen on an uninterrupted time scale. Time is the central variable in the field of life. Applying time thinking requires dynamics. And dynamics is - unfortunately for utmost readers - an intrinsically mathematical subject. As time cannot be interrupted, in the same way life-functioning that is tethered to time, cannot become interrupted either - or it ends, as just described, in death.

It is extremely burdensome, and to any large extent an impossibility, to grasp the real world in its continuous acting. The enormous difficulty to grasp the mathematical description makes it a need to build and establish a symbolic world around the reality, so that some kind of understanding of what exists becomes possible on an elementary, but therefore very incomplete and most of all, irrational basis. From this standpoint of the impossibility to perceive real reality, the existence of humanities might be excused

and justifiable. But this kind of non-physical sciences remains at the very surface as a rather naive and floating, unreal formation.

There is no fight possible about natural laws, about reality, whereas in the humanities, in philosophies, in politics, in religions, wars can be fought about who is right and who knows better, who is a believer and who is a heretic. In the illusion to be able to avoid these wars we created gods who are omniscient and almighty in ruling. But this gods immediately took over the fighting with each other and, indeed, for our very purposes! We call their order *Holy Wars: Deus vult!* God wants it.

Thus, we dare to express in short - and in a somehow groggy manner - that the comprehension of the world around us is, in regard to an individual's perception, the composite of

a) his very personal knowledge combined with
b) his symbolic world that became established in the course of history and that was indoctrinated into him and absorbed by him to become his world view.

In other words, the day-to-day knowledge (a) amalgamated with the symbolic content (b) establishes a person's world within which he has to survive and fulfill nature´s duties.

We only have a limited number of senses with which we perceive the world and look at it, and a limited brain to operate in the space around us. This space is just a tiny part of the All. Therefore, we substitute reality by means of a symbolic language. The ignorance of functional phenomena becomes replaced by symbols, be they religious for one person, juridical for somebody else, humanistic or political for further humans - and fairy tales for little and adult children.

Marcel Proust said: *Any mental activity is easy if it need not take reality into account.* But to take reality functionally into account, *functionally* what it really is, is - in the very end - an impossibility.

A symbolic world that is unable to reach into the depth of reality is needed to be able to struggle through the enormously increasing complexities within which we live. As the mystery in its entirety remains incomprehensible for our brain's capacity, we are left fighting with the different interpretations of symbols.

Fighting renders credit for being hostile and engaging in wars - beside the naive surrogate of folded hands that pray for the world peace. Through our model we found the terrible truth that nature favors aggression. *Nous y violà!*

In order to attain matter-based functional knowledge, original concepts of nature have to be found and explored. This eager endeavor pushed us into what made up these three Volumes I to III called simply *An Interdisciplinary Study*. It's but a modest attempt to tap the laws of nature that once were - as they say *big-bang given*. Although we will never know reality sufficiently - in contrast to the symbolic world that gives the impression of knowing the world concept - our formalism, with which we calculated into the unconscious, brought us one small step further toward understanding our archetypal behavior.

As the fundamental model of a human's social behavior is the same in these three volumes, and as the structural togetherness of beings is repeated in its defined form, a detailed layout of our basic thinking is not repeated in this last volume. But each chapter is nevertheless kept in such a form that it can be read independently from other chapters. Keeping up this rule, it could not be avoided that many terms and definitions still are repeated.

A survey of the content is the following:

Chapter I: **Mobbing and Terrorism in Globalization**
The chapter has two foci. One of them stresses on the *destruction* of an opponent. This is fervent *enmity* as happens in *terrorism*. The second focus takes into account the *hyposensitive* and the *hypersensitive* individuals in a mobbing dualism. These

very different aspects of sensitivity are amalgamated into a dualism of two human beings.

Chapter II: **Spy or Die**
Two partners in a hostile partnership, being in a state of peace (called latent hostility), spy on each other before they engage in a war (called manifest hostility). The differences in the outcome of a blitzkrieg with no further spying on one hand and of a long war with continuing spaying on the other hand are scrutinized.

Chapter III: **If the Blockhead's Power Grows - To the Dogs the Clever goes**
How do two partners help each other or damage each other when they want to get along together or are forced to stay together by law, or by religion, or by free will? What happens to the more intellient and swift partner when the stupid and stubborn partner dominates? The superior partner - as we will see - will be finished off.

Chapter IV: **The Damage of Communication Intensity**
Multi-lateral dialogues are an increase of entropy. We look at the intensity of communication (weak, normal, intense); at three different patterns of communication (consentient, hostile, destructive) and calculate the damaging effect in regard to the attainments of the communicating parties. The mathematical visualization is supported by means of three-dimensional models of three interacting parties.

Chapter V: **The Lawyer Syndrome**
The chapter investigates the outcome of two parties in a lawsuit with two lawyers in connection. The stronger, or crafty, or corrupt lawyer wins the case, no matter which one of the clients is legally right. The fact is rooted in the commonly held belief that in lawsuits it is not necessarily the person who is in the right is the winner, but rather that the winner is the one who has the better lawyer.

Chapter VI: **The Church Syndrome**
The model represents the psychosocial relationship of clergyman and believer. It is another human play of reality and fiction where one wins and makes the other the loser. As reality cannot be perceived with our limited brain, the escape into belief of the incomprehensible is logical, but often with fatal consequences.

Chapter VII: **The Loop Game**
Life consists of an inconceivable web of continuously functioning, goal oriented cause-effect-cause events. Such events can be superficially described in the form of tightly interlocked loops. Our formalistic look into loop structures is no remedy and no solution for the non-comprehensibility of higher complexities. It is but a *visualization of the invisibility*.

Chapter VIII: **The Brain Formula**
A formula is derived by induction step by step to determine the total number of all loops in a generally interwoven, multi-variably controlled system. The formula reveals a measure of complexity. The consideration of this measure is of interest as it was found that the architectonic structure of the brain of mammals is very similar to the structure of technical, industrial or social, multiply controlled organizations.

I. Mobbing and Terrorism in Globalization

Introduction

In Volumes I and II the unconscious attitude-interaction was formed for two basic modes, a *consentient* one and a *hostile* one. A third mode, that was mentioned but not investigated, was called *destructive* or socially *pathological*. This third unconscious communication pattern is taken now as the focus of this chapter. In Figure I-1 destruction is denoted by $S_{12} < 0$ and $S_{21} < 0$. The attitude feed-cross information, exerted by either partner in a dualism that is incorporated in a negative sense into the loop-functioning of the receiving partner, results in a destructive, socially ill concept.

We remember:
Consentient interaction, or amity-behavior, is characterized by $S_{12} < 0$ and $S_{21} > 0$ or $S_{12} > 0$ and $S_{21} < 0$;
Hostile interaction, or enmity-behavior, is denoted as $S_{12} > 0$ and $S_{21} > 0$.

And now we add to these two forms the *destructive* interaction, or *terror-behavior*. It is formed with $S_{12} < 0$ and $S_{21} < 0$. To call this terror-behavior *pathological* is not really adequate, because destructive behavior is - as history illustrates - as common in consentient and in hostile togetherness.

The procedure that led to the definition of these three concepts, amity, enmity and terrorism, happened indeed in a backward procedure. That is to say that originally we looked at the individual goal attainments of the partners in a dualism and defined the corresponding unconscious structure accordingly. We mean: If two partners are helping each other in their individual goal striving process, then the corresponding structure was defined as amity or *consent*. This is the case when $S_{12} < 0$ and $S_{21} > 0$ or $S_{12} > 0$ and $S_{21} < 0$. If on the other hand the two partners damage each other mutually, the corresponding structure was defined as enmity or *hostility*. This is the case when $S_{12} > 0$ and $S_{21} > 0$. And morbid and macabre lust to destroy each other occurs if $S_{12} < 0$ and

$S_{21} < 0$. Morbid fervor to destroy can be called *terror-behavior* in our contemporary time. This situation occurs when $S_{12} < 0$ and $S_{21} < 0$.

But - and not to forget - our philosophy is based on *loop-thinking.* Fundamentally, the loop phenomenon requires the two paths via S_{12} and S_{21} to form the interconnectedness. But in addition, all parts of the dualism come into play and not only the two factors S_{12} and S_{21}. Nonetheless, the two crossover variables, d_2S_{12} and d_1S_{21} in Figure I-1 are domineering the three characteristic outcomes of the togetherness.

This backward procedure is as follows. The goal attainments of the partners for a certain concept of S_{12} and S_{21} were compared with the goal attainment when the partners are in an autonomous state, i.e. when there is no interaction between them.

If the concept resulted in an increase of each others goal attainment compared to the state of no-interaction, we called this concept amity or consent. This was the case with either $S_{12} > 0$ and $S_{21} < 0$ or $S_{12} < 0$ and $S_{21} > 0$.

If the concept resulted in a decrease of each other' s goal attainment compared to the state of no-interaction, we called this concept enmity or hostility. This was the case with both, $S_{12} > 0$ and $S_{21} > 0$.

If now the concept of S_{12} and S_{21} results in a destructive goal attainment of the partners compared to the state of no-interaction, we call this concept destruction or terrorist-action. This is the case with both, $S_{12} < 0$ and $S_{21} < 0$.

Mutual goal damage is due to hostile and even more due to destructive interaction; mutual goal gain results in consentient interaction.

In all three cases it is assumed that the goals of the partners are not compatible. Each partner strives toward his own goal.

In the case of hostile structures in enmity, there is a dichotomy to be mentioned. Hostility has a positive outcome when goals of the partners are present and equally oriented, i.e., when both partners have the same goal they are striving toward. But the same unconscious structure deteriorates each other's goal attainment if the two goals are independent from each other, i.e., if each partner strives toward his own goal. The goals then are called incompatible.

Another dichotomy occurs in the case of destructive interaction. This is the case if the goals are antagonistic, i.e., if one partner wants the opposite, the negative, of the other partner, for example if each partner wants to kill the other but wants to survive. This is to say that a negative goal attainment (say $-x_y$) with the affiliated negatively set goal (say $-u_y$) makes the goal attainment positive because $-x_y/-u_y = +(x_y/u_y)$. If one has something negative in mind ($-u_v$) and the end becomes negative ($-x_y$), the result has a positive meaning, because one attains what one wanted. We must mention again that we operate with loop-thinking strategies. This fact clears up further down.

The three characteristic concepts depend in principal on the plus and minus signs of the attitude information transfers, i.e., on the signs of S_{12} and S_{21}. But as we have to deal with circular and interacting loops, we deal with d*eeper* meanings. Such a situation is formulated for example by the philosopher P. Cilliers [1] *In order to generate the meaning of a sign, not only that sign, but the whole system is involved - the meaning is distributed.* Such a philosophical verity is extremely helpful for our purpose.

At the end of this chapter we will show the structure with the highest potential we have found so far for dealing with a dualism; Figure I-9. Its complexity is already frightening. We must admit that our brain is structured for only simple life structures taking within the area we were born into. Our brain is not made to perceive higher complexities by just looking at them or by dealing with them with symbolic terms. There is, as an example, no way to perceive the full page of a book all at once. Not only do we have to break it

into sentences, we have to read it word after word, or even syllable by syllable, if it is written in a foreign language.

How, then, can we ever understand what is going to happen in the globalized world where there is interaction of hundreds of countries with their millions of people and their very different and constantly *changing* minds? No, we cannot, but nevertheless we can superficially observe:

Mobbing happens within small circles. This unpleasant phenomenon has always existed. It is an eruption of our archaic bellicose instinct to annoy and molest the weaker or more sensitive contemporary. Constant harassment can be enormously destructive for the victim.

Globalization on the other hand is new world megalomania. It promotes universal interaction that in turn arouses terrorism in a global expansion. When business interweaving becomes global, pretending for example to surmount poverty with global industrialization then negative facts come along too, and they will spread globally as well (e.g., poverty!). Globalization is headed to increasing the wealth of a few, and it will promote the poverty of billions - unless the rich people will have the mercy to decrease their greed for wealth and will fight their own wealth. What a pipe dream! Wealth for a few requires the poverty of many. Wealth is made possible through poverty. *For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath*; St Matthew 13/12.

If in the past different cultures, languages, religions were kept in local environments by enclosures in the form of national boundaries or geographic obstacles - like groups of different *animals* with their specific behavior inside their territory or hedges, globalization takes away all the boundaries and fences and consequently all sheep become the victim of wolves, all mice the victim of cats, the weak the victim of the strong and evil-mined.

We know that nature, for its own survival and for the sake of its further evolution favors aggression and hostility. The faster and the more prolifically a species reproduces, the higher is the probability for improvement by chance. Due to the purpose of improvement by chance we have an increasing population and over-population. And in hostility, in wars, in fighting, not in peace, beings become stronger and improve their skills for survival. Thus, terrorism will increase and flourish worldwide. Naive politicians who are obsessed of being able to replace terrorism by democracies and dialogues will die away before they realize that their goal is Utopian.

Globalization opens the way to mutual destruction on a large scale. Some institutions, foremost industries, benefit from such downfall because they will rob weak Peter - although not to pay strong Paul - but rather to build up their own wealth. The purpose of strong living being is to increase its own potential for survival. And the weak goes to the wall.

Foremost business people, industrialists, and politicians have very little knowledge, if any, about the dynamic interactions of the tremendous multifarious forms of life. They live in snapshot-concepts of daily, urgent problems to keep or increase their power. Hidden in their unconscious is the future perspective: *après moi le déluge!*

There is no doubt that nature favors aggression and destruction, because surviving requires ending another's life. And to take another's life guarantees one's own survival. Therefore, terrorism will grow; piracy will become a post-modern feature on a grand scale. The fight for territory and resources always was on, and the war for water resources is unfortunately just beginning to bloom.

In Chapter I of Volume II the modeling of the hyposensitive and the hypersensitive individuals were defined and their behavior investigated.

It was shown there that the unconscious awareness, that is the conscience, is responsible for one's own doing. This unconscious awareness is kept in the unconscious. Conscious awareness is given via the feedback control from the unconscious of the ongoing doing to the consciousness. The conscious comparison of the goal of self-realization in mind with this feedback signal over time as a continuous process provides the ongoing incompleteness a person feels. What a person aspires (his goal) minus what he has achieved is the incompleteness or deficiency. The result is fighting with willpower for improving the goal approach by reducing this deficiency. In plane words the willpower is fighting for more power and more wealth.

The hyposensitive individual can also be called a megalomaniac (a social psychopath). He is out to do damage to fellow citizens without being able to recognize the harm he does. As well hyposensitive is the sadist. He is not only insensitive to the damage he provides, he enjoys doing harm. The hypersensitive, fainthearted person, on the other hand, is an individual that becomes endangered by shrinking his self-confidence. Thus, he becomes a victim of the arrogant burgher, of the megalomaniac.

In this Chapter I we apply these two psychological and socially extremely different individuals in a dualism forming two perspectives: (a) a **mobbing** gang in a milder form of damaging, (b) **terrorism** in the strong sense of full destruction.

The megalomaniac attacks the weak person or the weak institution for causing inconvenience, or for molesting, or to plunder for making ill-gotten gains, or even for simple destruction in an archaic aggressive urge. We human beings still carry inside our cranium the reptile brain of our forebears, because we still have to kill in order to feed ourselves and will do so, have to do so. Killing is belligerent behavior that strengthens survival strategies.

The Model

The structure Figure I-1 of the dualism is already well known by the reader. The time behavior of the two partners is indicated with the transfer functions F_1 to F_6. Partner P_1 is the **mobbing gang**, or the **terrorist**. He is made slightly faster than the victim, i.e., Partner P_2. The word *mob* has its origin in Latin: *mobile vulgus* = *excitable crowd.* It is therefore correct to make mobs and terrorists acting faster than their victims.

As mentioned, the destructive interaction is denoted with the two social attitude transfer factors $S_{12} < 0$ and $S_{21} < 0$. We repeat that $S_{12} > 0$ and $S_{21} < 0$ or vice versa ($S_{12} < 0$ and $S_{21} > 0$) are effecting the *amity*, that $S_{12} > 0$ and $S_{21} > 0$ is responsible for *hostility*, and now that $S_{12} < 0$ and $S_{21} < 0$ result in *attrition*, a psycho-social ruining.

Keeping in mind that in dealing with complex systems it is not just the signs of its components - as S_{12} and S_{21} being larger or smaller than zero - that determine the behavior of a system. It is the whole system in which signs are embedded. The value of a sign enters its loop where it has its effect and the effect becomes transferred into other loops with which interaction occurs.

As previously remarked, the effortlessness with which symbols can be made in ordinary language for the affairs of everyday life to formulate conditions and situations fade away when dealing with functional natural laws.

Referring to the model Figure I-1, when it comes to the qualification of the different structures in relation to the goals u_1 and u_2 the partners have set for each of them, the goals´ magnitude and their orientation come into play as well. It is of an utmost importance whether the partners´ goals are independent, collateral, or antagonistic. Additional factors come in with their effect, i.e., the whole system becomes responsible for any outcome.

We know from former chapters that it is the *product* of the two factors (S_{12}) and (S_{21}) that determines mainly the characteristic

behavior of the partnership. This product $S_{12}S_{21}$ appears in the characteristic equation of the dualism, and it is this equation that determines predominantly the system's behavior. The individual attainments of the partners, however, depend on the character of the individuals *and* the S_{12} - and S_{21} -magnitudes with their signs, plus or minus, respectively.

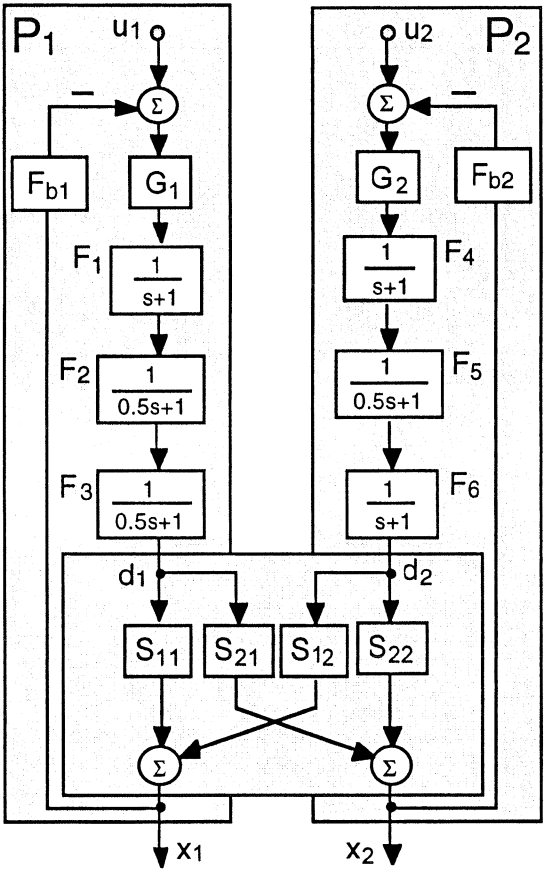

Figure I-1: Structure of the model.

The symbolic character of the system Figure I-1 is given with equation (I-1).

$$(1-F_1F_2F_3G_1S_{11}F_{b1})(1-F_4F_5F_6G_2S_{22}F_{b2}) - F_1F_2F_3F_4F_5F_6G_1G_2F_{b1}F_{b2}S_{12}S_{21} = 0 \qquad (I-1)$$

It becomes obvious that looking at Figure I-1 or at equation (I-1) the character of the dualism cannot be revealed despite its simple structure. Already at this point it can be presumed that terrorizing or bullying of, say, P_2 can be eliminated only by getting rid of the terrorist P_1. If this cannot be done due to human rights or other means, suffering is the only remedy, because the assumption that the weak person P_2 will be able to get rid of the strong P_1 by killing him is an absurd fantasy. *The weak always goes to the wall*, if there is no intervention from outside, from a third party. Without the helping interference by a third and forcible, authoritative party, the aggressive, hostile party always wins. That David conquered Goliath might be a pleasant fairytale.

The goal attainment (steady state), i.e., the result of the attacked P_2, x_2/u_2, is described with equation (I-2). Similarly, the goal attainment x_1/u_1 of the hostile gang P_1 is to be received by changing adequately the indices in the formulae (I-2).

$$\frac{x_2}{u_2} = \frac{S_{21}}{|D|}G_1u_1 + \frac{S_{22} - [S_{11}S_{22} - S_{12}S_{21}]G_1F_{b1}}{|D|}G_2u_2$$

$$|D| = (1-G_1S_{11}F_{b1})(1-G_2S_{22}F_{b2}) - G_1G_2F_{b1}F_{b2}S_{12}S_{21} \qquad (I-2)$$

The formula shows all the parameters that contribute to the success or ruin of P_2's goal attainment, i.e., his survival or death.

As the basic structure Figure I-1 is well known from former chapters, these introductory remarks can hopefully be regarded as sufficient.

The Investigation

In two sets of three figures each, the outcomes (goal attainments) of the two system partners are depicted. They are the high goal attainment of the terrorist, and the low goal attainment of the victim; low, due to the damage generated by the attacker.

With reference to the model Figure I-1 the three figures of the first set, Figures I-2, I-3, and I-4 contain the following data:

The parameters mentioned in the following two paragraphs, a) and b), stay the same in all these three figures I-2 to I-4.

a) The final goal attainments of the terrorist P_1 and of the victim P_2, i.e., x_1/u_1 and x_2/u_2, respectively.
There are two sets of goals for P_2, a1), and a2):
a1) $u_1 = u_2 = 1$ or 100%. Both, terrorist and victim have equal goal expectancies, which is equal prospect or equal endeavor for their success.
a2) $u_1 = 100\%$, and $u_2 = 50\%$. The goal magnitude of the victim is weak. The feeling for his life expectancy is reduced. Concerning loop-thinking, it means that his own outlook to reach his goal is small.

b) The variable is the willpower of the victim P_2, G_2. This willpower declines from as high as 8 down to zero, whereas the willpower of the attacker P_1, G_1, stays constant and high, i.e., at 8. The awareness factors (the feedback factors) of P_1 (F_{b1}) and of P_2 (F_{b2}) are the same, namely -1. (See Volume II, Chapter I)

c) The parameter that changes in the three figures is the effect the magnitude of the destructive intensity $S_{12}S_{21}$ has on the final attainments of the terrorist and of the victim, i.e., on x_1/u_1 and on x_2/u_2. This intensity varies in three steps: $S_{12} = S_{21} = -1$, -0.8, and -0.4. Thus, the three coupling factors $S_{12}S_{21}$ will be +1, +0.64, and +0.16. The results are depicted in the three figures:
Figure I-2, $S_{12} = S_{21} = -1.0$; $S_{12}S_{21} = +1$;
Figure I-3, $S_{12} = S_{21} = -0.8$: $S_{12}S_{21} = +0.64$;

Figure I-4, $S_{12} = S_{21} = -0.4$: $S_{12}S_{21} = +0.16$.

d) In a second series of three figures with the same parameters as noted in a) to c), Figures I-5, I-6, and I-7, the only parameter that changes is the awareness factor of P_2; F_{b2}, is -2 in this series. The factor F_{b2} of -2 compared to F_{b1} of -1 of P_1 renders the victim P_2 very sensitive compared to P_1's sensitivity. This higher sensitivity of the victim is set in regard of mobbing action. The mob generally chooses a weak and sensitive victim, a *soft* target, to inconvenience, and so do the terrorists. Does higher sensitivity help P_2 for better survival, i.e., for higher goal attainment compared to the former set of $F_{b2} = -1$?

These calculations a) to d) will be illustrated as steady state values, i.e., by disregarding the dynamic problem of stability, i.e., disregarding the transients from beginning of the action until the end, but assuming that the system remains stable all the way through the transient mobbing period up to the end. Stability means that the dualism stays goal oriented all the way through to the end damage.

e) In Figure I-8 the *awareness* factor of the hyposensitive terrorist (F_{b1}) becomes reduced from the feedback-value –1 up to zero. Plotted are the three values e1) to e3).
e1) his willpower G_1
e2) his goal attainment x_1/u_1, and
e3) the goal attainment of the victim, x_2/u_2.
This plotting is done with the hate-factors $S_{12} = S_{21} = -0.6$.
The dynamics of the two partners, i.e., F_1 to F_6, their time response will stay the same for different factors of the terrorist's awareness. In other words, Figure I-8 is taken at the **stability limit**. $G_2 = 2$. $u_1 = u_2 = 100\%$.

We will see that the terrorist can increase his willpower the lower his awareness factor is. That means that within the stable area of the dualism, less responsible a terrorist accounts for his doing, the greater his willpower can be with which he damages the victim. - This is an extremely important fact! In addition it has to be noted that a system has to be stable to operate efficiently. Therefore

even in the case of war between two partners the requirement of stability has to be satisfied. An instable system cannot reach its goal or goals, whatever the goal or goals might be: peace, war or flat hateful destruction. An instable system is no longer able to work toward its goals.

At the end of the chapter, Figure I-9 shows the dualism with all the characteristic features that can be modeled within our realm, including anticipation and enforcement (see Volume I, Appendix IV for Anticipation and Enforcement). This Figure I-9 has only an illustrative purpose, but it renders an idea of the complexity a social system has to face if only a few parameters have to be taken into account. - Models of the kind presented in our book can offer quite a firm grasp of the complexities we encounter in all branches of social life.

Table I-1 shows some data at the stability limit of the system Figure I-1.

Table I-1: Attainments at the stability limits. Variation of the feedback F_{b1} of the mobbing gang, and the attitude coupling. $S_{12} = S_{21}$. $u_1 = u_2 = +1$ or 100%.

	G_1	F_{b1}	G_2	F_{b2}	x_1%	x_2%	$S_{12} = S_{21}$
a)	5.48	-1	2	-2	33	-66	-1
b)	10.95	-0.5	2	-2	42	-172	-1
c)	21.9	-0.25	2	-2	47	-194	-1
d)	7.45	-1	2	-2	80	44	-0.6
e)	10.64	-0.7	2	-2	81	32	-0.6
f)	14.8	-0.5	2	-2	82	16	-0.6
g)	18.6	-0.4	2	-2	82	02	-0.6
h)	29.7	-0.25	2	-2	83	-40	-0.6
i)	74.45	-0.1	2	-2	83	-200	-0.6
k)	744.5	-0.01	2	-2	83	-2750	-0.6

The fact is: The lower the gang's awareness F_{b1} of his doing is, the higher the willpower G_1 for attacking can be. Terrorists who don't care about killing have a tremendous willpower available. Such power leads to receiving the laurel wreath of heroism on the grave for being a martyr - as far as a religious will of self-destruction (suicide bomb) is concerned.

In this table the product $G_1*|F_{b1}|$ is constant; it is 5.48 for a) till c), and so is the product $G_1*|F_{b1}| = 7.45$ constant for d) till k). The data d) to i) are plotted in Figure I-8. Concerning goal attainments of P_2, x_2%, only cases d) to f) can be considered realistic. In all cases a) to c) and g) to k), the victim P_2 cannot exist.

Discussion of the Findings

Figure I-2: This figure contains an interesting feature, although it is rather a singularity. The high hate-compound, S_{12}= -1, S_{21} = -1, $S_{12}S_{21}$ = +1, ends in self-destruction if both partners are equally strong ($G_1 = G_2$), dynamically equal, and equally oriented ($u_1 = u_2$). At this singularity point of full partner-equality where $G_1 = G_2 = 8$ and $u_1 = u_2 = 100\%$, the goal attainment of both partners is zero: $x_1/u_1 = x_2/u_2 = 0$. They destroy each other.

If P_2 is less powerful than P_1, P_1 gains attainment and P_2's attainment becomes negative. When G_2 becomes zero, P_1 makes +89% of his goal u_1, and P_2's attainment becomes -89% of his u_2. However, the question remains unanswered what a negative goal attainment in our model might mean socially. The interpretation might be that P_2 achieves the opposite of what the terrorist P_1 is after and what he, P_1, gets: the satisfaction of destroying. The interesting point, however, is the tendency toward self-destruction of both, of P_1 and P_2 if they exert equal strength and equal behavior. This fact is easily understandable: The variables, indicated as d_1 and d_2 in the model Figure I-1, are the same at any time. And consequently $S_{11}d_1+S_{12}d_2$ add up to 0, and so do $S_{22}d_2+S_{21}d_1$ ($S_{11} = S_{22} = +1$, and $S_{12} = S_{21} = -1$). Therefore $x_1 = x_2 = 0$; such simultaneity is an impossibility in daily life. It is a model's singularity. Nevertheless, concerning reality, it gives us a hint.

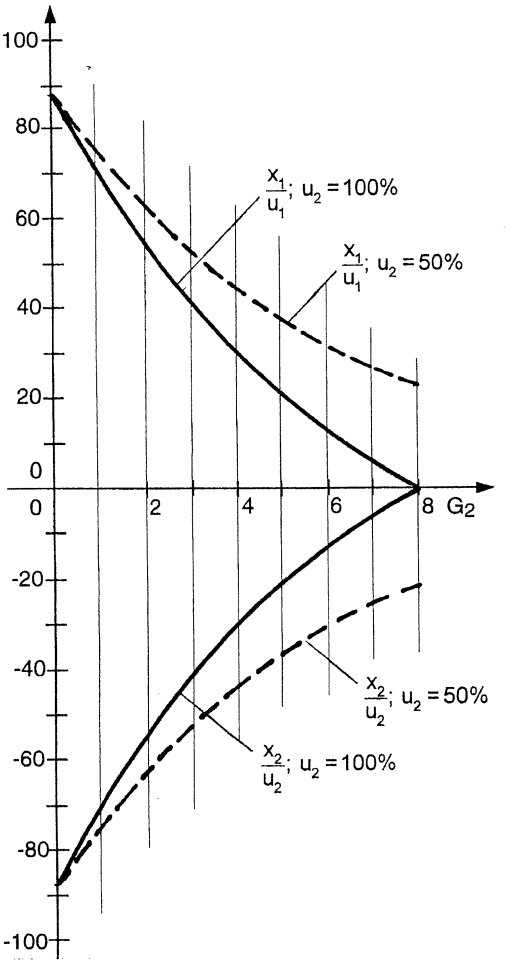

Figure I-2: Goal attainments of P_1 and P_2 at maximum hate magnitude of $S_{12}S_{21}$ = +1 (S_{12} = S_{21} = -1) with G_2 as variable. u_1 = 100%, u_2 = 100% and 50%. G_1 = 8; F_{b1} = F_{b2} = -1.

If the victim P_2 becomes weak in pursuing his goal u_2 (if u_2 is 50% only and no longer 100%) he turns further to the negative side of his goal endeavor. And what he loses, the adversary terrorist

gains correspondingly. This is depicted with the two dashed curves.

With $G_2 = 0$, we have the two facts
a: P_1 becomes autonomous: $x_1/u_1 = 89\%$, $[G_1/(G_1+1)]$, and
b: P_2's attainment x_2/u_2 becomes -89% through S_{21} of -1.

Figure I-3: Reducing the hate compound $S_{12}S_{21}$ from +1 down to +0.64 gives to P_2 already some chance to survive if he is strong in his willpower ($G_2 > 3.5$) and also in his goal endeavor, i.e., if his goal u_2 is as *strong* as the terrorist's goal u_1 of 100%. P_2's willpower cannot be below $G_2 = 3.5$ if we set a minimum goal attainment for the potential of survival of about 30% of u_2. This is indicated in the figure.

If in P_2's case the evaluation of his goal is weak (50% only), he is still bound to death. He will not survive. The weak goal prospect of P_2 of only 50% is for the benefit of P_1. The more considered or weaker or more modest P_2 is, the greater is P_1's success. This was already apparent in Figure I-2. In Figure I-3 at $G_2 = 0$, x_2/u_2 becomes -71% as formula (I-2) indicates with $x_2/u_2 = (S_{21}G_1u_1)/|D| = (-0.8*8*100\%)/9$.

Figure I-4: A rather substantial reduction of the hate-compound, from 1 down to 0.16 ($S_{12} = S_{21} = -0.4$), is needed to give the goal-weak P_2 the first chance to survive (at $u_2 = 50\%$). But P_2 needs a willpower of $G_2 > 4$ to save his duration. For P_1, however, it does not make much difference whether the goal of P_2 is 100% or 50% only, his attainment x_1/u_1 stays well over 80%; The strong P_1 wins, and we have the proverb: *The winner takes all!* At such a low hate factor of 0.16 we can talk more of mobbing rather than of terrorism. A terrorist is always ready to kill. His mind is housed in a belligerent frame.

The second series of three figures, Figures I-5, I-6, and I-7, has similar parameters but one as noted in a). The parameter that changes is the awareness factor of P_2, F_{b2}. It is now -2 instead of -1. Our victim P_2's awareness is made more sensitive about his situation in connection with the mobbing gang. Does this increased

sensitivity help him for better survival or better standing against the mobbing? For an easy comparison, all the other data and parameters shall stay the same as they are in the series of Figures I-2, I-3, and I-4.

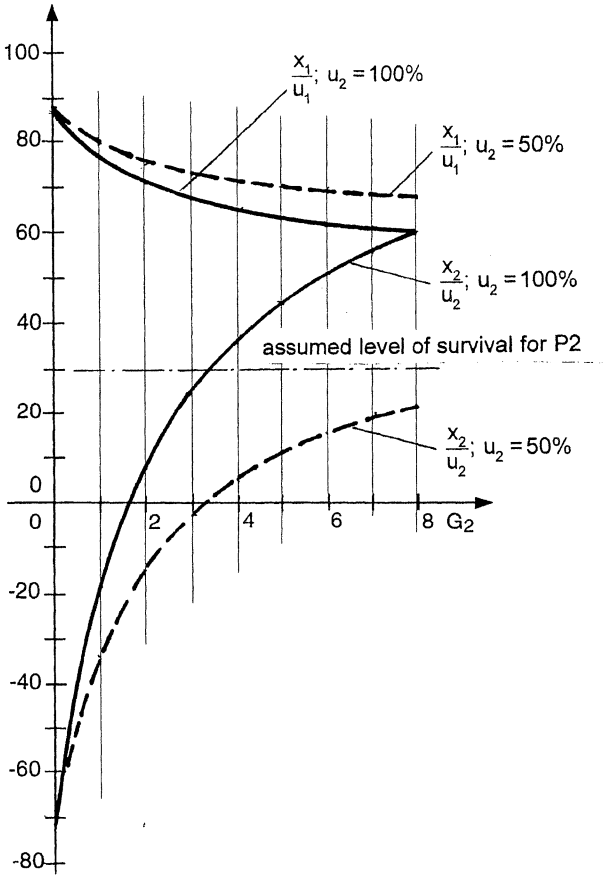

Figure I-3: Goal attainments of P_1 and P_2 with the hate factor of $S_{12}S_{21}$ = +0.64 (S_{12} = S_{21} = -0.8). G_2 is variable. u_1 = 100%, u_2 = 100% and 50%. G_1 = 8; F_{b1} = F_{b2} = -1.

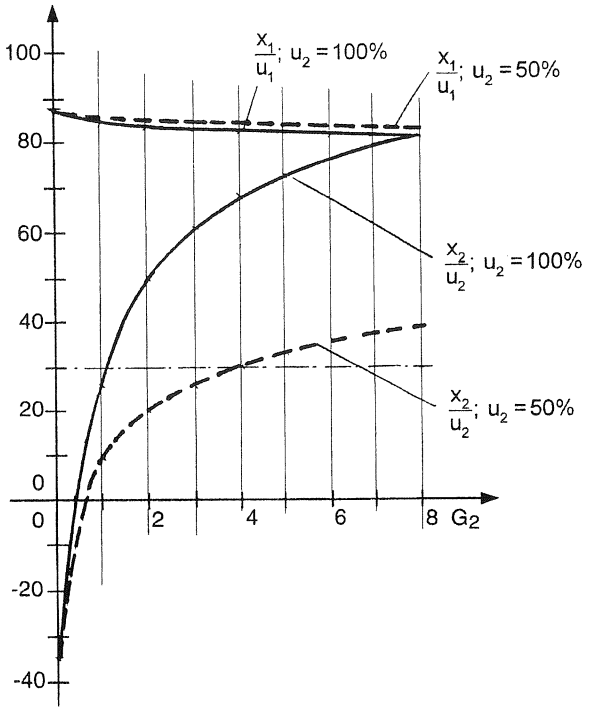

Figure I-4: Goal attainments of P_1 and P_2 with the hate factor of $S_{12}S_{21}$ = +0.16 (S_{12} = S_{21} = -0.4); G_2 is variable; u_1 = 100%, u_2 = 100% and 50%. G_1 = 8; F_{b1} = F_{b2} = -1.

Figure I-5: Compared to Figure I-2, the increased sensitivity of P_2 makes him suffer more. But not only has he to take a reduction of attainment (which is negative anyhow), P_1 also gains less of his goal u_1 that he is trying to reach. But the loss is not substantial.

Figures I-6 and I-7: On lower hate packages, P_2 makes some improvement and this in both of his goal expectations, on u_2 of 100% and of 50%. Comparing Figure I-3 with Figure I-6 and Figure I-4 with Figure I-7 it can be seen that the improvements for P_2 are not significant, although the awareness factor of P_2, F_{b2}, became

doubled in the second set. The survival process has not much clemency for sensitivity!

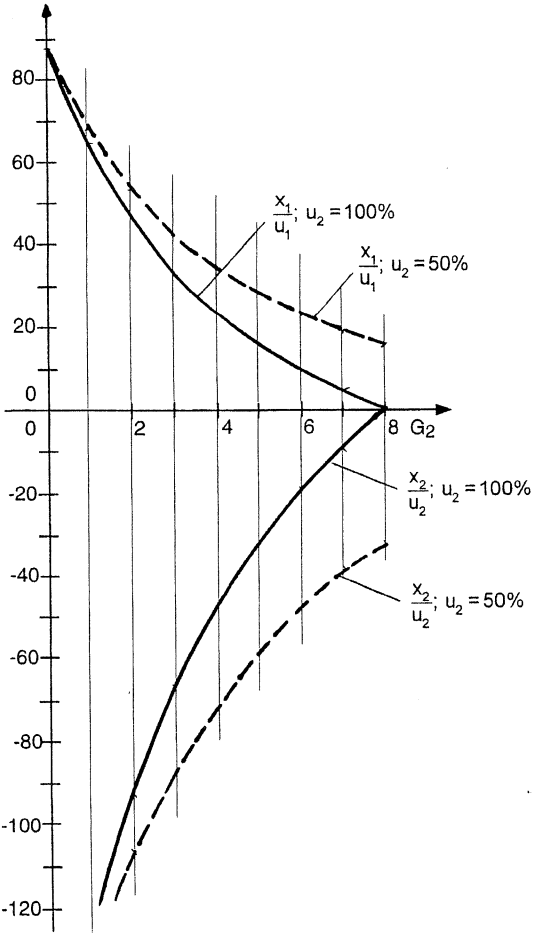

Figure I-5: Goal attainments of P_1 and P_2 at the maximum hate eruption of $S_{12}S_{21}$ = +1 with G_2 as variable; S_{12} = S_{21} = -1; u_1 = 100%, u_2 = 100% and 50%. G_1 = 8; F_{b1} = -1, and F_{b2} = -2.

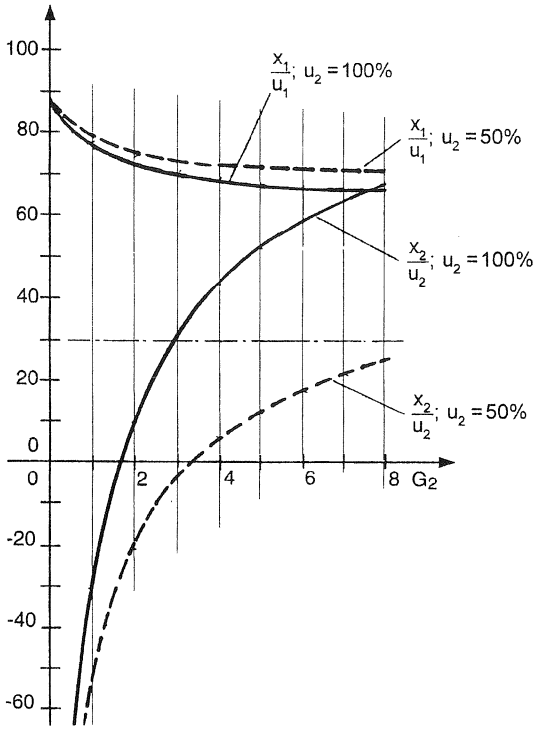

Figure I-6: Goal attainments of P_1 and P_2 with the hate factor of $S_{12}S_{21}$ = +0.64 with G_2 as variable; $S_{12} = S_{21}$ = -0.8; u_1 = 100%, u_2 = 100% and 50%. G_1 = 8; F_{b1} = -1, and F_{b2} = -2.

The picture Figure I-8 takes the time-behavior into account, i.e., the dynamics, the homeostasis. We reduce the awareness factor of the terrorist (F_{b1}) as a variable from the value 1 down to zero and plot some data at the stability limit of the system with the dynamics of Figure I-1. The time-behavior operates now within the proper stability domain.

The hate-transfer factors are $S_{12} = S_{21}$ = -0.6. Plotted are:

P_1's willpower G_1;

P_1's goal attainment x_1/u_1 with u_1 = 100%, and

the goal attainment of the victim P_2, x_2/u_2, with $u_2 = 100\%$;

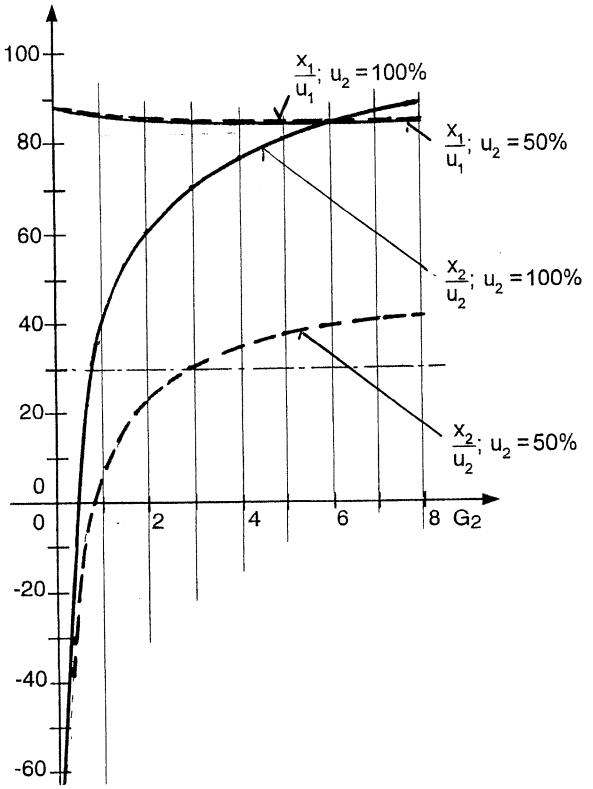

Figure I-7: Goal attainments of P_1 and P_2 with the hate factor of $S_{12}S_{21}$ = +0.16 with G_2 as variable; $S_{12} = S_{21}$ = -0.4; u_1 = 100%, u_2 = 100% and 50%. G_1 = 8; F_{b1} = -1, and F_{b2} = -2.

The dynamics of the two partners, i.e., F_1 to F_6, will stay the same for different factors of the terrorist's awareness F_{b1}. G_2 is kept constant at 2.

What comes to light? The willpower of the terrorist G_1 can increase the lower his awareness-factor F_{b1} is. That means, the

less sensitive a terrorist is, i.e., the less conscience he has about his doings, the greater his willpower can be - and in reality is - with which he damages his victim.

We know that a system has to be stable to operate in a goal-oriented manner. Therefore even a war situation between two partners has to satisfy the stability requirement. An instable system cannot reach its goal or goals, whatever that goal or goals might be: peace, war or flat hate-destruction. Therefore, basically any investigation of a complex dynamic structure must include the dimension of time; otherwise it is incomplete. Everything that is real does happen in time.

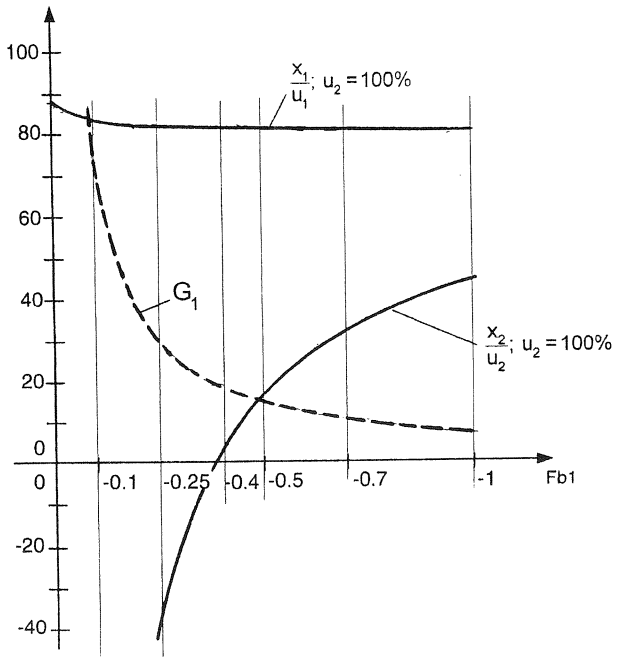

Figure I-8: The awareness factor of the terrorist (F_{b1}) as a variable. It changes from the value -1 to zero. Plotted are: P_1's willpower G_1; P_1's goal attainment x_1/u_1, and the goal attainment of the victim P_2, x_2/u_2. $u_1 = u_2 = 100\%$; $S_{12} = S_{21} = -0.6$; $S_{12}\, S_{21} = +0.36$; $G_2 = 2$.

Figure I-9 depicts the structure: of a dualism with all the behavioral characteristics that were taken into numerical consideration in the three Volumes, I, II, and III, - concerning a dualism. There are 24 parameters or variables that can be scrutinized. The figure has an illustrative meaning only.

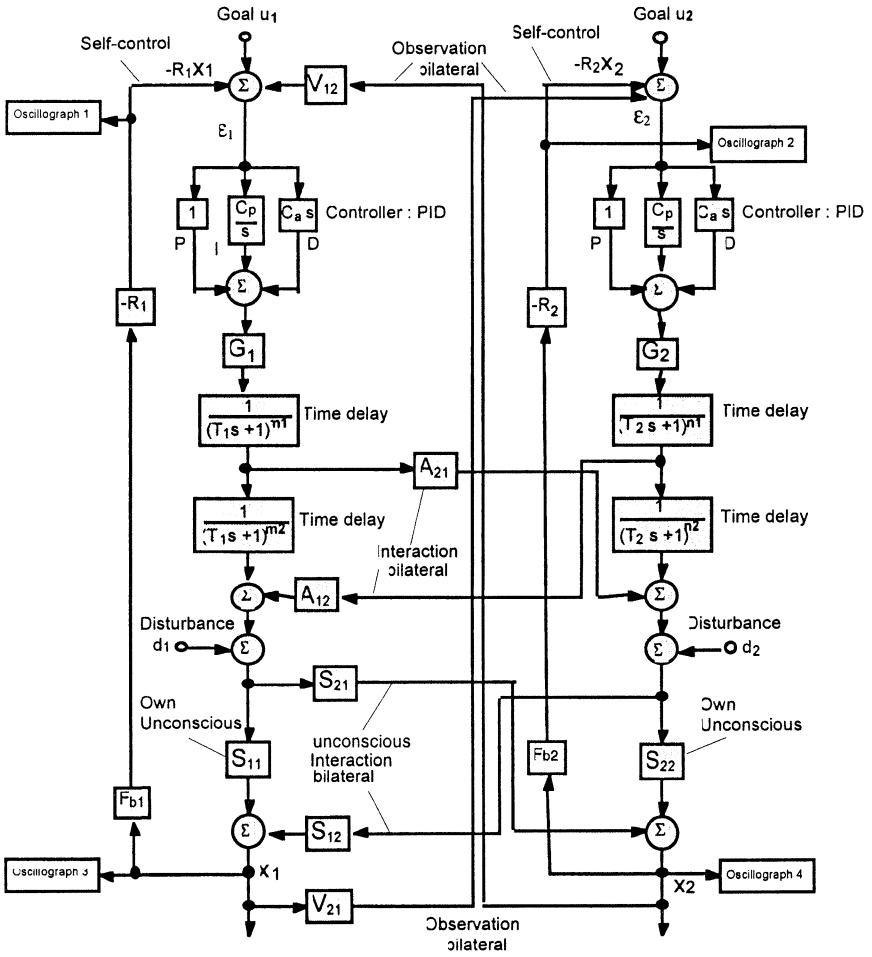

Figure I-9: The „complete" dualism.

Closing Remarks

The *mob* is generally used as a contemptuous designation of a lower social class or a lower person. Terrorism is the policy of using acts inspiring terror as a method of ruling or of conducting political opposition up to the destruction of the opponent.

The main topic of this investigation was to illustrate the extent the mobbed or terrorized victim will suffer. The weaker the sufferer is in his endeavor to struggle for his own welfare the more he will be affected.

Nature's interest is *citius, fortius, altius*, i.e., faster, higher, stronger. These three characteristics culminate in aggression. And aggression leads to hostility and destruction. Therefore we can say with certainty that destruction of the weak party within a species is indeed foreseen on our planet. However, unilateral surrender could be a road to temporary peace. But the road can only be walked if the counterpart accepts surrender. Hélas, this counterpart´s archaic genes act in his unconscious. And those genes there do not want to be weak and agree on surrendering.

II. Spy or Die!

(Pro Memorial Niccolò Machiavelli)

Introduction

The assumption is made that two parties are linked together to a hostile partnership. The parties come to know of each other's action and they incorporate this information into their own actions: they spy on each other. The espionage toward each other is carried out to improve their own goal attainment. Three modes are investigated: no spying, one–sided spying, and two–sided spying. At a certain point the hostility that was kept in a hidden state – defined as latent hostility or as state of peace – becomes manifest as a state of war - defined as manifest hostility. It is of interest to what extent the two parties can damage or even destroy each other as a function of the starting position into war that each one holds at the end of the latent phase. In one case the manifestation happens as a blitzkrieg where there is no time for further espionage; in the other case the manifestation happens as a long war with continuous spying activity.

The Structure

This chapter has the same structural background as Chapter VII of Volume II: A Trilogy of Hostility. In Chapter VII of Volume II, however, there is no war after spying, whereas here the two parties set eyes on each other with secret agents and finally go at each other in the form of either a blitzkrieg or a lasting war. The structure of the essay is the following:

Firstly, the mathematical–psychosocial model of the single party is very briefly repeated. Secondly, two parties are interconnected to a latent hostility without spying. Thirdly, a mutual spying activity is added. The state of peace is considered to be latent hostility with spying activity. The intensity of hostility and the intensity of spying activity are variables. Three different spying situations will be investigated:

a) two–sided or mutual spying,
b) one–sided spying,
c) two-sided spying with false information given to one side.

The criteria of the investigation are the goal attainments of the parties, i.e. it is of importance to what extent in every case each party reaches its goal – and simultaneously to what extent it damages itself and how much it damages the other's goal attainment - this in both cases, in hostility without spying, and in hostility with added spying.

In the period of latent hostility, that is the time of preparing for war, called peace, it is assumed that the goals of the parties are independent from each other. Each party strives toward its own aim or realization. In the manifest phase that follows, i.e., in the hostile manifestation in the form of quarrel or war, the goals are assumed to be antagonistic to each other, i.e. each party wants to survive and destroy the other.

The results that will be found are in short:

a) In mutually equal levels of spying activity and equal power, the positions at the end of the latent phase, that is the end state of peace, and at the end of war are different, but the same for both parties.

b) In mutually equal espionage activities but different powers there is a significant advantage for the party that exerts a higher power. This is the case at the starting stage as well at the end state of war.

c) In one–sided spying activity but equal power, there is an advantage for the party that spies. The advantage is evident at the starting and at the end position.

d) In one-sided spy activity and at different magnitudes of power, where the spying party has higher power than the party on which it spies, the situation for the non-spying partner becomes hopeless.

e) In mutually equal levels of spying activities where one partner receives false information, it shows that the party that gave false information shall go into a blitzkrieg in order not to provide to the other party the opportunity to compensate for the spying deficiency through a lasting war.

The Model of the Single Party

An individual party is characterized by the fact that it has one and only one goal toward which it strives in a continuous manner. At any instant, this goal becomes the party's self–realization. Self-realization is survival. A party can be considered to be an individual, or a one–goal oriented group, or also a whole nation that pursues its national goal and, thus, the realization of its existence. A party has a certain behavioral volition or power, this is the will to realize itself, i.e., a capability to strive toward its goal. In addition, a party consists of dynamics; it has a particular speed of action. It needs time to act. All these facts are well known by the reader at that state.

Part of the party's final activity is revealed into the environment, that means what it does in order to come closer to its goal can partially be observed by the environment.

The party has self-control because it knows at every instant its proximity concerning its goal. Its endeavor is to come closer and closer to its goal although disturbances constantly occur that tend to increase the distance from the goal. These disturbances originate with the other party or in the further environment.

Collecting the above notions in a mathematical frame results in a closed functional loop where each effect generates a cause, which in turn, results in a new effect. The model is constructed in such a way that the party can become unstable because of too extensive in exerting power and/or because of the dynamics (mainly a delay) of its action. An instable organization is no longer able to behave in a goal–oriented manner. It is, therefore, unconditional that the individual party – as well as later the

communicating dual system – remains within a stable area during a goal–seeking process. The individual party is described in more detail in Volume I.

The Model of the Dual Partnership

The structure of the dualism is illustrated with Figure II-1. The same figure can be found in Chapter VII, Volume II. The two parties are denoted as P_1 and P_2. The goals u_1 and u_2 signify the goals of self-realization of the parties as a constantly present aim.

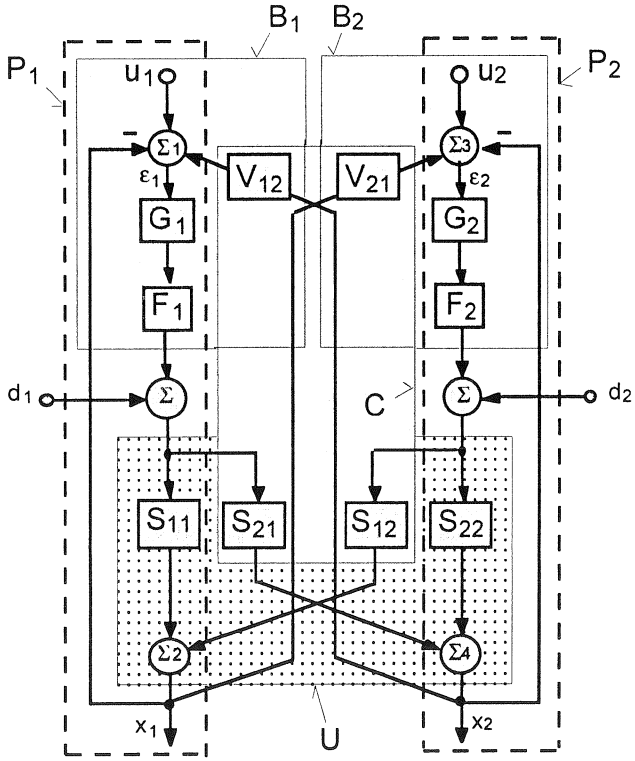

Figure II-1: The generalized model of the dual partnership P_1 and P_2 with espionage action.

Captions for Figure II-1:

P_1, P_2	Partners P_1 and P_2;
u_1, u_2	Set goals, intended self–realization;
G_1, G_2	Factors of willpower for self–realization;
F_1, F_2	Transfer functions of the inherent dynamic characteristics; $F_1 = \frac{1}{\prod_{i=1}^{m_1}(T_{1i}s+1)}$; $F_2 = \frac{1}{\prod_{k=1}^{n_1}(T_{2k}s+1)}$;
T_{1i}, T_{2k}	Time constants of delay;
m_1, n_1	Number of delay elements of first order in series;
x_1, x_2	The moment-to-moment goal variables;
x_1/u_1, x_2/u_2	Goal attainments;
S_{11}, S_{22}	Transfer factors of the own unconscious information;
S_{12}, S_{21}	Transfer factors of the unconscious hostile information, the bellicose attitude;
V_{12}, V_{21}	Transfer factors of mutual spying observation;
B_1, B_2	Conscious, or rational part of the parties;
C	Communication block;
U	Unconscious domain of the partnership.

The factors G_1 and G_2 are the magnitudes of the willpowers of the parties with which they strive toward their goals. The parameters m_1 and n_1, and T_{1i} and T_{2k} determine the speed of action, the dynamics and the psycho–social association of thinking resulting in action; in other words, the flexibility The smaller the exponents m and n are and the smaller the time constants T_{1i}, and T_{2k} are, the greater is the speed of the parties' activities.

The variables S_{12} and S_{21} are the factors with which the irrational hostile attitude becomes laterally transferred, i.e., intensified or diminished by the adversary. Hostility is information that penetrates into the opponent party or is perceived by it. It is the belligerent attitude of the two enemies that they harbor toward each other. The factors V_{12} and V_{21} signify the measure of the intensity of the mutual observation, the amount of spying. It is a matter of fact and it is modeled in this way that irrational information, that is the hostile

attitude, represented by S_{12} and S_{21}, originates inside the units P_1 and P_2, whereas the information, transferred by V_{12} and V_{21}, comes from information that is released into the outside, into the environment; this information is the actual state variables x_1 and x_2. The more carelessly a party demonstrates its doing, the easier it is for the opponent to collect the spied for information and to make use of it for its own preparation for war.

The values S_{12}, S_{21}, V_{12} and V_{21} as well as the values F_1, F_2, S_{11} and S_{22} are in principle time dependent. Yet, in order to remain within a reasonable frame of comprehension we restrict our consideration on steady state end vales, that is with $s = 0$, or $t = \infty$ in both, in F_1 and F_2.

Disturbances entering the partnership - as this can occur through further interconnectedness with the environment - are indicated in Figure II-1 with d_1 and d_2 but not considered herein.

The Investigation

As the speed of action of the parties is not taken into account (in F_1 and F_2, $s = 0$), the values of the calculated goal attainments are steady state values. These values are attained mathematically after a time span of infinite length. But supposing that both parties have equal dynamic behavior and that the time of acting from beginning to the end of the phase of operation is about tenfold the time constants T in Figure II-1, and that the system is dampened on its way to their goals, i.e., reasonably stable, then the steady state values are suitably relevant for a consideration of a limited length of time instead of an infinite time span.

Mainly two different goal-setting cases shall be investigated:

a) Mutually belligerent attitude in the state of peace, called latent hostility.
The goals u_1 and u_2 are independent from each other. Each party is an independent unit concerning its own self–realization. Each one is concerned with its own welfare. This can be a state

without espionage but there will be irrational or latent hostility. Under this circumstance of independent goals, u_1 does not influence P_2's efforts and vice versa: u_2 does not influence P_1's efforts. For u_1, $u_2 = 0$; for u_2, $u_1 = 0$.

b) Mutually belligerent attitude in the state of war, called manifest hostility.
In this situation P_1 wants to destroy P_2, and P_2 intends to destroy P_1. Hence, the goals are *antagonistic* toward each other: $u_1 = -u_2$ or $u_2 = -u_1$. Each party wants the opposite for the other party of what that party wants for itself. The situation is typically: *What is one man's meat is another man's poison.*

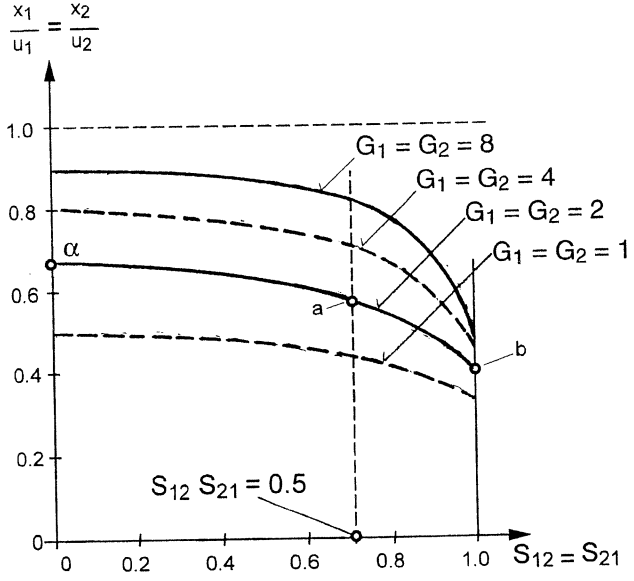

Figure II-2: Goal attainments $x_1/u_1 = x_2/u_2$ at mutual hostility. Parity of willpowers; $V_{12} = V_{21} = 0$.

Figures II-2 and II-3: These two figures demonstrate with no espionage yet an introduction to the topic. They demonstrate what hostility basically means. It is unconscious mutual attitude of

hostility or of hate of each other. In Figure II-2 there is parity of willpowers, in Figure II-3 there is imparity of willpowers. There is no espionage yet: $V_{12} = V_{21} = 0$.

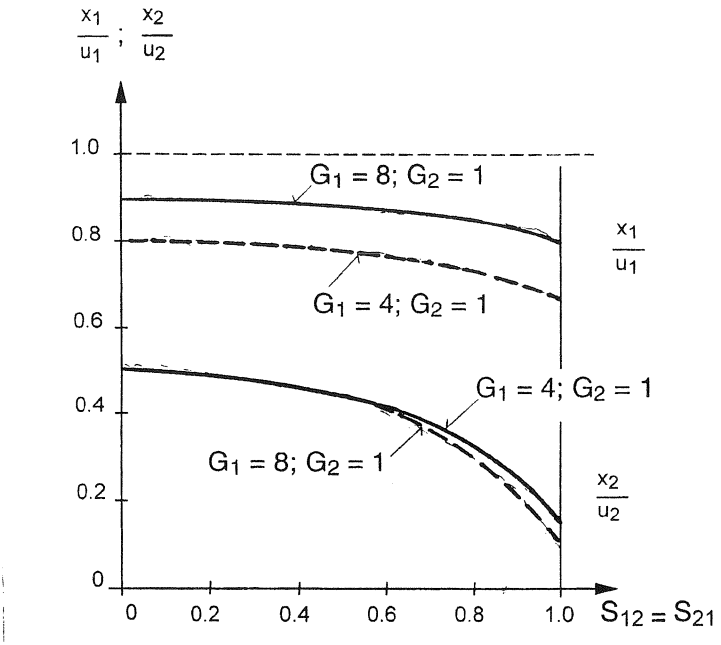

Figure II-3: Goal attainments $x_1/u_1 = x_2/u_2$ at imparity of willpowers; $V_{12} = V_{21} = 0$.

Remarks to Figure II-2: The larger the willpowers ($G_1 = G_2$) of the parties are for their self-realization, the larger is the mutual damage on both, x_1/u_1 and x_2/u_2, with increasing hostile attitude $S_{12}S_{21}$. The product of S_{12} and S_{21} is the measure of hostility. The derivative of x/u, formula (IV-1),

$$\frac{d\left(\frac{x}{u}\right)}{d(S_{12} = S_{21})} \qquad \text{(II-1)}$$

is larger negative at larger $G_1 = G_2$. Growing hostility results in a growing distance from one's goal $x_1/u_1 = 1$ and $x_2/u_2 = 1$, respectively. On the other hand it can be seen that the goal attainments come closer to the value $x_1/u_1 = x_2/u_2 = 1$ or 100% if the power of the parties is grater. $x/u = 1$ or $x = u$ means that the full amount of what is wanted can be achieved (a self-evident fact).

Remarks to Figure II-3: The two curves for the parameters $G_1 = 8$, $G_2 = 1$, and for the variables x_1/u_1 and x_2/u_2 show – compared with Figure II-2 – that the party with more willpower, P_1, suffers relatively little damage, whereas the weak one, P_2, is in a distinctively bad situation. If P_1 has less volition ($G_1 = 4$ instead of 8), it damages P_2 to a slightly smaller degree. P_2, the party of lower power, already has, compared with P_1, a considerably less favorable starting position, i.e., the position when there is no hostility yet ($S_{12}S_{21} = 0$). This is so, because P_2's striving for self-realization, i.e., G_2, is substantially smaller than that of P_1, namely G_1. The less power a party exerts for reaching its goal, less it achieves this goal.

An interesting fact is that even at unlimited but equal willpowers ($G_1 = G_2 = \infty$) and in hostility of $S_{12}S_{21} = 1$, i.e., at strong hostile attitude, the highest goal attainments, x_1/u_1 and x_2/u_2, are only 0.5 (or 50%). This is not shown in the two figures. Even at highest willpowers, both damage each other down to half of the desired amount of attainment. In autonomy (i.e., if there is no hostility) and at $G = \infty$, the goal attainment is 100%. Hostility costs energy, time and money, values that could be used for a better goal ending if there were no animosity. Hostility produces enormous damage!

It has to be mentioned that the attainments, x_1/u_1 and x_2/u_2, do not depend on the individual factors S_{12} and S_{21}, but only on the product $S_{12}S_{21}$. Hostility needs a partner in order to become realized and to manifest it: *It takes two to make a quarrel.* That S_{12} and S_{21} form a couple in the character of the dualism can easily be seen in the characteristic equation (II-2) when V_{12} and V_{21} are still zero:

$$1+G_1F_1S_{11}+G_2F_2S_{22}+G_1G_2F_1F_2S_{11}S_{22}-G_1G_2F_1F_2S_{12}S_{21}$$
$$-G_1F_1S_{21}V_{12}-G_2F_2S_{12}V_{21}$$
$$-G_1G_2F_1F_2S_{11}S_{22}V_{12}V_{21}+G_1G_2F_1F_2S_{12}S_{21}V_{12}V_{21}=0 \qquad (II-2)$$

Figure II-4 illustrates the advantage of espionage once the position without espionage has been damaged by latent hostility whilst goals were independent. The values for the starting position, when espionage begins, can be taken from Figure II-2. There it can be seen that for $G_1 = G_2 = 2$ and for $S_{12}S_{21} = 0$, i.e., no hostility yet, the goal attainments for both parties are $x_1/u_1 = x_2/u_2 = 0.67$ or 67% (point α).

With low hostility of $S_{12}S_{21} = 0.5$ ($S_{12} = S_{21} = \sqrt{0.5} \approx 0.71$) the goal attainments are $x_1/u_1 = x_2/u_2 = 0.57 = 57\%$; in Figure II-2 and Figure II-4, point a. With strong hostility ($S_{12}S_{21} = 1$, $S_{12} = S_{21} = 1$) the goal attainments are $x_1/u_1 = x_2/u_2 = 0.4 = 40\%$ only; in Figure II-2 and Figure II-4, point b.

With increasing observation V_{12} and V_{21}, i.e., increasing spying activity, the benefit can easily be seen – if the goals u_1 and u_2 are still independent from each other. Independent goals exist in latent hostility, i.e., in the period of peace. The smaller the latent hostility and the more spying activity there is the higher are the goal attainments the two parties.

If then through manifest hostility, that is by quarrel or war, the goals become antagonistic by $u_1/u_2 = -1$. It becomes clear that spying activity helps to mutually damage each other. The damage increases with the intensity of the spying activity. At a high level of manifest hostility ($S_{12}S_{21} = 1$) the mutual damage is total ($x_1/u_1 = x_2/u_2 = 0$) at any amount of spying action.

The mutual damage is radical for both parties of equal willpowers if the irrational or unconscious hostility is of a high magnitude. The two parties kill each other.

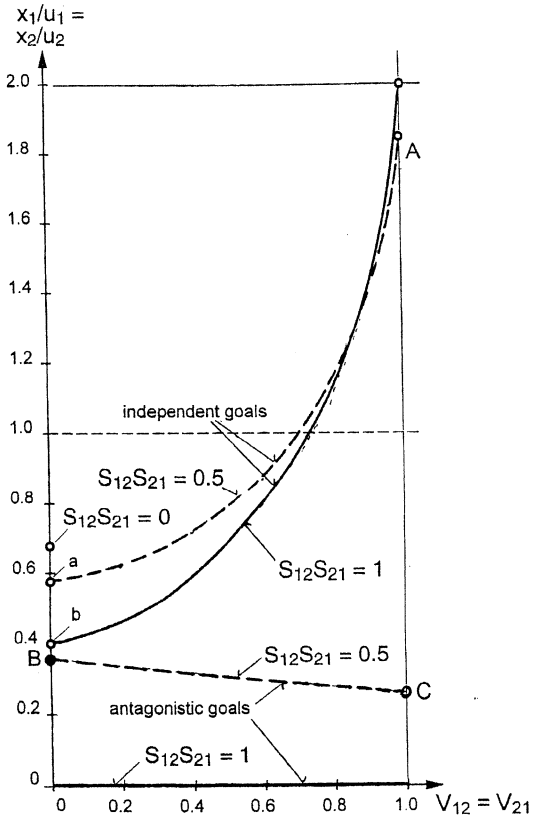

Figure II-4: Mutual espionage at latent and manifest hostility. Equal willpowers of the parties, $G_1 = G_2 = 2$. Parity of espionage, $V_{12} = V_{21}$. Hostility with two parameters. Independent and antagonistic goals.

The spying intensity of $V_{12} = V_{21} = 1$ has to be considered as an absolute maximum, because under this circumstance, 100% of what a party achieves (x_1 and x_2, respectively), can be observed by the opponent. More than $V_{12} = 1$ and $V_{21} = 1$, that is 100%, cannot be reached. In reality V_{12} and V_{21} are smaller than 1.

The end of the latent phase of hostile attitude is the end of the state of peace (during which the parties spied on each other and armed themselves and through such activity damaged each other economically (before the shooting). This is the start of manifest hostility, of war. This start is the beginning of either a blitzkrieg or a long war. In a blitzkrieg – it is assumed – that there is no time left for further espionage, whereas in a long war, the espionage continues.

It is possible for the disadvantaged party to make up for its deficient defense in a long war. In a blitzkrieg the time constants T_{1i}, T_{1j}, T_{2k} and T_{2l} can become drastically reduced to a time length of almost zero. During a long war it is quite possible that the system's parameters can change. For example the party of lower willpower can, when its life is at stake, through increased effort, augment its willpower, its effort. In this presented consideration, however, parameters defined within a phase remain unchanged.

It is assumed now that at the end of the latent hostility of $S_{12}S_{21}$ = 0.5 and $V_{12} = V_{21} = 1$ – this is point A in Figure II-4 – the goal attainment of $x_1/u_1 = x_2/u_2 = 1.84$ or 184% is the beginning of a state of antagonistic goals. The war starts. Then, in the case of a blitzkrieg (espionage is no longer possible, $V_{12} = V_{21} = 0$) 0.375 or 37.5% (point B) can be realized of 184%. In a long war (with espionage $V_{12}V_{21} = 1$) only 16% (point C) can be achieved of 184%. In a long war with continuing espionage, the goal attainment is, therefore, much smaller than the goal attainment in a blitzkrieg where there was no longer any espionage possible. Therefore, the following situation for $S_{12}S_{21} = 0.5$ occurs:

– Goals are independent:
End state of P_1's and P_2's attainments at $S_{12}S_{21} = 0.5$ in the state of peace and with mutual espionage = 184% (point A).

– Goals are antagonistic:
P_1's and P_2's attainments after a blitzkrieg: 1,84x0.375 (AxB) = 0.69 or 69%.
P_1's and P_2's attainments after a long war:1.84x0.26 (AxC) = 0.48 or 48%.

A blitzkrieg means less damage, less destruction, than a long lasting war. *A bold attack is half the battle.*

As each goal attainment is individually calculated from the basis 1, or 100%, sequential goal attainments have to be multiplied with each other!

The tremendous increase of goal attainments in the latent war phase with increasing spaying indicates the mutual animation of the two parties to prepare for war. To be afraid of each other makes one to arm oneself. The Latin saying describes that well: *Qui desiderat pacem, praeparet bellum:* If you want peace, prepare for war. But what is true too: *La guerre nourrit la guerre,* before it becomes manifest or during a long war! If hostility is extremely strong, $S_{12}S_{21} = 1$, the goal attainments for the parties become zero: mutual elimination; Figure II-4; $S_{12}S_{21} = 1$ at antagonistic goals.

Figure II-5: In this case we assume that there is a *one–sided* espionage only: P_1 spies on P_2, but not P_2 on P_1. Although this situation rarely occurs in a national situation, it happens very often in partnerships of two individuals. One partner (perhaps a jealous one) spies on his/her companion, whereas the other partner, in a state of naïveté, believes in the good of mankind and mistakenly projects this goodness-belief onto her/his partner where it does not exist – or she/he has no possibility of reaching the material which serves for espionage. The result is that the partner P_2, who does not spy during the latent phase of hostility will be left behind, and the one who spies gains advantage over his/her companion.

Before we set the parameters to this case, there is a consideration needed of the coupling factor $S_{12}S_{21}$.

When there is espionage within the dualism, the two attitude factors S_{12} and S_{21} do not appear as a product anymore only, but they separate and connect individually with spying action. This can be seen in the denominator of the description of the two goal attainments of P_1 and P_2, equations (II-3) (in the steady state situation, that is with $F_1 = F_2 = 1$), or in the characteristic equation

(II-2) with the terms $S_{21}V_{12}$ and $S_{12}V_{21}$). As usual, we set $S_{11} = S_{22} = 1$ as done in former chapters in Volumes I and II. The goal attainments of the two partners can be described with equations (II-3).

Further assumptions are: As she, P_2, does not spy on P_1 (we take *her* as P_2-partner, the supposition is justified that she is lower in her willpower than he, P_1. Therefore, G_2 be 1, G_1 be 3. Assuming that the non-spying partner P_2 is less hostile and therefore sends less hostile attitude information toward him, P_1, S_{12} be 0.5, whereas S_{21} be 1. Because we have no espionage from P_2 on P_1, the spying factor V_{21} is zero. The spaying factor V_{12} is kept as a variable. Equations (II-3) becomes reduced to equations (II-4):

$$\frac{x_1}{u_1} = \frac{\begin{vmatrix} 1 & G_2S_{12} - G_1V_{12} \\ S_{21} & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix} G_1 + \begin{vmatrix} S_{12} & G_2S_{12} - G_1V_{12} \\ 1 & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix} G_2 \frac{u_2}{u_1}}{\begin{vmatrix} 1+G_1 - G_2S_{12}V_{21} & G_2S_{12} - G_1V_{12} \\ G_1S_{21} - G_2V_{21} & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix}}$$

$$\frac{x_2}{u_2} = \frac{\begin{vmatrix} 1+G_1 - G_2S_{12}V_{21} & 1 \\ G_1S_{21} - G_2V_{21} & S_{21} \end{vmatrix} G_1 \frac{u_1}{u_2} + \begin{vmatrix} 1+G_1 - G_2S_{12}V_{21} & S_{12} \\ G_1S_{21} - G_2V_{21} & 1 \end{vmatrix} G_2}{\begin{vmatrix} 1+G_1 - G_2S_{12}V_{21} & G_2S_{12} - G_1V_{12} \\ G_1S_{21} - G_2V_{21} & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix}}$$

(II-3)

It is to be remembered that for independent goal attainments the opposite goal does not exist. For the calculation of x_1/u_1, $u_1 = 1$, $u_2 = 0$; for x_2/u_2, $u_2 = 1$, u_1 is set to 0.

During the independent phase of latent antagonism even the partner with a low hostility attitude of $S_{12} = 0.5$ gains some augmentation in her attainment x_2/u_2. That the spying partner P_1 stays ahead with his x_1/u_1 can be expected. Espionage is his asset. With $V_{12} = 1$ he reaches an attainment of 1.27% (point A'), whereas P_2 makes only 72% (point A").

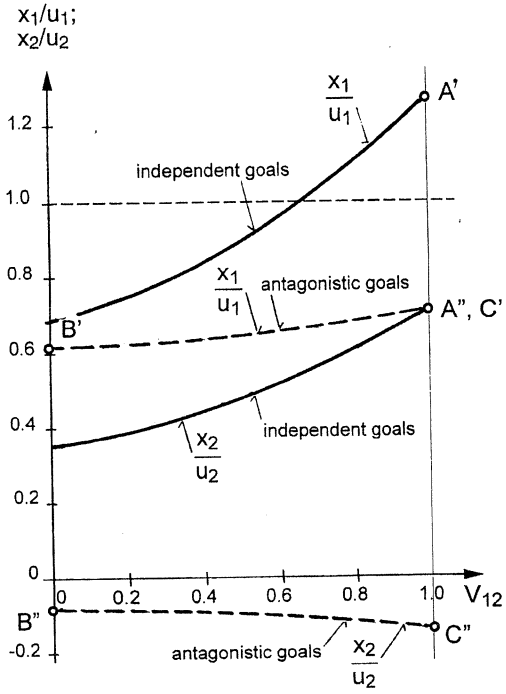

Figure II-5: One–sided espionage of P_1 on P_2, $V_{21} = 0$; V_{12}
Hostility with two goal settings: independent and anta
and the two parameters: $S_{12} = 0.5$; $S_{21} = 1.0$. $G_1 =$ 3.

In the phase of antagonistic goals, when the late
turns into a marital row, P_1 is understandably still a
ends at point B' if the two terminate their relation i
weak P_2 loses badly in this popping of flashbulbs. S
to point B". If the battle continues with further spy i
better it is for P_1 (point C'). She, on the other han
gives in (point C").

$$\frac{x_1}{u_1} = \frac{\begin{vmatrix} 1 & G_2S_{12} - G_1V_{12} \\ S_{21} & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix} G_1 + \begin{vmatrix} S_{12} & G_2S_{12} - G_1V_{12} \\ 1 & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix} G_2 \frac{u_2}{u_1}}{\begin{vmatrix} 1+G_1 & G_2S_{12} - G_1V_{12} \\ G_1S_{21} & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix}}$$

$$\frac{x_2}{u_2} = \frac{\begin{vmatrix} 1+G_1 & 1 \\ G_1S_{21} & S_{21} \end{vmatrix} G_1 \frac{u_1}{u_2} + \begin{vmatrix} 1+G_1 & S_{12} \\ G_1S_{21} & 1 \end{vmatrix} G_2}{\begin{vmatrix} 1+G_1 & G_2S_{12} - G_1V_{12} \\ G_1S_{21} & 1+G_2 - G_1S_{21}V_{12} \end{vmatrix}}$$

(II-4)

The end results are (GA stands for goal attainment):
P_1's GA at the end of the latent phase (A'): 1.27 or 127%;
P_1's GA after a blitzkrieg (A'xB'): 1.27x0.61 = 0.77 or 77%;
P_1's GA after a lasting struggle (A'xC'): 1.27x0.72 = 0.91 or 91%;
P_2's GA at the end of the latent phase (A''): 0.72 or 72%;
P_2's GA after a blitzkrieg (A''xB''): 0.72x(-0.08) = -0.05 or -5.5%;
P_2's GA after a long war (A''xC''): 0.72x(-0.14) = -0.1 or -10.0%.

No surprise:
The person who is strong, more hostile and who is spying will win. The person who is weak, less hostile and is not spying is the loser!

Figure II-6: In this situation of a latent state (cold war) of independent goals, P_1 receives unsuspectingly false information from P_2, whereas P_2 gets correct information about P_1. Already in a latent phase, in peace, P_1 works against his own concept, his own goal. P_1 relies on false information, he prepares wrongly - and therefore cannot realize himself as this is the case in Figure II-4. But although P_2 gets correct information from P_1, he sits in the same boat as P_1.

The goal attainments at the end of the latent phase of P_1 is equal to that of P_2, i.e., x_1/u_1 ($u_1 = 1; u_2 = 0$) is equal to x_2/u_2 ($u_2 = 1; u_1 = 0$). Both have the same bad starting position into the antagonistic

phase of war. One could be tempted to say at this point: *Whoso diggeth a pit shall fall therin: and he that rolleth a stone, it will return upon him;* (Proverbs 26/27): It is P_2 that sends false spying information to P_1 with the intention to mislead him in his spying effort. Both, P_1 and P_2 get punished; P_1 suffers for being misled, P_2 for misleading.

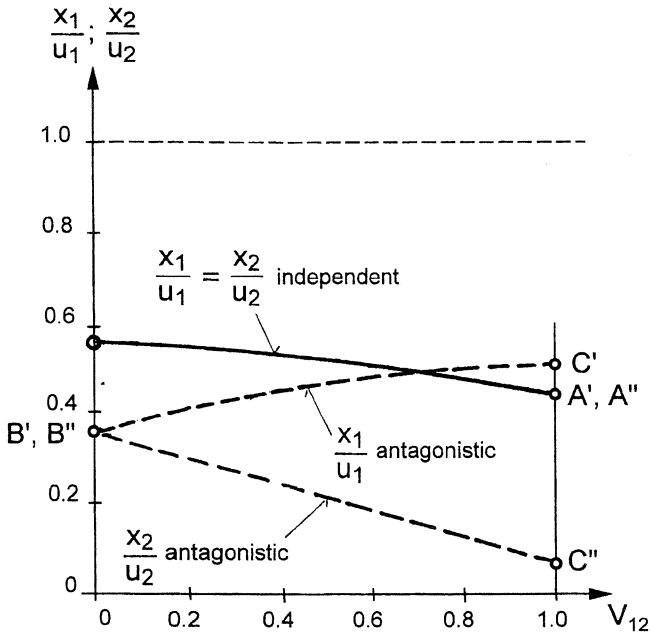

Figure II-6: False information of espionage for P_1. Correct information of espionage for P_2. $G_1 = G_2 = 2$; $S_{12} = 0.71, S_{21} = 0.71$; $V_{12} = -V_{21}$, $V_{21} > 0$. Independent and antagonistic goals.

[That P_1 is equal to P_2 in the latent phase can easily be checked with the formulae (IV-3) by setting $G_1 = G_2 = G$, $S_{12} = S_{21} = S$, $V_{12} = V$, and $V_{21} = -V$; and, indeed, for x_1/u_1, $u_1 = 1; u_2 = 0$, and for x_2/u_2, $u_2 = 1; u_1 = 0$.]

The reader shall be reminded of the following: If a set goal is negative, $(-u_2)$, and the calculated goal attainment, (x_2/u_2), becomes positive, then the goal attainment is negative, because a goal, (u_2), is always considered to be positive for the appropriate partner (P_2); $+x_2/-u_2 = -(x_2/u_2)$.

We have the following situation for Figure IV-6:

P_1's and P_2's GA at the end of the latent phase (A' = A"): 0.44 or 44%;
P_1's GA after a blitzkrieg (A'xB'): 0.44 x 0.365 = 0.16 or 16%;
P_1's GA after a long war (A'xC'): 0.44 x 0.51 = 0.22 or 22%;
P_2's GA at the end of the latent phase (A"): 0.44 or 44%;
P_2's GA after a blitzkrieg (A"xB"): 0.44 x 0.36 = 0.16 or 16%;
P_2's GA after a long war (A"xC"): 0.44 x 0.06 = 0.03 or 3%.

With a goal attainment of either 16% or 22%, P_1 cannot survive - we would say. But P_2 faces the same fate. Blitzkrieg or long war, P_2 goes down the drain too.

Conclusions

As the state of peace, our latent hostility, is best called platonic hate. In such a situation a party has to do both, try to spy on the potential aggressor and try to avoid being spied on oneself. In this manner the starting position of the manifest hostility, i.e., war, with the enemy becomes more favorable. Indeed, the other party tries to do the same. In order to avoid to be spied on oneself, the old true saying has to be observed: *Talk is silver, but silence is gold.* Or, if talk is necessary – as the arms talks in Geneva – follow the French saying: *Tais–tois quand tu parles!* Within a hostile, or treacherous and deceitful environment, the author tries to us the philosophy:

Never say what you do;
Never do what you say.

This chapter illustrates that situations in real life are extremely complex, much too complex for just applying the notion *Tit for Tat.*

And life-happenings are no doubt too complex for politicians who often make rather naïve statements and decisions about peace, democracy and human rights. We human beings are still equipped with the archaic reptile brain of primeval men and still have to kill life in order to survive. And because our brains have more sophisticated structured than other beings we might say:

We are much more intelligent than beasts;
But also much more bestial.

Thus, even the advocates for human rights are very probably good in their intentions but bestial in their actions.

In order to be forbearing, it is necessary to recognize that killing, xenophobia, vandalism, terrorism, and all kind of social deviations are part of the human behavior that houses as greed in the unconscious. This greed is longing for power, dominance, and wealth. It is the consciousness that is needed to prevent such ill-doings. It is to recognize as well that no religious power-symbols, as there are Allah, Mohammed, Jesus, and Buddha or any God that has any physical power or effect on any earthly event. It is solely the application of the human awareness to foil or avert temptations to commit social harming improprieties.

The greed in the unconscious exists in the being as collective unconscious. In order to become forbearing as a social global vertue, a collective consciousness would have to become evolved by nature. An illusion for the next few millennia? We think so.

III. If the Blockhead's Power Grows - To the Dogs the Clever Goes

In Short

A model of a social system is now investigated that represents two partners communicating with each other in the two contrasting modes, *consentient* and *hostile*. The study is done with two partners of equal and of different levels of intelligence. Each partner strives toward his own goal. As usual, the goal is considered to be the partner's self-realization, i.e., his existence.

The investigation reveals - what is to be expected - that in *consent* and in the case of different levels of intelligence, the intelligent partner is help for the stupid one to a much greater extent than the stupid partner helps the intelligent one.

In *hostility*, if the intelligent partner dominates, the less intelligent will be destroyed. On the other hand, if the intelligent partner gives way, the realization of the stupid opponent is guaranteed and the intelligent partner will be destroyed.

The mathematical model provided with numerical values allows a comparison of the results and a judgment of the evidence of the model against reality. The term *partner* can be extended to a party of several individuals with their one goal or even to a nation with its goal of welfare for its people.

The German saying of this chapter's title is:
Schlägt des Dummkopfs grosse Stunde,
Geht der Kluge vor die Hunde;
Comes the blockhead's great hour, the clever goes to the dogs.

Consentient and hostile behavior are considered to be attitudes embedded in the unconscious.

Introduction

This chapter and the very next one, chapter IV, are based on the unconscious attitude information exchange only, as Figure III-1 indicates. Realizing psychosocial occurrences requires unconscious perception of the value of mutual exchange of information among individuals; and insight into facts demands a conscious analysis of interactive behavior.

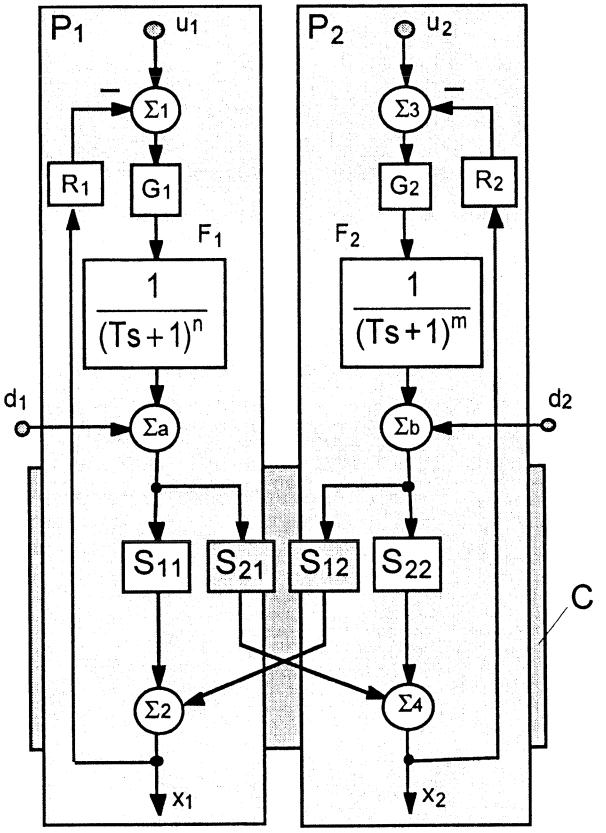

Figure III-1: Structure of the model of two unconsciously communicating parties

Realization and insight are based on a cybernetic, i.e., a functional pattern of continuous brain operations. A point-to-point form of thinking leads merely to a sequence of situations, of isolated facts and stories. Functional thinking on the other hand integrates situations into behavioral continuity, puts them - so to speak - into a flow of time.

This chapter - as a repetition of our philosophy - is a further contribution to the formulation of psychosocial behavior, based on the theory of multivariable automatic control systems. In such systems simultaneously created effects immediately become new causes which, in turn, create new effects. Such a pattern of interlaced action forms a complex, functional continuum. It is the opinion of the author that systems theory of multiple automatic controls provides an interlink between classical physics and descriptive, narrative sociology.

The model for the individual is the social unit - as it is presented again in this chapter. This model is no longer new to the reader. Because of its potential value, this model is applied in the following aspect:

Two partners, who represent two individuals or two homogenous groups, are given equal and different levels of intelligence in order to investigate whether they support or damage each other while being involved in the two typical social communication patterns: *consensus* and *hostility*. It is assumed that each partner strives toward his own goal, i.e., each partner tends to realize himself. Survival requires continuous self-realization.

The intelligence of each partner as well as the difference in intelligence between the two partners will be changed in discrete steps. The partners' goal attainments are investigated with the consideration that the relationship as a whole has to act within its stable area, i.e., within a behavior which assures the goal striving process while maintaining simultaneous communication.

The system of differential equations for describing time behavior is still linear, and calculations are based on numerical values. As the

obtained results will be used for comparison only and as there are no ethical values attributed to the results, neither linearity nor numerical values imply an obstruction. The necessary premises for modeling a partner are presented and justified in [2]. We know that there is conscious and unconscious communication among partners. In this work, only unconscious communication is assumed to exist. It influences the goal attainment of both partners in a supportive or detrimental way without a direct, mutual, conscious action toward each other's existence. The unconscious communication helps or hurts. This fact is well known in the field of psychology. Here, its existence is cybernetic-mathematically proven. - Compared to former chapters, this chapter III as well as the next, chapter IV, are both on the relatively easy side of mental perception.

In order to have an accurate criterion for the behavior at hand, the goal attainments are expressed at the stability limit of the partnership. Based on the assumed linearity and as comparison is the means of criteria, this extrapolation to the stability limit is acceptable.

The definition of the intelligence of a partner (of an individual, or of a homogenous group) is simply the speed of action with which he approaches his goal in the *autonomous* state, i.e., in a state without any communication. In such a state an intelligent partner, i.e., a partner of great agility, approaches his goal fast; a stupid partner, one with low agility, tends only slowly toward his goal. Speed, deep in the archaic brain, means survival, either for catching and killing a being to still one´s hunger, or for fleeing from a hungry predator.

The term willpower of a partner is the effort with which he strives toward his goal. If he has a great self-determination, the willpower he exerts to reach his goal is great. If he has little willpower, his determination is low. (Power, we know, does *not* have the physical dimension *energy per time*. The meaning is rather effort for self-realization.)

The chapter shows that in the case of communication, i.e., in the case of non-autonomous behavior, an intelligent partner cannot realize himself if he cannot act with his own willpower within the relationship. This means, if the stupid partner excessively exerts his willpower, then the intelligent partner goes to the wall. In a decent relationship, the willpowers have to be shared even if there is only unconscious interaction. In the case of a *consentient* relationship, it is illustrated how a stupid partner can prevent the success of an intelligent one. This means it is shown how large the damage to the intelligent partner's self-realization can become if the stupid partner wants to have his way. It also shows the minor damage (if any at all) a stupid partner has to face if an intelligent partner exerts his power to his full capacity. The stupid partner can even gain considerably if he knows how to attach himself to an intelligent one. In short: the intelligent partner lifts the stupid one up, the stupid one pulls the intelligent down.

In the case of *hostility* the intelligent partner in full power ruins the stupid one, but the stupid one in power can ruin the intelligent as well if the intelligent one is inattentive or gives way.

The chapter's conclusion is that the proverb: *Where there is a will, there is a way* has to be reversed into: *Where there is a way, there is a will* if there is a power struggle between partners. A more drastic description of the facts is expressed in the chapter's proverbial title. The breakdown of so many marriages establishes the proof of the model's value: the inflexible and domineering partner ruins the relationship. The partner of incessant refusal to communicate on a sharing basis and who is exerting his willpower makes himself responsible for the breakdown of the relationship.

The willpower an individual exerts for his self-realization has its real value in his autonomous state i.e., when he has no communication whatsoever. In interaction the effect of willpower becomes more complex - as will be demonstrated.

As the mathematics used is based on linear systems theory, its specific application for this essay is not considered important and therefore, is not given. - The partner's pronoun is taken as *he*.

The Structure of the Dual-Partnership

In short only, because we are being repetitive: Figure IV-1 depicts the structure of the model of two partners, P_1 and P_2, who are communicating unconsciously with each other. Each partner is modeled as a one-goal self-reflecting loop of an n-th and/or m-th order differential equation, respectively. The equation represents the mobility and, thus, the partner's intelligence. The mobility of an individual is equivalent to his speed of logical association and emotional acting; see [2]. The bilateral unconscious communication transfer functions S_{12} and S_{21} are assumed to be time independent. In other words, the exchange of attitude information is instantaneous.

The captions for Figure III-1 are:

P_1, P_2	Partners P_1 and P_2;
u_1, u_2	Set goals as self-realization;
x_1, x_2	Goal variables, momentary attainment;
G_1, G_2	Willpower for self-realization;
T	Delay of action (time constant);
m, n	Order of time-delaying differential equations,
C	Unconscious communication block, mutual attitude;
S_{12}, S_{21}	Communication transfer factors;
S_{11}, S_{22}	Eigen-transfer factors within C (the assumption is that $S_{11} = S_{22} = +1$);
R_1, R_2	Feedback signals R_1 and R_2, set to 1;
d_1, d_2	Disturbing information, coming from the further environment; to be disregarded herein.

If the product $S_{12}S_{21}$ is negative, the situation is called *consentient* communication, because the goal attainment of both partners increases compared to autonomous behavior. If $S_{12}S_{21}$ is positive, the situation is called *hostile* communication, because the goal attainment of the two partners decreases compared to autonomous behavior. These definitions of consensus and hostility correspond with the normal social attitudes: consensus results in help, hostility in damage. - *Concordia parvae res crescunt, discordia maximae dilabuntur.* Through concord small things grow, through discord the mightiest things decay:

The communication - consentient or hostile - is assumed to originate in the unconscious of the partners. This is why the communication is expressed as *attitude* the two partners have toward each other. Attitudes cannot be changed rationally.

The goal attainments in Figure III-2 (also in Volume I, Figure V-2, and V-10) illustrate these facts. The data are steady state values, which are end-values after goals u_1 and u_2 were set and ample time was given to the partnership to reach the final state. The figure shows how the power G_2 of partner P_2 increases the goal attainment of partner P_1 in the case of consent ($S_{12}S_{21} = -1$), and how it decreases P_1's attainment in the case of hostility ($S_{12}S_{21} = +1$).

It is impressive how minor the help is in consent compared to the great damage that occurs in hostility!

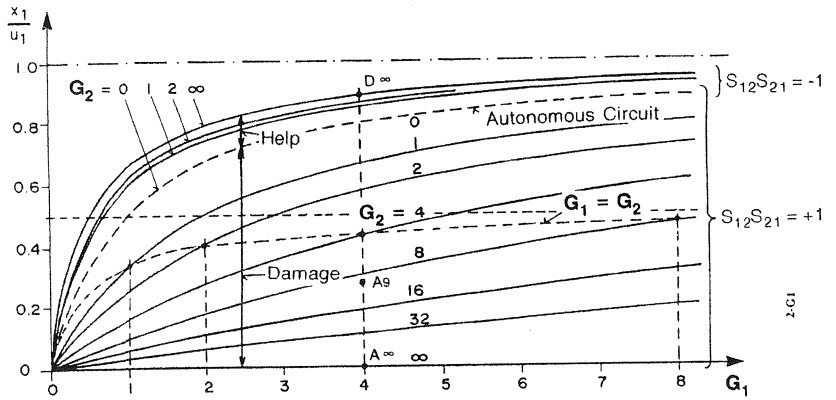

Figure III-2: The unit's goal achievement x_1/u_1, both in %, as a function of G_1, for consentient and hostile communication; steady state values.

G_1, G_2 Willpowers of partners P_1 and P_2,
$S_{12}S_{21} = -1$: *Consentient* communication,
$S_{12}S_{21} = +1$: *Hostile* communication

Accepting the notion that a partner's goal is his self-realization, the minor help in consent and the enormous damage in hostility are startling. Hostility has a much greater effect on social life than consent does. This might be the reason that war is socially so fascinating even to children in the form of games (fighting and shooting).

A specific example from Figure III-2: If the willpower G_1 of P_1 is 4, his goal attainment x_1/u_1 is 80% in autonomy. If the willpower G_2 of P_2 is ∞ (this means a socially tremendous willpower), the help in *consent* for P_1 from P_2 is only 9%. But in *hostility* P_1's damage is 80%, i.e., his complete destruction. Assuming a minimum of 30% x_1/u_1 below which existence is no longer possible, a willpower of G_2 of 9 ($G_1 = 4$) would be enough to remove P_1 from the scene. The point for consent, $G_1 = 4$, $G_2 = \infty$, $x_1/u_1 = 89\%$ is indicated as $D\infty$. The point for hostility, $G_1 = 4$, $G_2 = \infty$, is shown at $A\infty$, and the point $G_1 = 4$, $G_2 = 9$ is point $A9$.

The Psychological Significance of Willpower and Goal Attainment

To ensure that the mathematical-functional model is compatible with the psychosocial situation, terms have to correspond especially because the parameters in the model are given numerical values.

The *willpower G* is synonymous with the aspiration to execute. Willpower can be thought of as a feeling of *momentary* self-value. It is, therefore, a constant *self-esteem*. The self-esteem is large at high willpower, and it is equivalent to inferiority feelings at low willpower. Superior willpower is - no doubt - pleasurable!

The *steady state goal attainments* x_i/u_i is the result of *long-term* effort. It results as an effort-time-integral. From an egoistical standpoint, goal attainment is given a high value although from outside, from a third party, somebody's goal attainment can be seen as low. Very generally, the forcing and exerting of high

willpower - especially in the form of puissance or force - is given low value if it does not concern one's own behavior!

If in a dualism, on the one hand, a high goal attainment can be achieved with low willpower and, on the other hand, only a poor goal attainment can be achieved with high willpower, then value-priority is given to the first case. In Figure III-2 it can be seen that in consent ($S_{12}S_{21} = -1$) good goal attainment is attained already at low willpower, and in hostility only poor goal attainment is attained with high will-power. Thus, consent is valued positively by society (somehow related to democratic behavior), whereas hostility is valued negatively. Why then is hostility in the form of quarrels so much more attractive than consentient behavior for the general public? This facts come to light further down.

The Stability Limits

We know by now: In order to attain goal attainment, a system has to be stable. Only in stable functioning is a continuous goal approach guaranteed.

Table III-1 represents a survey of the parameters of the partnership of which stability limits will be depicted. The table shows parameters for partners of equal and of different intelligence (flexibility In). In section (A) the two exponents m and n are the same for both partners, P_1 and P_2, but of different magnitude. This situation signifies different partnerships with intelligence parity but of different levels of intelligence.

(A1) describes the more intelligent partnership ($m = n = 3$ in F_1 and F_2); (A2) describes the less intelligent relationship ($m = n = 4$). In section (B), m and n are different ($m > n$), but both partners have the same time constants T. The partners' intelligences are different and the partnerships also have different levels of intelligence.

In system (B1) partner P_1 is more intelligent (faster acting) than partner P_2. In system (B2) the difference in intelligence between

the partners is increased. P_2 with n = 5 is much slower than P_1 with m = 3.

In both sections, (A), and (B), $S_{12}S_{21}$ is equal to (-1) for consent, and (+1) for hostility. With these magnitudes $|S_1| = |S_{21}| = |1|$ it is meant that the mutual attitude-information is neither amplified nor reduced, but are transferred with the ratio 1/1 between the partners.

Table III-1. Survey of stability limits of investigated partnerships of equal partner-intelligence [Group (A)], and different partner-intelligence [Group (B)]. Intelligence of P_1 is indicated as In1, intelligence of P_2 as indicated as In2.

Group	P_1 Order n	P_2 Order m	$S_{12}S_{21}$	Number of figure	In1 In2
(A1)	3	3	±1	IV-3	In1 = In2; high
(A2)	4	4	±1	IV-4	In1 = In2; low
(B1)	3	4	±1	IV-5	In1 > In2;
(B2)	3	5	±1	IV-6	In1 >> In2;

Figure III-3 illustrates the stability limits for the section (A1), Figure III-4 for the section (A2); and Figure III-5 shows the situation for (B1), and Figure III-6 for the situation (B2). In Figure III-1, T = 1.

An extremely important fact socially, although not directly related to this point of investigation and already mentioned in former discussions, shall be mentioned anew: The characteristic equations, i.e., the characters of the partners, is depicted with the two equations (III-1) ($R_1 = -1$, $R_2 = -1$):

$$\text{for } P_1: \quad 1+G_1F_1S_{11} = 0;$$
$$\text{for } P_2: \quad 1+G_2F_2S_{22} = 0. \qquad \text{(III-1)}$$

The character of the partnership is the sum of the characters of the partners ($G_1F_1S_{11}+G_2F_2S_{22}$), plus the multiplication of their characters ($G_1F_1S_{11}G_2F_2S_{22}$), plus the interacting loop involving both partners ($- G_1F_1S_{21}G_2F_2S_{12}$). See equation (III-2).

$$1+ G_1F_1S_{11}+G_2F_2S_{22} + G_1F_1S_{11}G_2F_2S_{22} - G_1F_1S_{21}G_2F_2S_{12} = 0 \quad \text{(III-2)}$$

The two attitude transfer factors, S_{12} and S_{21}, become multiplied by each other to $S_{12}S_{21}$ within their loop. Attitude is a mutual matter! Hostility as well as consent, both mean a matter of a partnership.

Equation (III-2) indicates that neither of the two partners can perceive the behavior of the togetherness, because each partner is only a partial substance of the total relationship as an entity!

The social togetherness contents functionally more, much more, than the sum of its parts. If anybody enters a relationship he does not know, cannot know, how this dualism will turn out because each participant is only himself. It is the interaction that is the crucial point, and the interaction cannot be perceived by either of the two parts. Due to this fact, it can be said that nature keeps its plan of evolution a secret forever.

The Analysis

In all four figures, Figures III-3 to III-6, the stability limits are shown as a function of the willpowers G_1 and G_2 of the partners. The letter H stands for hostility, the letter C for consent. The numbers in the circles beside the letters H and C are the two exponents n and m, i.e., the order of the action delaying differential equation of the individual partners. The lower the number, the higher is the partner´s dynamics, called intelligence.

The first circle contains n, the second m. The partner denoted with n and m equal to 3 is more intelligent than the partner denoted with n and m equal to 4, or even n and m equal to 5. So, the degradation in intelligence is from 3 to 4 to 5.

Comparing Figures III-3 and III-4, and considering only positive willpowers, ($G_1 > 0$, $G_2 > 0$), it can be seen that in Figure III-3, where n = m = 3, the stability area is about four times larger than in Figure III-4, where n = m = 4. That will say that in the dualism of the more intelligent partners, Figure III-3, the partners have the potential to exert higher powers than the less intelligent partners of system Figure III-4 in order to remain in the stable area.

We see here that the labor union's claim that the *same vocational training deserves the same pay* can be, or is, ridiculous. The slower and in addition the less powerful individual is less efficient than the fast and powerful one.

In interaction there is a correlation between speed (n and m) and willpower (G_1 and G_2). The faster partner can exert more willpower within a stable area. This is nature' s will to give to the more willing and faster acting being the priority for survival.

In Figure III-3 at parity of willpowers, $G_1 = G_2$, the indicated speed in hostility is marked with 100, whereas in consent it is only 60. *Nature promotes high willpower with high speed* among equal partners. Hostility is fast and powerful!

One can lament in saying that our models are too simple to represent human nature. But in the technical-mathematical world - that is nature's realm as well - these facts we show are substance that hold true in the whole universe.

In hostility Figure III-3, ($S_{12}S_{21} = +1$), the limits consist of two straight lines, one running through $G_1 = 8$, $G_2 = 0$ to $G_2 = 8$, $G_1 = 0$ and the other line running through the points $G_1 = -1$, $G_2 = 0$; and $G_1 = 0$, $G_2 = -1$. In Figure III-4, also in hostility, the upper straight line runs from $G_1 = 4$, $G_2 = 0$ to $G_2 = 4$, $G_1 = 0$; the lower line is the same as in Figure III-3. The ratio of the areas of Figure III-3 and Figure III-4 within the area of positive willpowers is 4. Fast acting and powerful systems have the highest potential for survival - within the same species.

In consent, Figure III-3 and III-4, ($S_{12}S_{21}$ = -1); the areas have the shape of two wings. Although the system is composed of linear differential equations, the contour looks highly non-linear. In interacting complexities the common term linear loses its simple meaning - but mathematically *linear* systems are much easier to be handled.

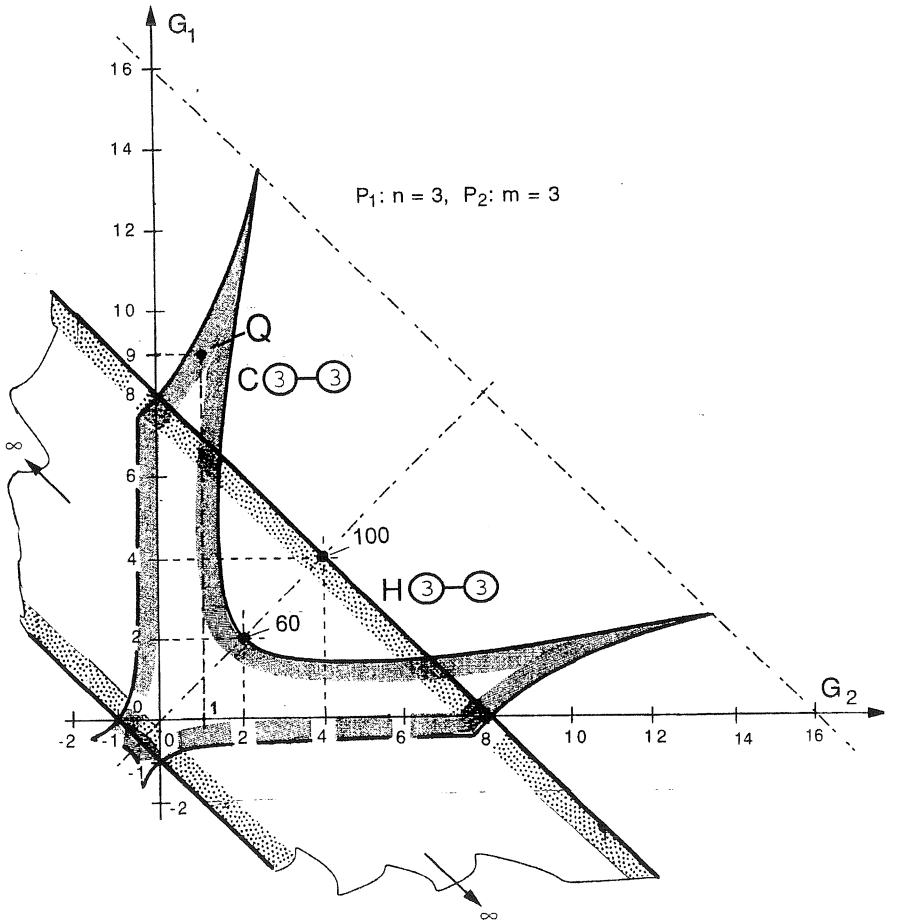

Figure III-3: Stability limits of the systems H and C: n = m = 3.

All these facts are not new in our context, but important enough to be repeated.

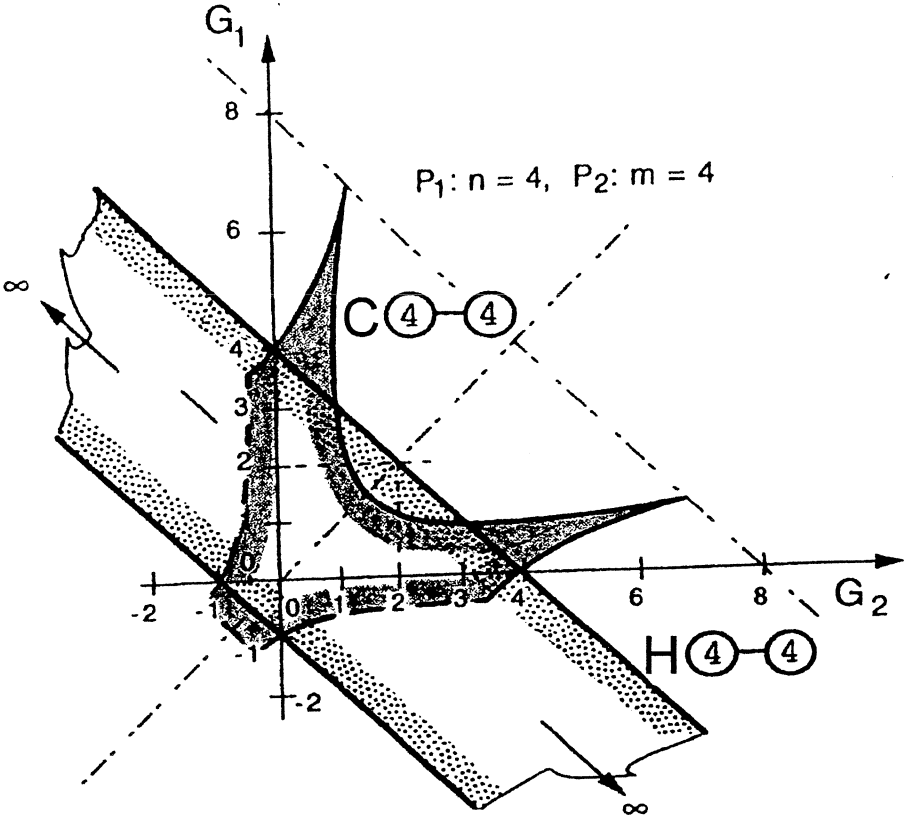

Figure III-4: Stability limits of the systems H and C: n = m = 4. At parity of willpowers, $G_1 = G_2$, the speed of acting in hostility is 60, in consent it is only 40.

As P_1 and P_2 are dynamically equal, Figures III-3 and III-4 are symmetric with respect to the coordinates. In order to determine the goal attainment for a specific situation, the willpowers of the partners, G_1 and G_2, have to be chosen within the stable areas. In daily life G_1 and G_2 will depend upon the *pecking order* of the two

partners. Only in the very unlikely social situation of equal power, $G_1 = G_2$, would the goal attainments be equal. *Equality in any regard is one of the many democratic illusions.* What a figment of the imagination was the slogan of the French Revolution: *Liberté, „égalité", fraternité!* Yet, when the revolution broke out all people received *égalité* in killing each other.

It is necessary to discuss Figures III-3 and III-4 in more detail.

Several facts can be concluded from their stability limits

(α) *The lower the intelligence is of partners that constitute a partnership the more modest they have to be in exerting their willpowers; otherwise their dualism will no longer be able to strive toward its two goals. Disruptive instability occurs.*

(β) *The consequence is* - according to Figure II-2: *less intelligent partnerships have smaller goal attainments than intelligent ones because their willpowers are smaller.*

At parity of intelligence (n = m), the willpowers ($G_1 = G_2$) are considerably larger in hostility than in consent. The ratio G_H/G_C is the larger the higher the intelligence is. In the case of n = m = 4 the ratio is 1.5. In the case of n = m = 3 the ratio is 2. And, what is not shown here, in the case of n = m = 2 the ratio is ∞. A *hostile* system with partners of n = m = 2 *cannot* become instable, but the *consentient* system of n = m = 2 will become *instable* at $G_1 = G_2 > 4.8$. One has to think about such facts!

The third conclusion is:

(γ) *For the individual, whose self-esteem is measured and valued by his own willpower, hostility is more attractive than consent; and this in turn is more significant where there is a high level of intelligence - or high willpower. The greater the willpower, the higher the probability of hostile behavior!* This is a natural law, proven in politics every day. Exertion of willpower is pleasurable, in hostility even much more than in consent.

When there are equal willpowers, the speed of acting is higher in hostility than in consent. In Figure III-3, (n = m = 3), the ratio (speed in hostility)/(speed in consent) is 1.67.

(δ) Hostile *systems act almost twice as fast as consentient ones.*
Another natural law! How immediately hostility breaks out! Experience: driving on the highway!

Instead of staying in the wing-shaped stability area of consent, it is quite advantageous for the more eager willpower partner to deviate from parity. This is so, because in this form of communication it is possible to exert a willpower that is larger than that in autonomy. Although in this state the goal attainment is not much larger than in autonomy, for the self-esteem this state is attractive. If, for example, the point of operation in Figure III-3 is Q, the partner P_1 is best called the *egoist* and P_2 is called the *altruist*. P_2 renounces - voluntarily or under pressure - his self-esteem in favor of P_1. The interpretation is the fifth conclusion:

(ε) *Not only in hostility, in consentient behavior as well, the general trend is away from power-equality - on the grounds of a pecking order. Even in a consentient relationship, one partner tends to lead, he is the egoist; and one partner gives in, he is - has to be - the altruist.*

But the altruist in consent is still in a considerably better situation than if he were to live with the same amount of renunciation of self-esteem in hostility.

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Some numerical examples underline the above statements. It is assumed that both, u_1 and u_2, have equal value of 100%: $u_1 = u_2$. But goals are independent! n = m = 3, Figure II-3; Partners of equal intelligence.

Consent:

a) Partners of equal willpower: $G_1 = G_2 = 2$; $x_1/u_1 = x_2/u_2 = 77\%$.

In autonomy with $G_1 = G_2 = 2$, they both would reach 67% only. Consentient attitude is mutual help of 10%.

b) P_1 exerts more willpower than P_2, see point Q: $G_1 = 9.0$, $G_2 = 1$: $x_1/u_1 = 93\%$, $x_2/u_2 = 66\%$. In autonomy with the *same* willpowers: $x_1/u_1 = 90\%$, and $x_2/u_2 = 50\%$. That means that P_1 gets 3% help from P_2, and P_2 gets 16% of help from P_1. The strong partner helps the weak one much more than the weak helps the strong one. But this help from the strong to the weak partner is based on the assumption that the weak partner P_2 has a willpower available of only $G_2 = 1$. In autonomy with maximum $G_2 = 8$ his attainment would be 89%. The statement *The strong partner helps the weak one much more than the weak helps the strong one* is indeed a deceitful truth if the weak partner could stay in autonomy and exert a G_2 of 8 instead of $G_2 = 1$ only!

Hostility:

a) Partners of equal willpower: $G_1 = G_2 = 4$; $x_1/u_1 = x_2/u_2 = 44\%$. In autonomy with $G_1 = G_2 = 4$, they both would get 80%. The mutual damage is -36%.

b) P_1 exerts more willpower than P_2: $G_1 = 7$, $G_2 = 1$: $x_1/u_1 = 78\%$, $x_2/u_2 = 11\%$. In autonomy with the same willpowers: $x_1/u_1 = 87\%$, and $x_2/u_2 = 50\%$. P_1 becomes damaged by -9%, whereas P_2's damage is -39%!

Our sixth conclusion is:

(μ) *In hostile relationships the weak partner with his low level of willpower becomes destroyed.* Advice: when you are weak: take your hat and run!

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Comparing Figures III-5 and III-6. Partners of equal time constants T but of different delay elements ($n \neq m$) are of different intelligence. Stability limits of such partnerships are shown in these two figures. In Figure III-5, P_1 is of 3rd, P_2 is of 4th order; in Figure III-6, P_1

is again of 3rd, but P_2 now is of 5th order. P_2 of 5th order is less intelligent than P_2 of 4th order. In other words, in Figure III-6 the difference of intelligence between P_1 and P_2 is larger than in Figure III-5.

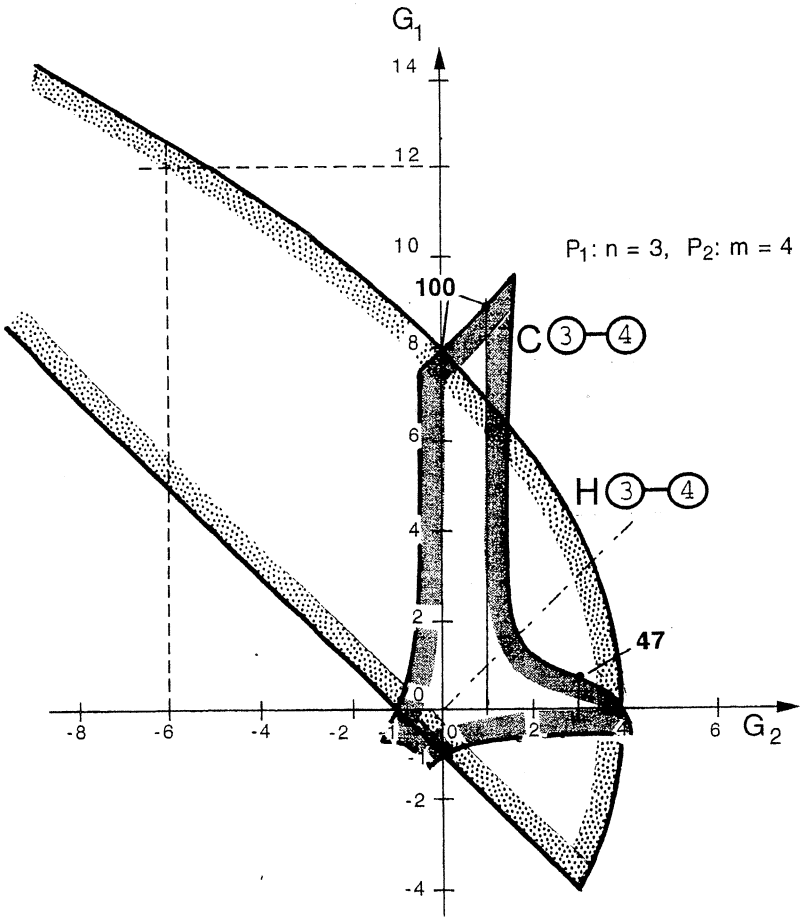


Figure III-5: Stability limits of the systems H and C: n = 3, m = 4.
P_2 is domineering, the speed of the system is 47;
P_1 is domineering, the speed is 100.

Figure III-5:

a) Assuming that in *consent* C the less intelligent partner P_2 exerts a willpower of $G_2 = 3.5$, then the more intelligent partner P_1 could exert a willpower of $G_1 = 0.4$ only. ($G_2 = 4$ would be P_2's highest willpower in autonomy.)

b) On the other hand, if the intelligent partner P_1 could exert a willpower G_1 of 8.9, i.e., a will beyond the autonomous power of $G_1 = 8$, P_2 would have to be satisfied with $G_2 = 1.0$.

What are the goal attainments for these two pairs of willpowers in a) and b)? Goals are independent, i.e., not compatible - to remark again.

a) P_2 exerts more willpower than P_1: $G_1 = 0.4$, $G_2 = 3.5$: $x_1/u_1 = 42\%$, $x_2/u_2 = 82\%$. In autonomy with the same willpowers (with $G_1 = 0.4$ and with $G_2 = 3.5$): $x_1/u_1 = 29\%$, and $x_2/u_2 = 78\%$. This will say that P_1 gets 13% help from P_2, and P_2 gets 4% of help from P_1. The more powerful, less intelligent partner P_2 still helps the more intelligent but powerless partner P_1 with the tiny amount of 4%. If the subsistence level is 30%, the stupid P_2 survives well. The intelligent one has to struggle with his 42%.

Perhaps the reader has to be reminded again that we are in loop-thinking, where interaction cannot be evaluated by looking at a system in the common day-to-day mentality. Our model is simple, yet already complex. It must be assumed that life cannot be simpler than our model. And although our model is hypothetical, it tells us what nature might have in its basket. The reader shall not take our numbers at face value. *Argumenta non numeranda, sed ponderanda sunt.* Arguments shall not be counted, but pondered.

b) What is the situation if the more intelligent partner P_1 exerts more willpower than his counterpart P_2?

P_1 exerts more willpower than P_2: say, $G_1 = 8.9$, $G_2 = 1$; then $x_1/u_1 = 93\%$, $x_2/u_2 = 66\%$. In autonomy with the same willpowers (with $G_1 = 8.9$ and $G_2 = 1$): $x_1/u_1 = 89\%$, and $x_2/u_2 = 50\%$. That means

that P_1 gets 4% help from P_2, and P_2 gets 16% of help from P_1. The more powerful and more intelligent partner P_1 gives more help to the less intelligent and powerless partner P_2 then vice versa. The more intelligent partner gets acknowledged with what he deserves. And the stupid one can be cheerful with his attainment. He is somehow a parasite.

As the speed is 47 if P_2 (with $G_2 = 3$, $G_1 = 0.65$) is domineering, and as it is 100 if P_1 (with $G_1 = 8.9$ and $G_2 = 1$) were domineering, it becomes obvious that P_1 cannot go, will not go along with a P_2-dominance. The dualism will fall apart although their partnership is by definition amicable. If P_2 insisted on domineering, P_1 with his willpower of 8.9 and his speed of 100 would have to give in to a willpower of 0.65 and a speed of 47. He will not.

Although a consentient relationship is mutual help, the attainment of the more intelligent partner is less than half if the stupid partner wants to dominate compared to the situation when the intelligent partner can rule; 42% only instead of 93%. And, what is even worse, the speed of the system, when the less intelligent partner dominates, is about half the speed of when the more flexible partner can dominate. Note that there is only one speed in a partnership. The speed of the individual two partners amalgamates into one, into the system's speed. - Thus, the slow and stupid partner P_2 can hang himself for his benefit on the fast P_1 if he let the fast one dominate.

Looking now at the damaging hostility H. Not to forget: Goals are not compatible; they are independent! Again: points are taken at the stability limit.

a) The slow P_2 exerts more willpower than the fast P_1: $G_1 = 1$, $G_2 = 3.9$: $x_1/u_1 = 17\%$, $x_2/u_2 = 66\%$. P_1 will succumb.
In autonomy with the same powers: $x_1/u_1 = 50\%$, and $x_2/u_2 = 80\%$. The weak P_1 becomes damaged by -33%, whereas the strong P_2's damage is only -14%.

b) The fast P_1 exerts more willpower than slow P_2: $G_1 = 6$, $G_2 = 1.7$: $x_1/u_1 = 69\%$, $x_2/u_2 = 22\%$. P_2 will die. In autonomy with the

same willpowers: x_1/u_1 is 86%, and x_2/u_2 is 63%. P_1 becomes damaged by -17%, whereas P_2's damage is -41%. P_2 will perish.

Compared to consent where both, P_1 and P_2, will survive in both cases a) and b), hostility creates mutual damage that can be disastrous. The feeble partner will be conquered. Thus, the solution for life is: If you are weak in power, submit yourself to consent. The requirement however is that your partner accepts your offer of consentient behavior. Otherwise make yourself autonomous - if you can, if your partner lets you go! Every so often powerful people not only kill to gain affluence, they want to kill - period!

Beside speed and power for self-esteem, *hostility* shows one more surprising fact. The stability areas expand far beyond the region of positive willpower factors G_1 and G_2 into negative values.

The most astonishing situation can be seen in Figure III-3. The stable area in hostility expands in two directions to infinity. Let's take the point $G_1 = 12$, $G_2 = -4$. With these two willpowers, both partners in autonomy would be highly unstable. They could not attain their goals u_1 and u_2. But if they go into a hostile relationship, the stable system guarantees their goal attainment. The only problem is: you have to be the strong partner P_1 with G_1 of 12. Then you can achieve $x_1/u_1 = 133\%$, whereas P_2 with his negative willpower of $G_2 = -4$ (or with $G_2 = +4$ and $R_2x_2 = +1$) would get $x_2/u_2 = -44\%$. The hunter P_1 gets the kill. This is a point of far reaching implications. If two nations become unstable (due whatever reason), they can go to war with each other and have a stable, lasting fight. However, the partner with a negative power, the partner who is in a desperate situation ($G_2 = -4$), will be put to an atrocious end: $x_2/u_2 = -44\%$. Note that wars are not necessarily unstable situations as it is understood in the popular meaning. Wars can be very stable and long lasting.

The stable area of hostile relationships is a multiple of the area of consentient relations. Therefore, not only the human world, the worlds of all beings are packed with hostility.

Figure III-6: What was said for Figure III-5 holds qualitatively true as well for Figure III-6. It is just worse in the case of a consentient relation. The more intelligent P_1 becomes more tormented if the blockhead P_2 pushes through with his will. If the less intelligent partner wants to dominate with his willpower (say with $G_2 = 2.5$), then the more flexible one, P_1, has to shrink to a willpower of 0.32. And the dualism's speed is barely 30. But this is not so in hostility. The more intelligent P_1 still can exert his will up to 7.1 at G_2 of 2.5 before the system runs into instability. And the speed is almost 100.

It can be summarized:

The greater the difference of intelligence is in *consent* the more the stupid partner gains from the intelligent one if the intelligent partner is in power. And the more clearly the intelligent partner loses the game if the stupid partner has the stubbornness to exert his will. The more intelligent partner will eventually fade away or be forced to walk away. This scenario can be called democratic! In a relationship, called amity, the strong in will and less gifted in speed will exploit the flexible one who is restricted in exerting his will and will drastically slowed down in his mobility. If one has to deal with a stupid partner or a stupid system - one has to try to regain autonomy, otherwise one will be manipulated to *pass away!*

In *hostility* the tenor becomes more complex. But first of all, hostility has mutual damage in mind. If you are weak, don't start a war. There is no question that you will be ruined. If you are socially instable and cannot survive in autonomy, you may join an also instable partner and go into a stable warfare relationship with him. However, if you are in a situation of low negative willpower (or positive feedback) that will be your end, and your stronger enemy makes the neat benefit. He takes all your possessions. He gains more than what he was after. With the data above he gets over 130%! And if the goals are not independent, if they are antagonistic ($u_1 = +1$ and $u_2 = -1$), the situation becomes even better for the strong P_1 and worse for the weak P_2 (this fact is not shown here).

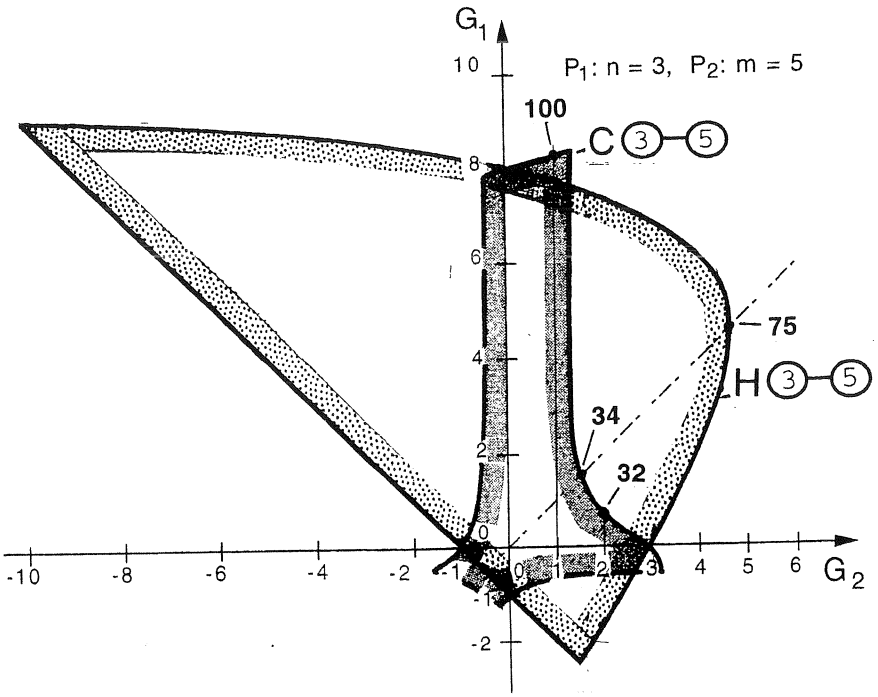


Figure III-6: Stability limits of the systems H and C: n = 3, m = 5.
P_2 is domineering, the speed of the system is 32;
P_1 is domineering, the speed is 100.

Table III-2 lists the data mentioned above.

Conclusions

An extremely simple model of systems theory indicates anew a social complexity that is not easy to perceive. The study of specific data is especially arduous.

In *consent*, the larger the difference in intelligence between two partners and the more backward the less intelligent companion

are, the worse is the situation for the flexible partner if the slow one exerts his will.

Table III-2: Power factors G_1 and G_2 and goal attainments x_1/u_1 and x_2/u_2 in % for partnerships of equal (n = m) and different intelligence (m > n). C stands for consentient, H for hostile relationships.
Goals are independent, i.e., for calculating x_1/u_1, $u_1 = 1$, $u_2 = 0$, and for calculating x_2/u_2, $u_2 = 1$, and $u_1 = 0$.

	n	m	G_1	G_2	x_1/u_1	x_2/u_2	Autonomy x_1/u_1	Autonomy x_2/u_2
C	3	3	2	2	77	77	67	67
C	3	3	9.4	1	93	66	90	50
H	3	3	4	4	44	44	80	80
H	3	3	7	1	78	11	87	50
C	3	4	0.4	3.5	42	82	29	78
C	3	4	8.9	1	93	66	90	50
C	3	5	8.2	1	92	65	89	50
H	3	4	6	1.7	69	22	86	63
H	3	4	1	3.9	17	66	50	80
H	3	3	12	-4	133	-44	----	----

Underlined goal attainments means death for the partner.

Also in *consent*, the larger the difference in intelligence between two partners and the more intelligent the intelligent is, the more the stupid gains from the intelligent partner if the intelligent one is in power.

If, in *hostility*, the intelligent cannot or does not exert his willpower, the realization of the stupid is assured and the intelligent becomes destroyed. The term *destruction* is used if there is a minimum attainment of 30% below which existence is not possible - we assume.

And ending with the words of an intelligent woman: *Der Gescheite gibt nach; eine traurige Wahrheit; sie begründet die Weltherrschaft der Dummheit.* (Marie von Ebner-Eschenbach). In free translation: The intelligent person gives way; a sad verity; it proves the dominance of stupidity in the world.

Appendix

Formulae for Figure III-1 for calculating x_1/u_1 and x_2/u_2; d_1, and d_2 not included.

$$\frac{x_1}{u_1} = \frac{S_{11} - (S_{11}S_{22} - S_{12}S_{21})\, R_2G_2F_2}{(D)} G_1F_1; \quad u_2 = 0$$

$$\frac{x_2}{u_2} = \frac{S_{22} - (S_{11}S_{22} - S_{12}S_{21})R_1G_1F_1}{(D)} G_2F_{22}; \quad u_1 = 0$$

$$[D] = (1 - R_1G_1F_1S_{11})(1 - R_2G_2F_2S_{22}) - R_1G_1F_1R_2G_2F_2S_{12}S_{21} \qquad \text{(III-3)}$$

For the calculation of the steady state data:
$S_{11} = S_{22} = F_1 = F_2 = 1$; $R_1 = R_2 = -1$.

IV. The Damage of Communication Intensity

Introduction

The desire and right to talk, to participate in all kinds of social activities, and to have an influence in many political events, be they of relevance or not, manifest themselves in our democracies not always as good but unfortunately often as misbehaving and, thus, damaging the underlying purpose. This impropriety enjoys ethical value as human rights (sometimes even as human dignity), although it strikes one very often as social rank growth. Overdone communication is consuming time, energy, and money, which can damage substantially the realization of the original intention. To day's eagerness of large-scale meetings, even of paranoia, in nationalized enterprises, in large concerns, and in unification of individual countries in the EU, may be examples of system-created *necessary-unnecessary* multilateral discussions and negotiations.

Within a smaller frame, it is often the weak or incapable individual who is not able to reach his own goal and therefore is likely a protagonist of dialogues, communication, and public relations. The incompetent and ineffective person likes to hide behind a legal or ethical surrogate and establishes this way an illusive self-esteem.

In our *excursus* that deals with three persons (also called partners), a person can also mean an organization, or a political party, or a nation.

This chapter shows that with growing intensity of communication among individuals, when all three strive toward their own goal, the goal attainment generally decreases and that it only increases in exceptional limited circumstances. Systems that can be regarded as exceptional have *bivalent* parameters. This is to say that either the increase or decrease of a bivalent parameter renders the system from a successful into an unsuccessful and back to a successful state. Such systems are in a predicament, in a dilemma, called hyper-delicateness. They show a so-called broken stability.

Each individual of the three constituents has uninterrupted self-control over the state of his goal proximity. That means that the individual has consciousness of its existence and doings. Simultaneously each individual communicates with partners. In other words, each individual continuously receives information and knows about others and influences the others and becomes influenced in return. With three partners we have, as we will find, eight interacting loops through which interacting information can flow in continuously operating loops.

As results of the investigation are depicted with three-dimensional models, we are restricted to three individuals or three parties. The varied parameters are:

a) The intensity of communication in three magnitudes:
minor, normal, strong;

b) The pattern of communication in three social comportments:
consentient, hostile, destructive;

c) The willpowers the individuals are exerting on themselves in order to attain their own goal. These willpowers will be variables.

We consider communication as unconscious information flow that is the attitude the partners feel toward each other. The attitude is so strong that vocal information is expressing the attitude. Therefore, the attitude information and the *viva voce* blend together into one stream of information.

The investigation is structured into four groups:

Group A:
All three partners have the same speed of acting, the have, so to speak, the same flexibility or the same dynamics. We set flexibility equal to intelligence. We coined this simplified term *speed of acting equals intelligence* before. In addition, the communication pattern among the three constituents is homogenous, i.e., they all have the same attitude toward each other, be it friendly, hostile, or

destructive. Due to the homogeneity, this group is described with the least number of parameters.

Group B:
As in the group A, the three partners have the same speed of acting, i.e., they have the same intelligence. But the patterns of communication are no longer the same among the three partners. There are mixed formations: consentient, hostile, or even none.

Group C:
All three partners are faster than in the group A, but also with equal speed of acting. This group C is shown for friendly togetherness only. It becomes apparent how nature preferres speed for its own sake. Swiftness is a most necessary characteristic for survival.

Group D:
The three partners have different speeds of acting. One partner is faster acting than the other two. And they also have mixed formations of communication.

Groups A and C have a systematic feature. Group A, however, is of our main interest. Groups B and D have rather the purpose of demonstrating a functional variety in the form of an album of models. To this album of three-dimensional models, all four groups can be included.

Group A has two foci:

AI. The number one focus is the determination of the systems' *space of stable behavior.*
As stability is the *conditio sine qua non* for proper operation in reaching the goal, the space of stable existence is shown in three-dimensional representations of the partners' willpowers as coordinates. There are three communication intensities and three different patterns of communication. Therefore, there will be nine basic models.

All. The number two focus is the final goal attainment of the individuals as a function of the three different intensities of communication. We remember that the goal of an individual can be regarded as his self-realization if goals are independent from each other. - The space of stable behavior, though, is the top feature for all four groups, A to D.

There is - to repeat - an eminent fact in society: the speed, or flexibility, of a person in his thinking and acting. Speed is considered to be a prime factor for surviving. We consider speed as intelligence. Depending on the intelligence of the different partners, the speed of a multi-person system - as an entity - differs considerably. That will say that the speeds of the autonomous partners become amalgamated into one speed, the system's speed. This fact became obvious in the former Chapter III.

Intelligence of an *autonomous* partner can also be defined - a more accurate definition - as his speed together with his willpower with which he strives toward his goal. The faster an individual behaves and the greater his willpower is, the closer he finally comes to his goal. In groups A and B, the intelligence is equal for all three partners. In the group C partners have equal intelligence but it is higher than in groups A and B. In the group D the partners´ intelligence is different.

As noted: for groups B, C, and D, only stability spaces are displayed and no goal attainments.

The Model of Analogy

Figure IV-1 depicts the model that serves as a linear functional system of a triplex. P_1, P_2, and P_3 represent the three partners or three one-goal organizations, respectively.

u_1, u_2, and u_3 represent the goals the three partners have set for themselves. The goals can be considered as attempted self-realizations. The goal variables are denoted as x_1, x_2, and x_3. The quotients, x_i/u_i are by definition the goal attainments. CB means to

be the communication block. S_{ik} (i, k = 1, 2, 3; i ≠ k) signify the transfer factors of the communication channels (as before: S_{11} = S_{22} = S_{33} = +1). The urge for self-realization is to a large degree an unconscious endeavor. The communication block CB represents foremost the unconscious information transfer in the form of attitudes. Therefore self-realization - as the cardinal goal of an individual - makes individuals quite prone to engage in conflicts and to strong reacting upon confrontations.

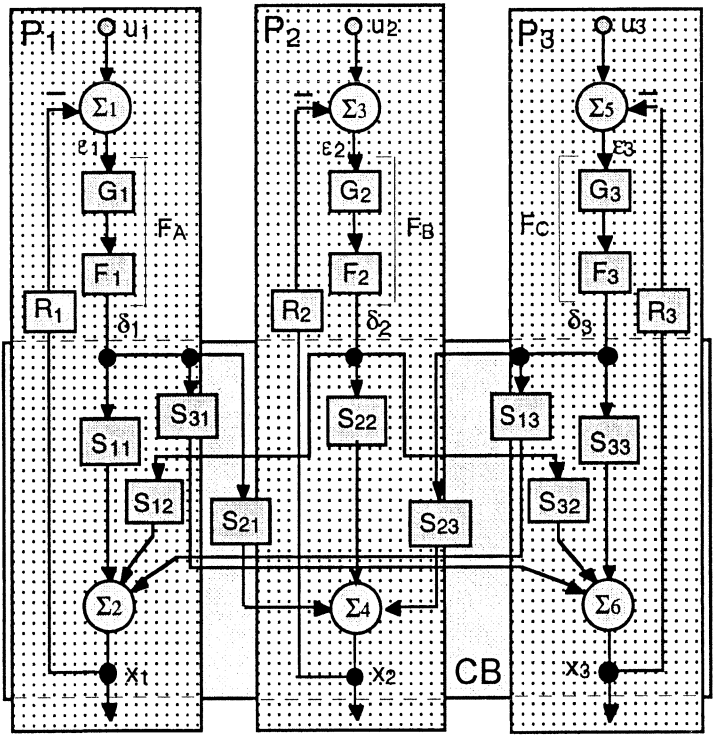


Figure IV-1: Triple organization, consisting of three partners, P_1, P_2, and P_3.

The focus of the investigation is the effect of these irrational attitude channels within the block CB. Different patterns of connection, ($\pm S_{ik}$), cause different patterns of behavior that, in turn, result in different goal attainments of the partners. A certain type of communication can be of help for each other; another one can damage or even destroy.

We understand that a goal has no ethical value. If a behavioral pattern increases the goal proximity, such a pattern has a positive effect for the affiliated partner; if a behavioral pattern decreases the goal proximity, the pattern has a negative effect for that partner.

The characteristic equation of the triplex Figure IV-1 is given with equation (IV-1). The negative feedback signals: $R_1 = R_2 = R_3$ are implicit as -1.

$$
\begin{aligned}
&1+[F_AS_{11}]+[F_BS_{22}]+[F_CS_{33}]\\
&+[F_AS_{11}][F_BS_{22}]+[F_AS_{11}][F_CS_{33}]+[F_BS_{22}][F_CS_{33}]\\
&-F_AF_B(S_{12}S_{21})-F_AF_C(S_{13}S_{31})-F_BF_C(S_{23}S_{32})\\
&+[F_AS_{11}][F_BS_{22}][F_CS_{33}]\\
&-\{F_AF_BF_C\}(S_{12}S_{21})S_{33}-\{F_AF_BF_C\}(S_{13}S_{31})S_{22}\\
&-\{F_AF_BF_C\}(S_{23}S_{32})S_{11}\\
&+\{F_AF_BF_C\}S_{12}S_{23}S_{31}+\{F_AF_BF_C\}S_{21}S_{13}S_{32} \quad = 0.
\end{aligned}
\qquad \text{(IV-1)}
$$

The mentioned eight loops through which information can flow are:

Loop 1) $\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{11}\text{-}\Sigma 2\text{-}\Sigma 1$

Loop 2) $\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{22}\text{-}\Sigma 4\text{-}\Sigma 3$

Loop 3) $\Sigma 5\text{-}G_3\text{-}F_3\text{-}S_{33}\text{-}\Sigma 6\text{-}\Sigma 5$

Loop 4) $\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{21}\text{-}\Sigma 4\text{-}\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{12}\text{-}\Sigma 2\text{-}\Sigma 1$

Loop 5) $\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{31}\text{-}\Sigma 6\text{-}\Sigma 5\text{-}G_3\text{-}F_3\text{-}S_{13}\text{-}\Sigma 2\text{-}\Sigma 1$

Loop 6) $\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{32}\text{-}\Sigma 6\text{-}\Sigma 5\text{-}G_3\text{-}F_3\text{-}S_{23}\text{-}\Sigma 4\text{-}\Sigma 3$

Loop 7) $\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{21}\text{-}\Sigma 4\text{-}\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{32}\text{-}\Sigma 6\text{-}\Sigma 5\text{-}G_3\text{-}F_3\text{-}S_{13}\text{-}\Sigma 2\text{-}\Sigma 1$

Loop 8) $\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{31}\text{-}\Sigma 6\text{-}\Sigma 5\text{-}G_3\text{-}F_3\text{-}S_{23}\text{-}\Sigma 4\text{-}\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{12}\text{-}\Sigma 2\text{-}\Sigma 1.$

We display equation (IV-1) and the eight loops for the purpose of remembering that functional systems cannot be perceived by looking at them, and that everything in life is functional! And we repeat the unpleasant statement for many readers: *What cannot be understood with pure thinking and reflecting - has to be calculated.*

Parameters and Patterns of Communication

According to Figure IV-1, the following variables and parameters will be taken into account:

1) The willpowers G_1, G_2, and G_3 of the three system partners. They will serve as variables. Willpower is necessary to force oneself toward one's goal.

For the group A, which is the group of equal speed of acting, the focus is on:

2) The communication transfer factors S_{ik} (i, k = 1, 2, 3; $i \neq k$), ($S_{11} = S_{22} = S_{33}$ are +1)

3) The signs, (+) or (-), of the factors S_{ik}.
A positive S_{ik} ($S_{ik} > 0$) together with a negative S_{ki} ($S_{ki} < 0$) within a closed interacting loop between two partners results in a *consentient* relation;
A positive S_{ik} ($S_{ik} > 0$) together with also a positive S_{ki} ($S_{ki} > 0$) within a closed information loop between two partners results in a *hostile* relation;
A negative S_{ik} ($S_{ik} < 0$) together with also a negative S_{ki} ($S_{ki} < 0$) within a closed interacting loop between two partners results in a *destructive* relation.

4) In the following, a consentient relationship is denoted with (+ –); a hostile relationship with (+ +), and a destructive relationship

with (– –). We will see that goal attainments are decreasing from the best situation to the worst: from (+ –) via (+ +) to (– –). Principally, if an interrelation between two partners results in either an increase, or in a reduced or even in an opposite goal attainment, we call such an interrelation either consentient (increase), or hostile (decrease) or destructive (opposite). But such statements are now short cuts, because we are dealing with a triple-relationship where three partners are involved in their togetherness. In complex systems all interacting elements happen simultaneously in time and in close cause-effect-strings. Therefore there are no *simplistic* rules. The patterns of interaction become rich. The ease with which symbols are used in the humanities to represent facts vanishes when we deal with complex problems. New notions and new definitions have to be found for finer discernments and distinctions.

5) The transfer factors S_{ik} are responsible for the intensity of communication. The influence of three different values is investigated: $|S_{ik}|$ is minor, normal, and excessive.

6) The time behavior of the partners is incorporated in the transfer functions F_1, F_2, and F_3. These functions shall all be equal. In our simple terminology, equal means of *equal intelligence.* It is assumed that in the crossover communication channels S_{ik} and S_{ki} there are no time delays. The feed-cross information (the attitude) establishes itself instantaneously between communicators. As in former studies, the time behavior affiliated with the individual partners is denoted as equation (IV-2) indicates. We set T = 1.

$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3} \qquad (IV-2)$$

The main interest is the stability space of the systems within which they operate properly. Three communication intensities: minor = 0.5, normal = 1, and 2 = excessive, multiplied with three patterns of communication: consentient, hostile, and destructive will be illustrated. The communication denoted as nil (0-0) is indeed trivial

and mentioned in passing. The nine spaces are shown in the nine Figures, IV-2 to IV-10. The three willpowers, G_1, G_2, and G_3, are the space-coordinates. For better visualization, the models are shown in layers. The rough rule to interpret the shape of the models is: The more intense the communication among the partners is, the smaller is the model's space.

Table IV-1 depicts an overview of the parameters of the nine Figures, IV-2 to IV-10.

Brief remarks about the models:

Figure IV-2: The (+ –)–model represents the stability space for *consentient* systems with *minor* communication intensity;
$S_{ik} = +0.5$; $S_{ki} = -0.5$. That is: $S_{ik}S_{ki} = -0.25$.

Figure IV-3: The (+ –)–model represents the stability space for *consentient* systems with *normal* communication intensity;
$S_{ik} = +1$; $S_{ki} = -1$. That is: $S_{ik}S_{ki} = -1$.

Figure IV-4: The (+ –)–model represents the stability space for *consentient* systems with *intense* communication intensity;
$S_{ik} = +2$; $S_{ki} = -2$. That is: $S_{ik}S_{ki} = -4$.

The point to mention is the shrinking of the stability space (the existence space) with increasing communication intensity. In other words: the more intense the communication is, the less the willpowers are allowed to be if a system shall continue to operate. The friendlier and the more intimate you are with your partners the more you have to cut back your willpower with which you strive toward your own goal, your own survival. This rule continues to be right for all models to come.

Figure IV-5: The (+ +)–model represents the stability space for *hostile* systems with *minor* communication intensity;
$S_{ik} = +0.5$; $S_{ki} = +0.5$. That is: $S_{ik}S_{ki} = +0.25$.

Figure IV-6: The (+ +)–model represents the stability space for *hostile* systems with *normal* communication intensity;
$S_{ik} = +1$; $S_{ki} = +1$. That is: $S_{ik}S_{ki} = +1$.
What we call here *normal* is already *intense* in social matters.

Table IV-1:

Figure	System	S_{ik} (i > k)	S_{ik} (i < k)	pattern	Intensity
IV-2	(+ –)	+0.5	-0.5	consentient	minor
IV-3	(+ –)	+1.0	-1.0	„	normal
IV-4	(+ –)	+2.0	-2.0	„	intensive
IV-5	(+ +)	+0.5	+0.5	hostile	minor
IV-6	(+ +)	+1	+1	„	normal
IV-7	(+ +)	+2	+2	„	intensive
IV-8	(– –)	-0.5	-0.5	destructive	minor
IV-9	(– –)	-1	-1	„	normal
IV-10	(– –)	-2	-2	„	intensive

Figure IV-7: The (+ +)–model represents the stability space for *hostile* systems with *extreme* communication intensity;
$S_{ik} = +2$; $S_{ki} = +2$. That is: $S_{ik}S_{ki} = +4$.

In hostile relationships, the willpowers generally increase immediately and grow beyond the stability limit in daily occurrences. Such systems turn over into instability and explode socially. The police must step in. At this point our linear philosophy might leave us with our interpretations, because linearity is rather a help to show evidence of live situations rather then accurate reality.

Figure IV-8: The (– –)–model represents the stability space for *destructive* systems with *minor* communication intensity;
$S_{ik} = -0.5$; $S_{ki} = -0.5$. That is: $S_{ik}S_{ki} = +0.25$.

This space is somewhat larger than that of hostility. Why is that so? We don't know. Are there situations where nature favors destruction before hostility, and hostility before consensus? Might be that this is so!

Figure IV-9: The (– –)–model represents the stability space for *destructive* systems with *normal* communication intensity;
$S_{ik} = -1$; $S_{ki} = -1$. That is: $S_{ik}S_{ki} = +1$.
This space is considerably smaller than that of hostility.

Figure IV-10: The (– –)–model represents the stability space for *destructive* systems with *intense* communication;
$S_{ik} = -2$; $S_{ki} = -2$. That is: $S_{ik}S_{ki} = +4$.
There is practically no meat left on the bone for stability, i.e., for proper existence. As a stable destruction is rather a contradiction, in normal life situations the term *stable destructions* does not make much sense in the realm of public opinion.

- - - - - - - - - -

The second part of the investigation of this group A involves the goal attainments x_1/u_1 as a function of the willpower G_1. The other two willpowers, $G_2 = G_3$, will be the parameter. The curves are depicted in Figures IV-11 and IV-12.

Figure IV-11: Goal attainment of P_1: x_1/u_1 is a function of P_1's willpower G_1. The upper curves are for *consensus*, that is for the (+ –)–systems; $S_{ik} = +1$; $S_{ki} = -1$, or $S_{ik}S_{ki} = -1$. The lower curves are for *hostility*, that is for the (+ +)–systems: $S_{ik} = +1$; $S_{ki} = +1$; that is: $S_{ik}S_{ki} = +1$. $G_2 = G_3 = G$ as parameter. The dotted line is for parity of all three willpowers, i.e., for $G_1 = G_2 = G_3 = G$, in hostile systems with G_1 still as a variable.

Figure IV-12: Goal attainment of P_1: x_1/u_1 is a function of P_1's willpower G_1 for *destruction*, i.e., for (– –)–systems; $S_{ik} = -1$; $S_{ki} = -1$, i.e., that is: $S_{ik}S_{ki} = +1$. The two dotted lines are for parity of all three willpowers, i.e., for $G_1 = G_2 = G_3 = G$.

These two figures, Figure IV-11 and IV-12 will be further discussed after the stability models of Group A are depicted.
In group B the patterns of communication are different. In group C the partners' speeds of acting are faster than in groups A and B. Various stability spaces will be presented and discussed when the models are shown further down.

The Three-Dimensional Spaces of Group A

The three-dimensional stability spaces, Figures IV-2 to IV-10, demonstrate impressively the shrinking of the spaces of stable existence when the intensity of communication increases. We put *attitude* - that is unconsciously exerted information toward a partner - equal to *communication* because it is the attitude that forms the words of communication. And attitude dominates because it is multiply stronger than words. The communication block CB in Figure IV-1 reflects the unconscious relation among the partners. Love, hate, idolization, blasphemy, and fanaticism gain their thrust and blow out of the unconscious. (Animals and plants have no words, but they communicate with each other!)

The models indicate how tremendous a reduction of willpower is needed with increasing attitude-thrust if systems have to remain operating properly. We know that in daily life situations this reduction does not occur. It is rather the opposite that occurs. The stronger the love or hate is, the more awfully the willpower bursts out, and the systems ruin themselves in instability.

This fact of necessary reduction of willpowers shows itself very clearly in our models' loop-behavior. But it seems not so in social and political circumstances. There the meaning is: the greater the power, the greater the effect. This is not untrue, but the greater the power, the more certain the instability, and thus the disintegration and downfall occur. Every so often, the downfall comes before the desired effect.

The cube beside the models shows the stability space when all the S_{ik} in Figure IV-1 are zero (S_{ik} $i \neq k$), i.e., when the partners are

in an autonomous state, i.e., without any communication. We call this kind of communication the (0-0)–system. The highest willpowers G_1, G_2, and G_3 then are 8, the length of the side of the cube. This length, G = 8, is known from the characteristic equation of the autonomous partner, equation (IV-3) for any T:

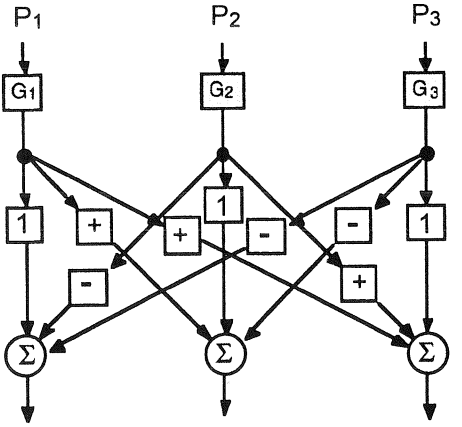
$$G + (Ts + 1)^3 = 0 \qquad \text{(IV-3)}$$

We call this maximum willpower of the autonomous partner $G_{m\text{-}au}$. (For the proof of this fact: G = 8 and independent on T, see Volume I, Chapter IV-3: The Limits of Stability; the Homeostasis.) As all three partners are dynamically equal, the three arms of the models are equal as well. The maximum G-values on the coordinates are $G_{m\text{-}au} = 8$.

Only G_i-points, G_1, G_2, and G_3, inside the model's space, are loci for valid operation. The closer an operating point G_i is to the intersection of the G_i-coordinates, to the zero-point, the better stable the system operates. Once the operating point is chosen, the goal attainments of the three partners can be evaluated and/or calculated. These attainments will be shown further down with Figures IV-11 and IV-12.

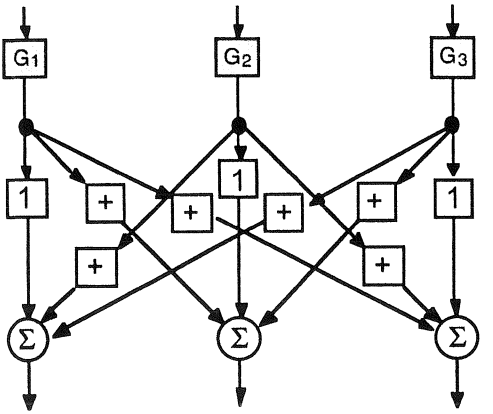
Attributed to all space models are the sign constellations of the cross information transfer factors S_{ik} and S_{ki}, i.e., the Figures IV-2a, IV-5a, and IV-8a, and further on.

It is not relevant whether the minus signs run from right to left (figuratively) or vice versa if the pattern of communication is equal for all three partners. This is the case for the two groups A and C.



$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3}$$

Figure IV-2a: S_{ik}-sign constellations for the three Figures IV-2, IV-3, and IV-4; *consentient* relationships, (+ -).



$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3}$$

Figure IV-5a: S_{ik}-sign constellations for the Figures IV-5, IV-6, and IV-7; *hostile* relationships, (+ +).

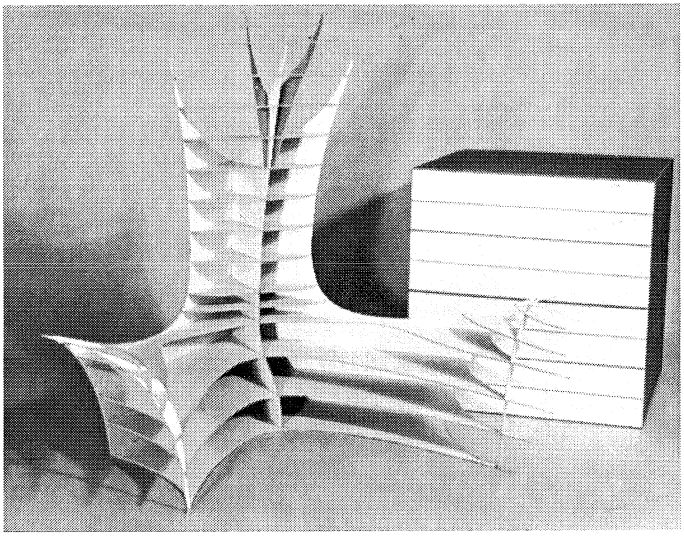


Figure IV-2: Stability domain for the *consentient* relationship w
$|S_{ik}| = 0.5$.

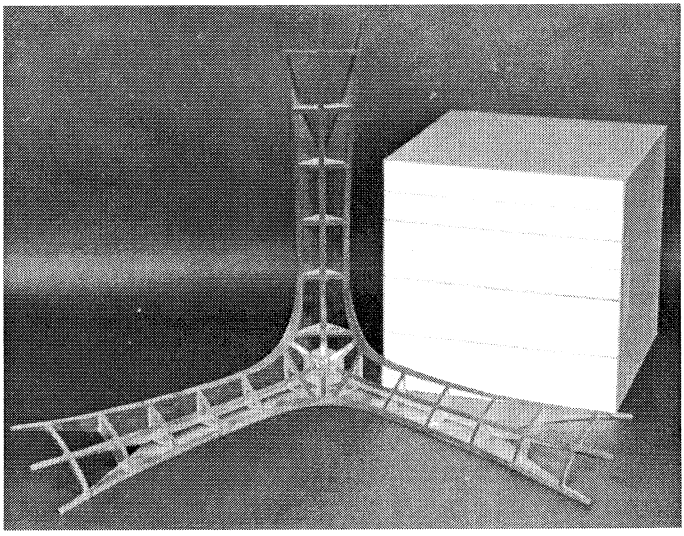


Figure IV-3: Stability domain for the *consentient* relationship w
$|S_{ik}| = 1$.

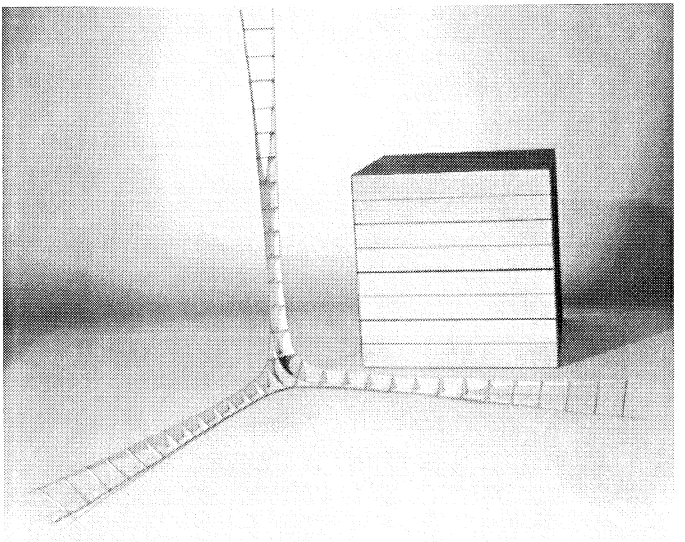


Figure IV-4: Stability domain for the *consentient* relationship with $|S_{ik}| = 2$.

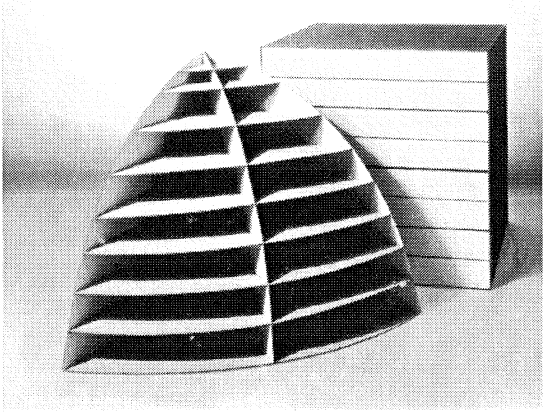


Figure IV-5: Stability domain for the *hostile* relationship with $S_{ik} = +0.5$.

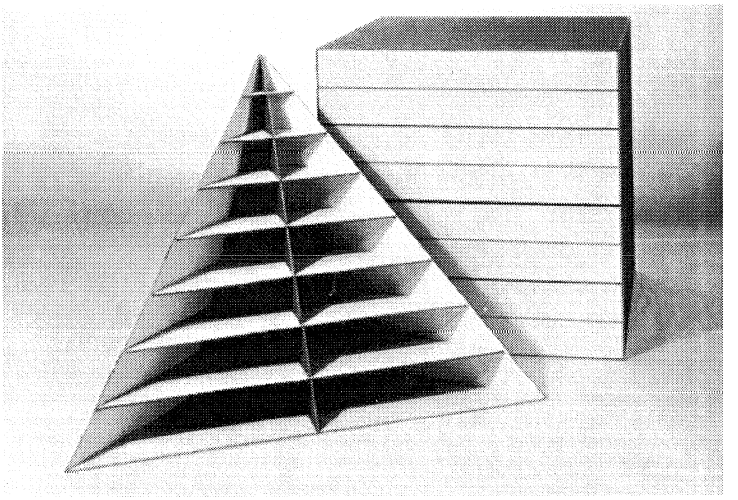


Figure IV-6: Stability domain for the *hostile* relationship with $S_{ik} = +1$.

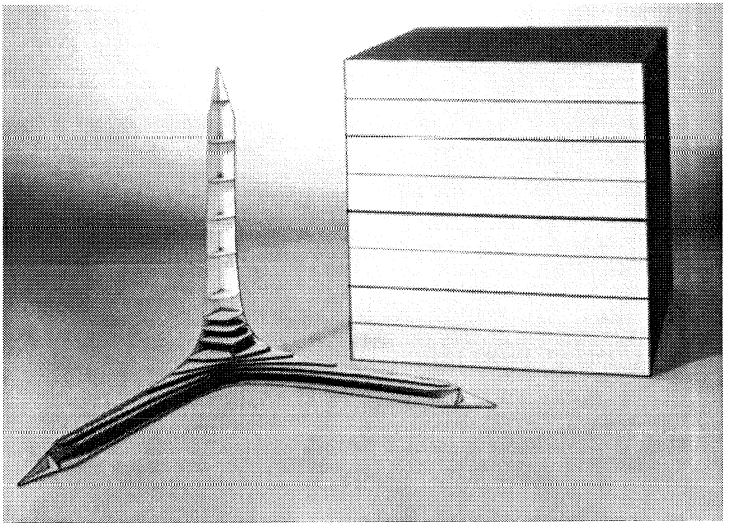
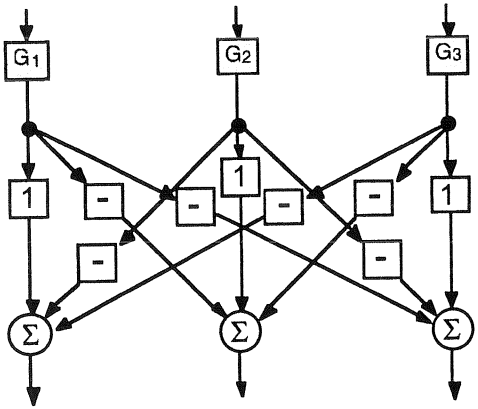


Figure IV-7: Stability domain for the *hostile* relationship with $S_{ik} = +2$.



$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3}$$

Figure IV-8a: S_{ik}-sign constellations of the Figures IV-8, IV-9 and IV-10; *destructive* relationships, (- -).

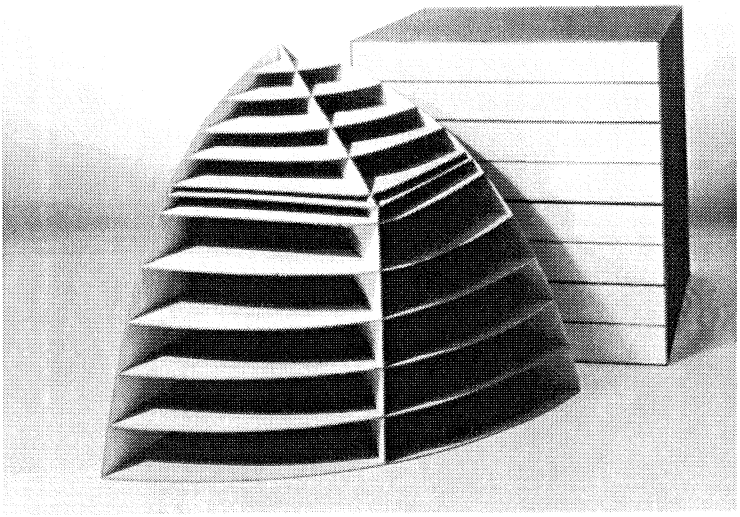


Figure IV-8: Stability domain for the *destructive* relationship with S_{ik} = -0.5.

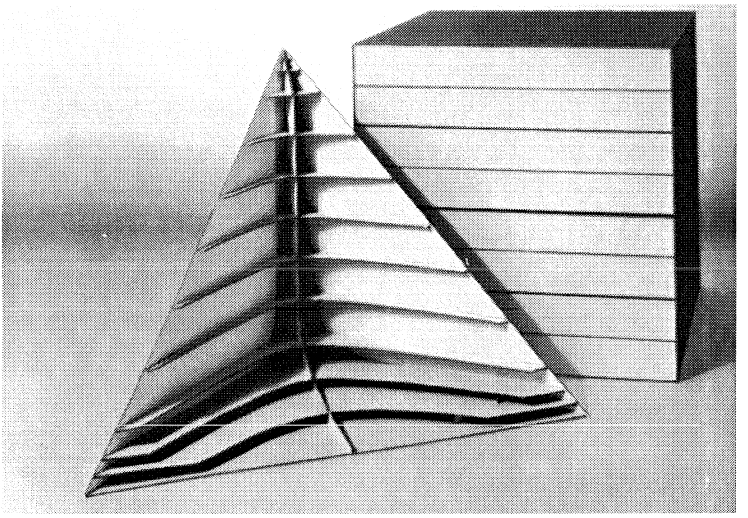


Figure IV-9: Stability domain for the *destructive* relationship with $S_{ik} = -1$.

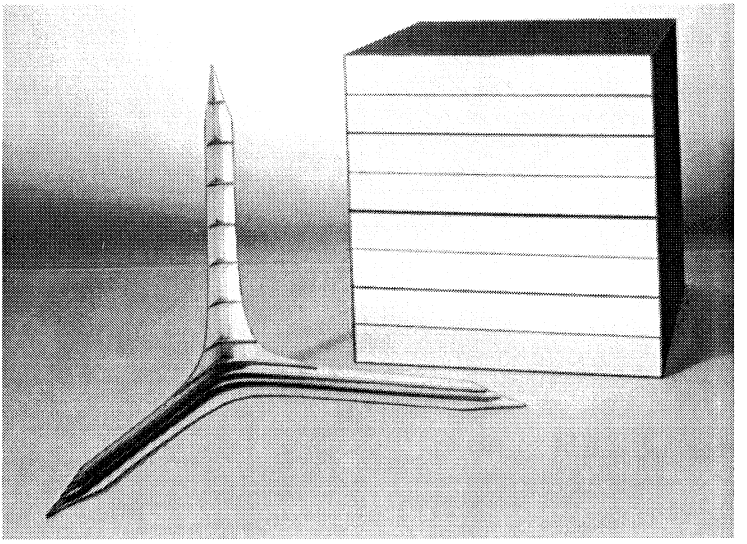


Figure IV-10: Stability domain for the destructive relationship with $S_{ik} = -2$.

Remarks to the stability Models IV-2 to IV-10

The spaces of consentient relationships, Figures IV-2 to IV-4, show areas where either an increase or a decrease of any of the three willpowers G_i the system runs into instability and, eventually, falls apart. This phenomenon is known already from Volume I, Chapter V-2: The Limits of Stability; the Homeostasis.

Figure IV-3a illustrates what is meant by *increase or decrease*. We call this state of consentient relation *hypo-stability*. In the vertical direction through the point P there are two stable and two instable areas. The instable area i between the two stable ones s can be called *broken stability*. The horizontal cut A--A through the point P shows a very small tolerance for stable behavior. Although we work with a hypothetical model, the facts give us a hint about the delicacy of friendships compared to hostile and destructive relationships, where there is none of such broken stability. Hostility and destruction, it seems, are rigidly stable states, and the forms of their models are rather simple.

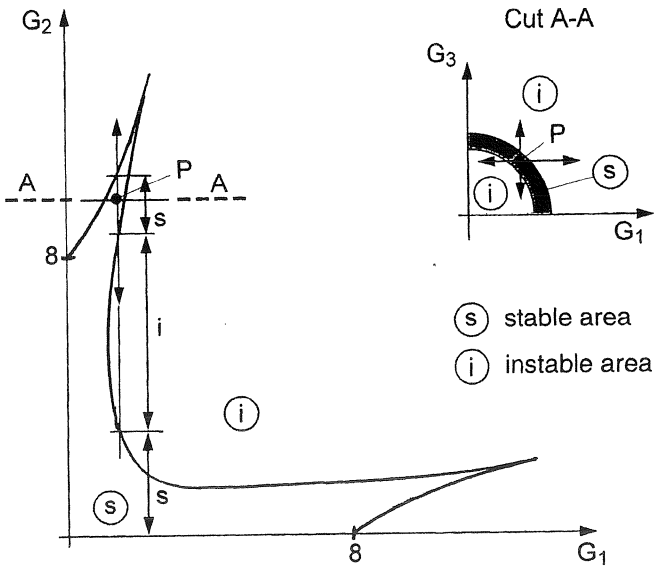


Figure IV-3a: Explication of the fact *broken* stability.

Another peculiarity appears in the friendship model. The point P out in the *hypostable* area allows a willpower of G_2 for P_2 that is greater than the autonomous willpower G_2 of 8; an attractive but dangerous situation. Such a state does not exist in the two other formations, *hostility* and *destruction*. P_2 in this dangerous area around point P can be called the *egoist*, whereas P_1 and P_3 have to give in to very small willpowers and, in doing so, are the two *altruists* of goodwill. Only one out of three can dominate!

At parity of the three willpowers, i.e., at $G_1 = G_2 = G_3$, and at the stability limits, the maximum willpowers in *hostility* are more than twice as great as in *consent*. In *consent*, $G_1 = G_2 = G_3 = 1.11$; in *hostility*, $G_1 = G_2 = G_3 = 2.66$. The (oscillatory) *speed* in hostility is twice the speed in consensus. We already know from the treatment of the dualism that at normal *consent* ($S_{12}S_{21} = -1$) the willpowers are $G_1 = G_2 = 2$, whereas in normal *hostility* ($S_{12}S_{21} = +1$) $G_1 = G_2 = 4$, and the ratio of the speeds hostility/consent is about 1.66.

In *destructive communication* at $S_{ik} = -1$and $G_1 = G_2 = G_3$, the *astatic* stability limit is $G_1 = G_2 = G_3 = +1$. The goal attainments are deeply negative: see Figure IV-12.

From history one knows that hostility is fast in acting and long lasting, i.e., stable, over centuries. Hostile relationships have much longer lives than consentient relations. Nature wants it this way, it seems.

Surprisingly, the $S_{ik} = S_{ki}$ of -0.5 in destructive relationships allow higher willpowers $G_1 = G_2 = G_3$ than $S_{ik} = S_{ki}$ of +0.5 in hostility. But, as we will see, goal attainments in destruction are very negative. The notion *destruction* requires negative attainments. Something has to break down.

From former investigations we know that consentient systems are far more sensitive on disturbances than hostile systems. This is another hint that nature favors aggression, and religious people still pray for peace!

Table IV-2 shows the willpowers in parity for all three parts of the A-group: $G_1 = G_2 = G_3$. They are the willpowers at the stability limit of the space diagonal of the models. It can be seen that the willpowers in hostility are about twice the willpowers in consent.

Table IV-2: The willpowers at the stability limits in parity of $G_1 = G_2 = G_3$ for the models of the A-group:

Communication pattern	Magnitude of S_{ik}	$G_1 = G_2 = G_3$	speed
Consent	±0.5	2.30	60
	±1.0	1.112	48
	±2.0	0.511	40
Hostility	+0.5	4	100
	+1.0	2.667	100
	+2.0	1.00	astatic
Destruction	-0.5	5.333	100
	-1.0	1.0	astatic
	-2.0	0.333	astatic

Speed means: Oscillating frequency at the stability limit.

The Goal Attainments of the Triplex

Reference is given to Figure IV-11. The curves (+ –) in the figure indicate that *consentient* behavior supports goal attainment. The higher the own willpower G_1 and the higher the willpowers of the two partners, $G_2 = G_3 = G$, the better each one's goal attainment becomes. But the greater G_1 is, less is the help. The extension of the (+ –)-help shrinks. The interpretation is that P_1 having great willpower G_1 does not need much help anymore. He can do it himself.

Here we mention again a fatal circumstance for not only consentient togetherness, but for any of the three relationships. In

the case of equal willpowers of the three constituents, $G_1 = G_2 = G_3$, a system with communication allows less willpower to the constituents than the individual can exert in an autonomous state. In the autonomous state the goal attainment can be considerably higher than in togetherness. Communication requires enormous reduction of willpower and consequently, communication reduces goal attainment in the state of independent goals.

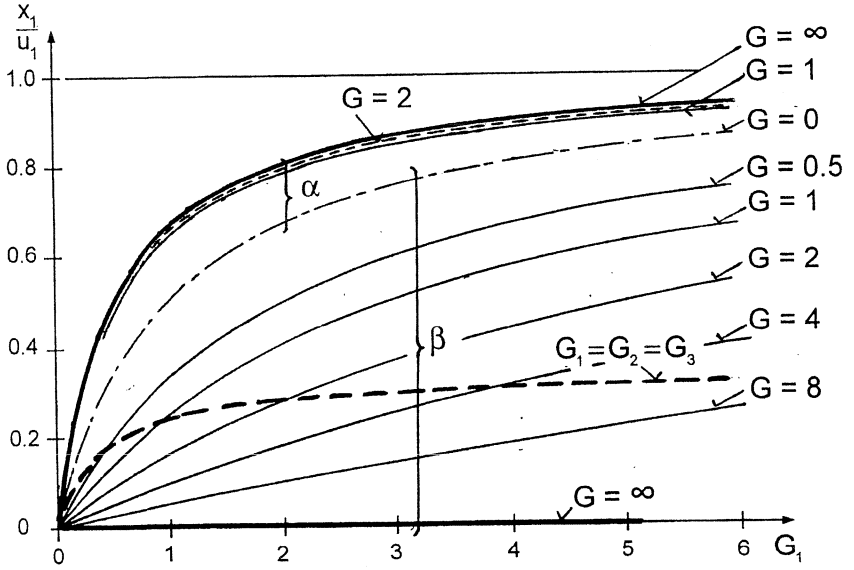


Figure IV-11: Steady state goal attainments of P_1, x_1/u_1 and G_1, for the (+ -) and the (+ +)-systems, that is for *consentient and hostile* togetherness. The variable is G_1, and $G_2 = G_3 = G$ is parameter. Due to the symmetry of the systems, the G-indices can be interchanged. Goals are independent, i.e., with $u_1 = 1$, $u_2 = u_3 = 0$.

In the *consentient* togetherness, with parity of willpowers, with $S_{ik} = +1$, $S_{ki} = -1$ and at a point close to the stability limit of $G_1 = G_2 = G_3 = 1$, the goal attainment of P_1 is $x_1/u_1 = 64\%$. If P_1 is autonomous with G_1 of only 1, he gets 50% of his goal u_1. Therefore his gain is 14%. But if he, P_1, is autonomous he could exert a willpower G_1 of 8 and could get 89% of his goal u_1. Thus, if you are weak in

willpower, (small G_1), join a consensus of strong participants to get help from them. If you are strong, (large G_1), stay alone.

The (+ +)-curves in Figure IV-11 with $S_{ik} = S_{ki} = +1$ represent the goal attainments in *hostile* relationships. In parity of willpowers, $G_1 = G_2 = G_3 = G$, $G = 2.66$ is the stability limit. Dividing 2.66 by the *consentient* stability point of 1.11 results in 2.4. The *hostility* willpower is 2.4 times the equivalent *consentient* willpower. The curves in Figure IV-11 show the damage that strong communication does to each other. Hostility in conglomerates does not pay in surviving prospects.

In the case of parity of willpowers, with $S_{ik} = S_{ki} = +1$, a point close to the stability limit of $G_1 = G_2 = G_3 = 2.5$, the goal attainment of P_1 is $x_1/u_1 = 29\%$. If P_1 is autonomous with G_1 of only 1, he gets - as mentioned - 50% of his goal u_1. The loss is 21%. As also commented above, the autonomous attainment could be 89%.

If one is weak and has to deal with strong opponents, the situation for the weak party is death. We look, e.g., at the case of $G_1 = 1$, and $G_2 = G_3 = 2$: Assuming a minimum survival rate of 20% of the goal u, P_1 with G_1 of only 16% of his goal u_1 will not survive.

The dotted (+ +)-curve is the goal attainment for P_1 in the case of parity of willpowers ($G_1 = G_2 = G_3$). Thus, in Figure IV-11 it can be seen that $G_1 = G_2 = G_3 = 1$ is about a survival point; x/u for all three partners is 24%. A willpower of $G_1 = G_2 = G_3 = 1$ and an attainment of 24% for each one of the three could be a willpower of 8 and an attainment 89% if they could give up hostility and each one would go his own way. Hostility is mutual damage.

Figure IV-12, the *destructive* cause in view of goal attainments is rather confusing. It is difficult to make the bridge to reality because it seems that this situation is somehow pathological. At small willpowers $G_2 = G_3 = G < 0.5$, the systems are not destructive yet. But already at $G_2 = G_3 = G = 0.5$, P_1's goal attainment is 0 independent of his willpower G_1. With $G_2 = G_3 = G > 0.5$, P_1's attainment no longer makes sense. The system has asymptotes:

goal attainments jump from $-\infty$ to $+\infty$, a fact that does not make sense in our rational, social world. Therefore we call this situation - at that point of investigation and our actual system-knowledge – ill disposed. A way to interpret the jump from $-\infty$ to $+\infty$ might be the saying that is assigned to Napoleon: *Du sublime au ridicule il n´y a qu´un pas!* From subtlety to ridiculousness there is only one step!

The dotted line in this Figure IV-12 is for $G_1 = G_2 = G_3 = G$. It can be seen that for $0 < G < 0.5$, x_1/u_1 is positive but tiny. At $G_1 = G_2 = G_3 = G = 0.25$, $x_1/u_1 = 11\%$. $S_{ik} = S_{ki} < -0.5$ might not make sense in the world of our human social structure. The system is physical, but where is it to be placed it in our social and indeed highly irrational world?

To summarize:

Autonomy is the best behavior as regards survival. But it means total isolation, total detachment from society or full disinterest in others' lives.

Consentient togetherness is advantageous, but extremely delicate to be maintained. A change of mind from a $-S_{ik}$ to a $+S_{ik}$ of one partner - changing his mind - in regard to the other leads generally to an incurable hostility.

Hostility is mutual damage! Advice: be consentient or leave the party! Great willpower in hostility is momentary show-off. Hostility acts much faster than consent what makes it attractive. If at $G_1 = G_2 = G_3 = 1.11$ of the $(+-)$-example the speed is 100%, then the speed of the $(+ +\beta)$-example with $G_1 = G_2 = G_3 = 2.66$ is over 200%. Hostility acts twice as fast as consent. Hostility is speed and power with self-damage.

At a high intensity of hostility it cannot be foreseen what is going to happen; one can survive, one can be killed.

Although everybody knows by now our calculated results, we emphasize them by finishing group A with some proverbs.

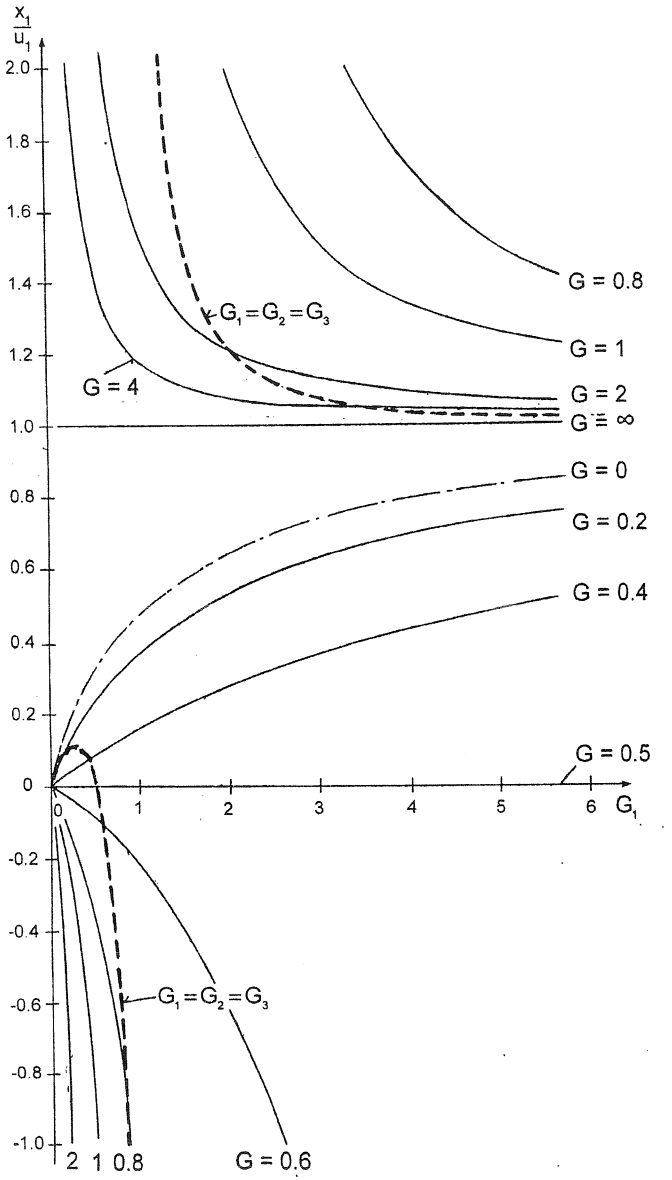


Figure IV-12. Steady state goal attainments of P_1, x_1/u_1 and G_1, for the (- -)-systems, that is for *destructive* togetherness. The variable is G_1, and $G_2 = G_3 = G$ is parameter. The $S_{ik} = S_{ki}$-values are -1.

For low or no intensity of communicating:
Talk is silver; to keep quiet is golden, (Originally from the Arabic world).
A wall between preserves love.
A hedge between keeps friendship.

To propose autonomous behavior:
Good fences make good neighbors
No neighbor, good neighbor. (Russian proverb)
Selbst thun ist bald than. Do it yourself; it will be done soon.

To promote consentient behavior and be the altruist:
Man soll des Nachbarn grosses Haus stützen, damit unsere kleine Hütte nicht einfällt; One should shore up the neighbors mansion so that our little shack does not collapse.

The damage due to hostility.
Wer den Nachbarn tritt, leidet selber mit; He who hurts the neighbor hurts himself too.
Ein schlimmer Nachbar ist schon schwer im Dorf, im Haus und Wagen, am schwersten doch im Bett zu ertragen; To endure a bad neighbor in the town, in the house and on the wagon is grave, but the worst is to have him/her in your bed.
Fluch einem Nachbarn, und du gräbst zwei Gräber (Japanese Proverb); Curse on your neighbor, and you dig two graves.

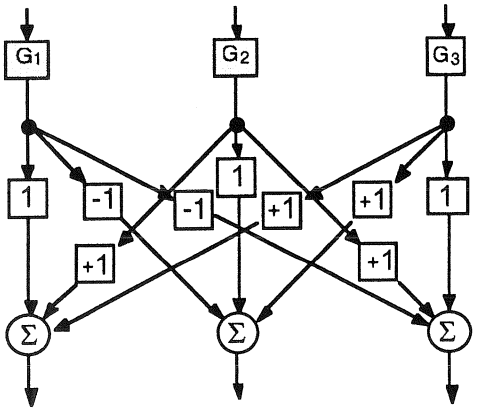
The Three-Dimensional Spaces of Group B

The models in this series are not *space-symmetric* as group A's models and group C's models are. Although the speed of the partners´ acting (our definition of intelligence) is still the same, namely according to equation (IV-2), the patterns of communication become mixed. We consider *consentient* and *hostile* bilateral *information exchange* between partners, *one-sided* and also *no information exchange* between them. Without going into a detailed explanation of each model, the B-series and including the C- and D-group can be regarded as an album. The models give insight into

the enormous complexity that can occur when only three partners join together in a relationship.

Models give a firmer grasp on the complexities encountered in economics, biology, medicine, psychology, sociology, law and politics including daily family squabbles. Considering that attitudes can change at any instant of time with generally increasing willpowers, the prediction of peace and war, of stability and instability remains remote, remains impossible. The greatest absurdity is - we mean - to pray for salvation and peace for the world. Trying to postpone wars that are imminent after peace conferences ended unsuccessfully is endeavor enough for maintaining blurred hope.

There are five models in twelve pictures: Figures IV-13, -14, -15, -16, and -17.



$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3}$$

Figure IV-13a: S_{ik}-sign constellations for Figures IV-13b and c.
Partner P_1 is in *consent* with P_2 and P_3.
P_2 and P_3 are in a *hostile* relationship with each other.

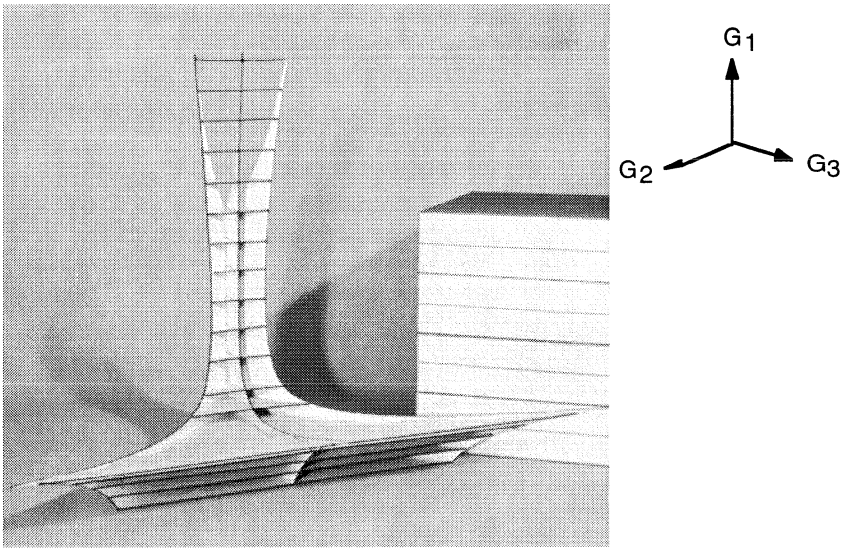


Figure IV-13b: Partner P_1 is in *consent* with P_2 and P_3. P_2 and P_3 are in a *hostile* relationship with each other.

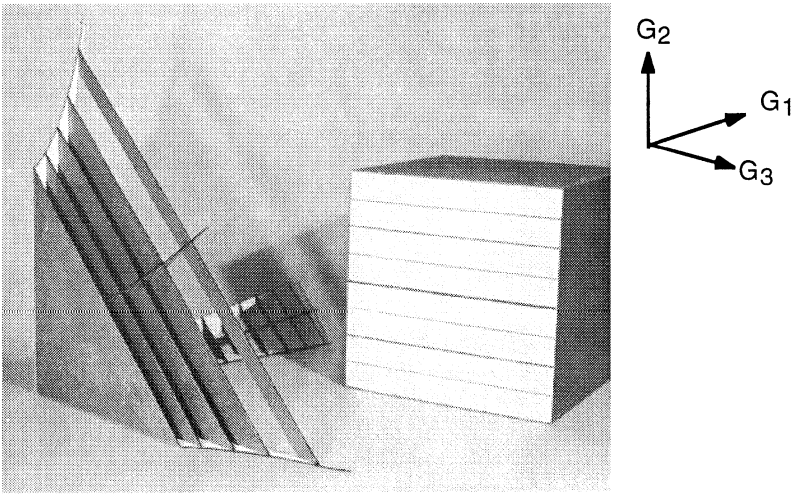
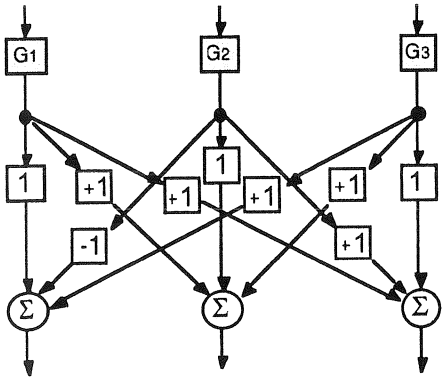


Figure IV-13c: Partner P_1 is in *consent* with P_2 and P_3. P_2 and P_3 are in a *hostile* relationship with each other.



$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3}$$

Figure IV-14a: S_{ik}-sign constellations for Figures IV-14b and c.
P_1 and P_2 are in *consent* with each other.
Both, P_1 and P_2, are in a *hostile* relationship with P_3.

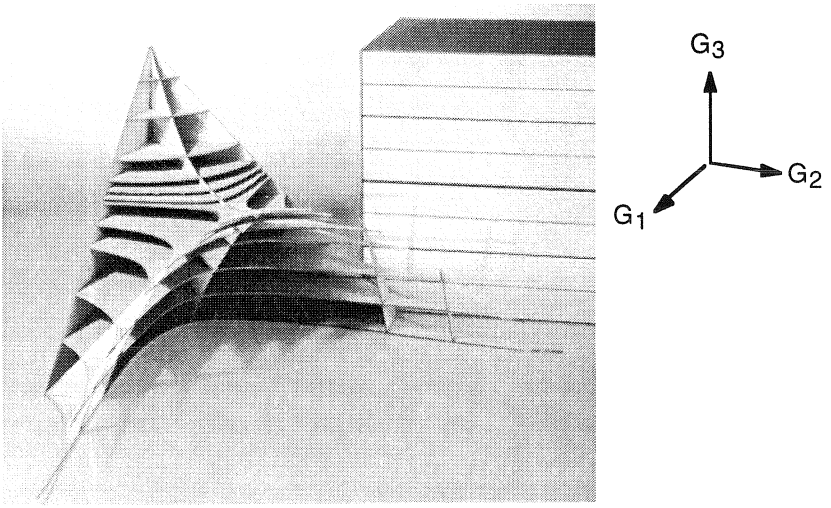


Figure IV-14b: P_1 and P_2 are in *consent* with each other.
Both, P_1 and P_2, are in a *hostile* relationship with P_3.

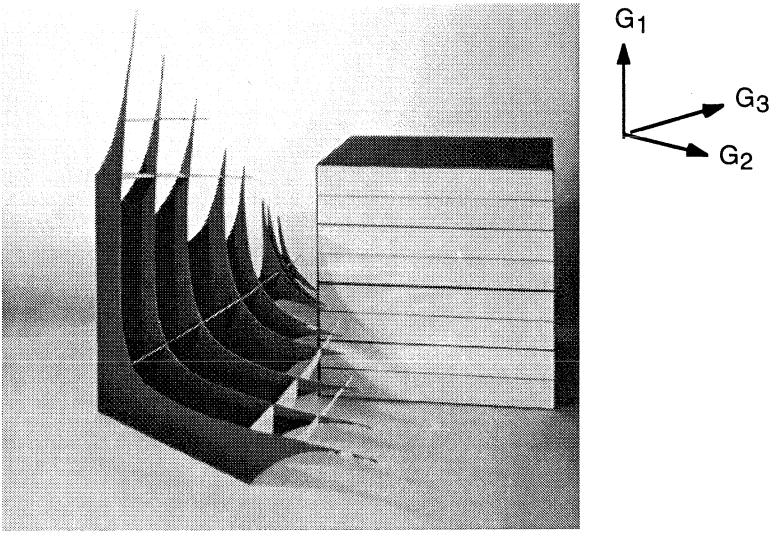


Figure IV-14c: P_1 and P_2 are in *consent* with each other. Both, P_1 and P_2, are in a *hostile* relationship with P_3.

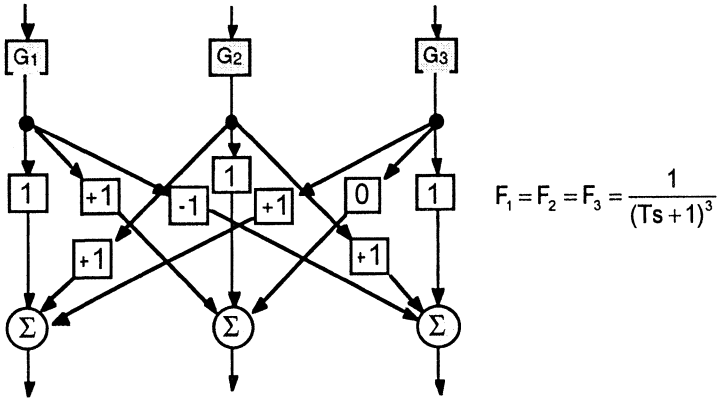


Figure IV-15a: S_{ik}-sign constellations for Figure IV-15. P_1 is in *hostility* to P_2, but in friendship with P_3. P_2 sends affirmative information to P_3, but P_3 does not respond to P_2.

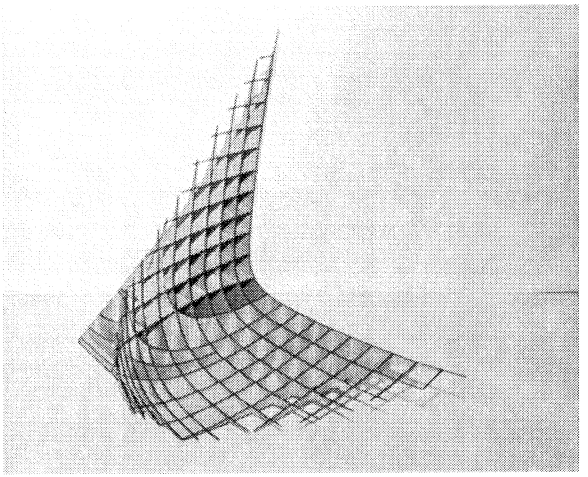


Figure IV-15b: P_1 is in *hostility* to P_2, but in friendship with P_3. P_2 sends affirmative information to P_3, but P_3 does not respond to P_2.

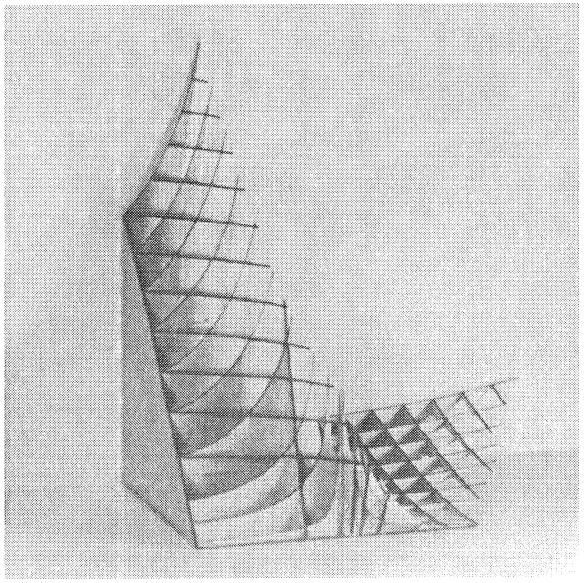
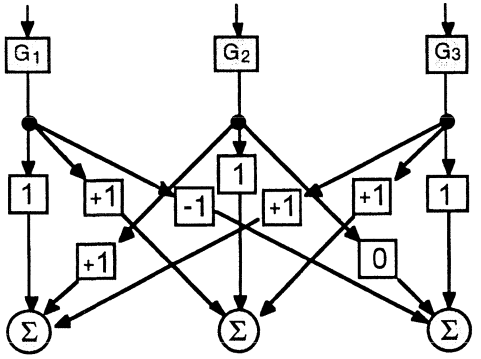


Figure IV-15c: P_1 is in *hostility* to P_2, but in friendship with P_3. P_2 sends affirmative information to P_3, but P_3 does not respond to P_2.



$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3}$$

Figure IV-16a: S_{ik}-sign constellations for Figure IV-16. As in Figure IV-15, P_1 is *hostile* to P_2, but in *friendship* with P_3. P_3 sends now affirmative information to P_2, but P_2 does not respond to P_3.

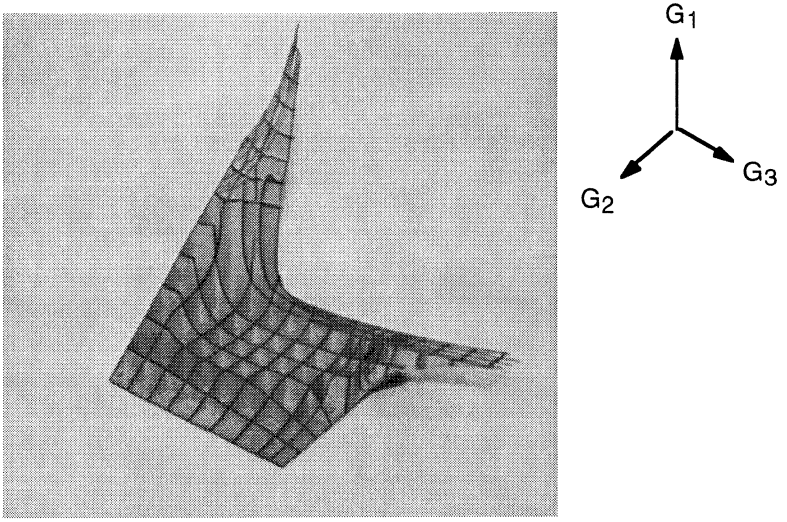


Figure IV-16b: As in Figure IV-15, P_1 is *hostile* to P_2, but in *friendship* with P_3. P_3 sends now affirmative information to P_2, but P_2 does not respond to P_3.

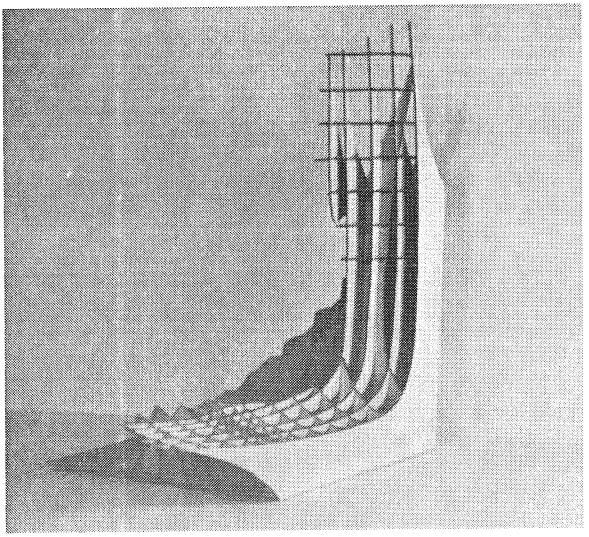
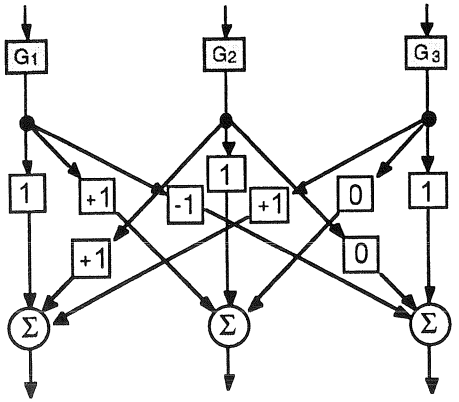


Figure IV-16c: As in Figure IV-15, P_1 is *hostile* to P_2, but in *friendship* with P_3. P_3 sends now affirmative information to P_2, but P_2 does not respond to P_3.



$$F_1 = F_2 = F_3 = \frac{1}{(Ts+1)^3}$$

Figure IV-17a: S_{ik}-Sign constellations for Figure IV-17. As in Figure IV-16, P_1 is *hostile* to P_2, but in *friendship* with P_3. Between P_2 and P_3 there is no information exchange at all.

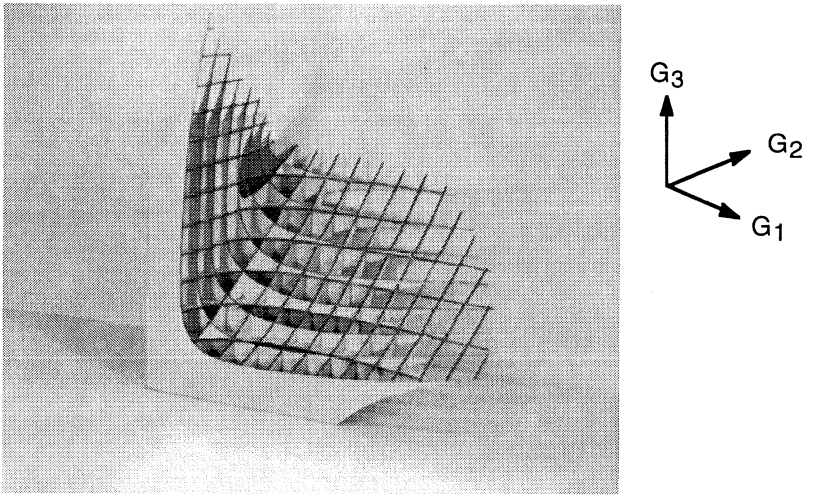


Figure IV-17b: As in Figure IV-16, P_1 is *hostile* to P_2, but in *friendship* with P_3. Between P_2 and P_3 there is no information exchange at all.

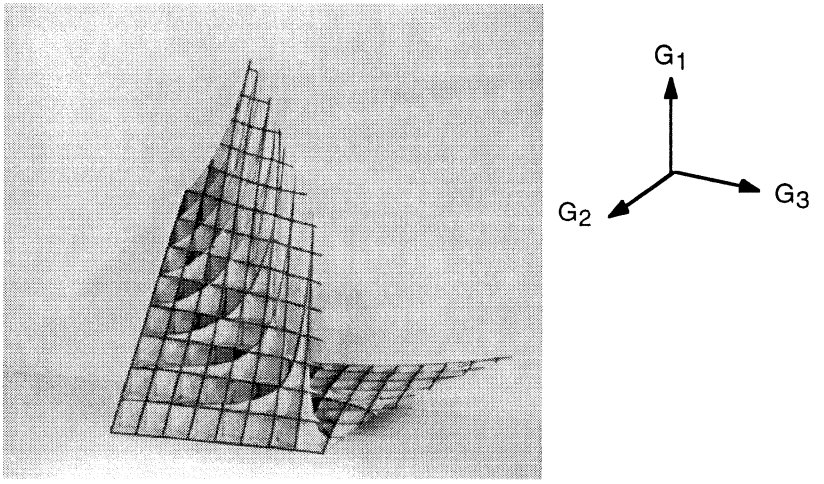


Figure IV-17c: As in Figure IV-16, P_1 is *hostile* to P_2, but in *friendship* with P_3. Between P_2 and P_3 there is no information exchange at all.

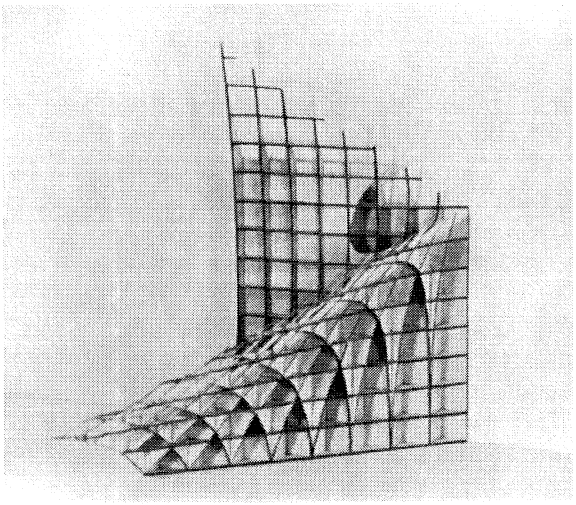


Figure IV-17d: As in Figure IV-16, P_1 is *hostile* to P_2, but in *friendship* with P_3. Between P_2 and P_3 there is no information exchange at all.

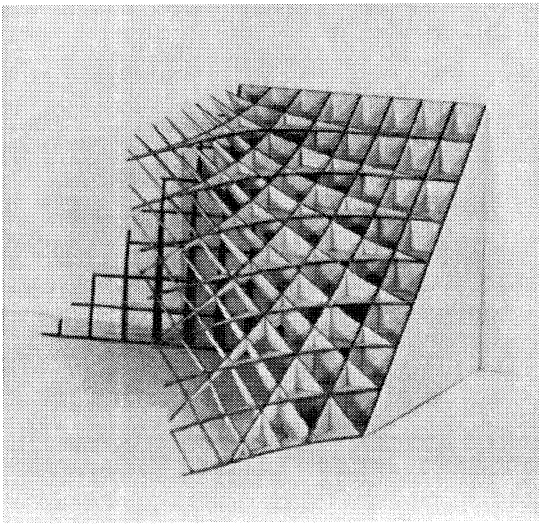


Figure IV-17e: As in Figure IV-16, P_1 is *hostile* to P_2, but in *friendship* with P_3. Between P_2 and P_3 there is no information exchange at all.

The Three-Dimensional Spaces of Group C

This Group C is similar to the consentient Group A. What is equal is the formation of communication and its magnitude. What is different is the speed of acting. The three transfer functions F_1, F_2, and F_3 are now of second order only and no longer of third.

This second order has a consequence. The stability limit of a linear loop of a second order is in the infinity. The willpower of such a loop has therefore no final limit. The loop has no realistic value. But our interest is focused on the tendency when loops become faster within a conglomerate of partners. We want to show that nature favors velocity. This phenomenon is definitely the reason that speed fascinates - and speed means survival!

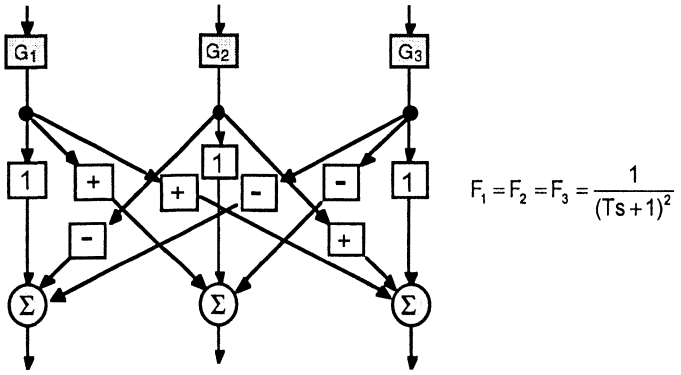


Figure IV-18a: S_{ik}-sign constellations for the Figures IV-18, IV-19, and IV-20; *consentient* relationships.

A comparison of the stability points $G_1 = G_2 = G_3 = G$ of the three corresponding *consentient* systems of the third order versus the second order indicates that flexibility (or intelligence) offer exertion of a higher level willpower within stable living spaces. Comparisons are shown
between Figure IV-2 and Figure IV-18, $|S_{ik}| = 0.5$,
between Figure IV-3 and Figure IV-19, $|S_{ik}| = 1$, and
between Figure IV-4 and Figure IV-20, $|S_{ik}| = 2$.

Figures IV-2, -3, and -4 show models of third order,
Figures IV-18, -19, and 20 show models of second order.

Table IV-3 indicates that speedy individuals in acting together can exert higher willpowers than slow ones. Ergo: nature favors speed and power compared to slowness and weakness. And as we know well, nature also favors hostility compared to consent. Hostility is fast, consent is slow: see Volume II, Chapter X, Figures X-6 and X-8. In Table IV-3 the three willpowers are equal, $G_1 = G_2 = G_3 = G$. The point taken at the stability limit is on the space diagonal of the models.

Table IV-3: Willpowers $G_1 = G_2 = G_3 = G$ for *consentient* systems at the stability limit.

$\|S_{ik}\|$	G $[1/(Ts+1)^3]$	G $[1/(Ts+1)^2]$
0.5	2.3	6.2
1.0	1.11	2.0
2.0	0.51	0.76

The following three stability models, the Figures IV-18, IV-19, and IV-20, have truncated arms. This is due to the fact that the individual partner is symbolized with a second order differential equation in F_1, F_2, and F_3. In reality the arms extend to infinity.

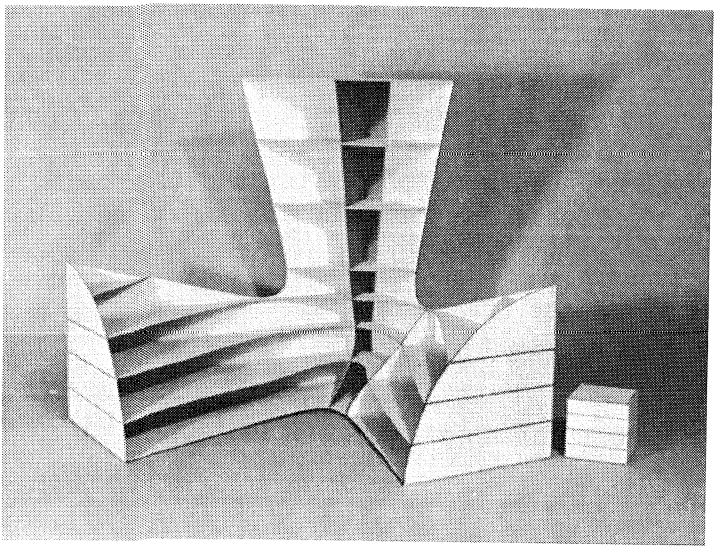


Figure IV-18: Stability domain for the *consentient* relationship with $|S_{ik}| = 0.5$. F_1, F_2, and F_3 are of second order.

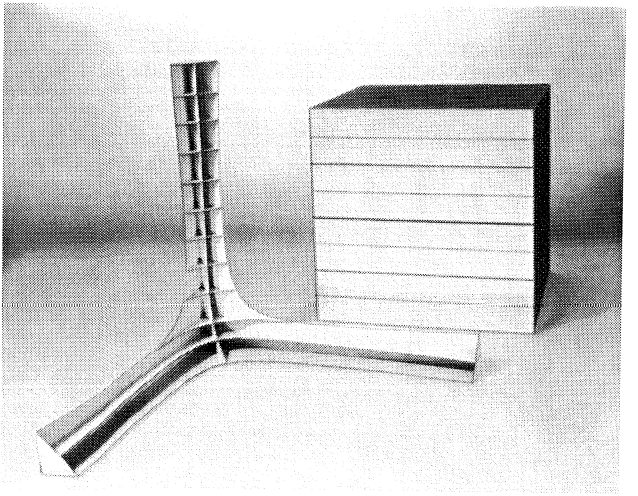


Figure IV-20: Stability domain for the *consentient* relationship with $|S_{ik}| = 2$. F_1, F_2, and F_3 are of second order.

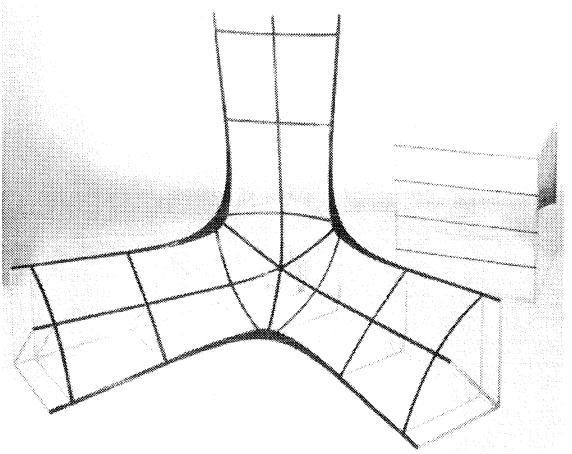
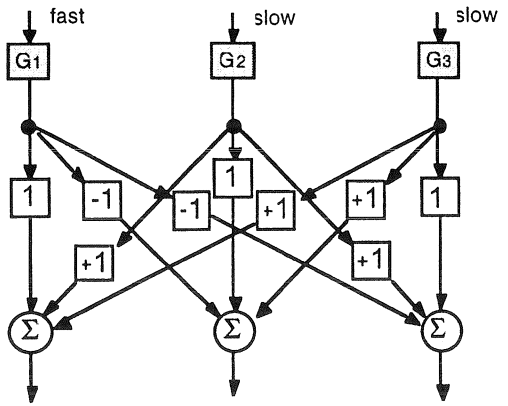


Figure IV-19: Stability domain for the *consentient* relationship with $|S_{ik}| = 1$. F_1, F_2, and F_3 are of second order.

The Three-Dimensional Spaces of Group D

Figure IV-21: P_1 is considerably faster than P_2 and P_3.



$$F_1 = \frac{1}{(0.1s+1)^3}$$

$$F_2 = F_3 = \frac{1}{(s+1)^3}$$

Figure IV-21a: S_{ik}-sign constellations for Figure IV-21.

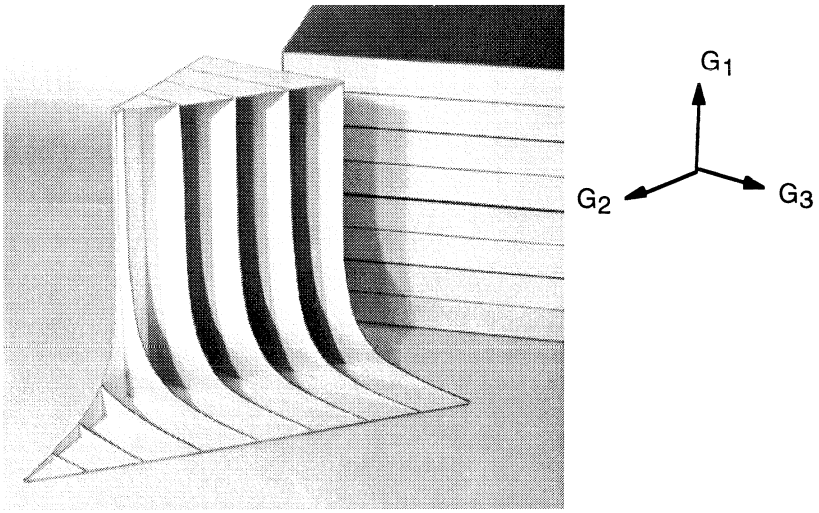
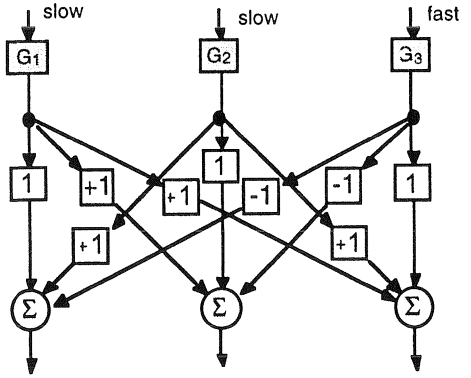


Figure IV-21: Stability domain for a system in which P_1 is very fast. He is in *consent* with P_2 and with P_3, whereas P_2 and P_3 are in *hostility*. The fast and *double consentient* partner pulls the stability domain toward his domain.

The fast P_1 has an advantage concerning his goal attainment. He can strive toward autonomous willpower if his two partners give in and do not insist on tending toward their autonomous willpower. As F_1 is also of the third order, there is no truncation on the P_1 arm. That the arm seems to be cut is the proper stability limit.

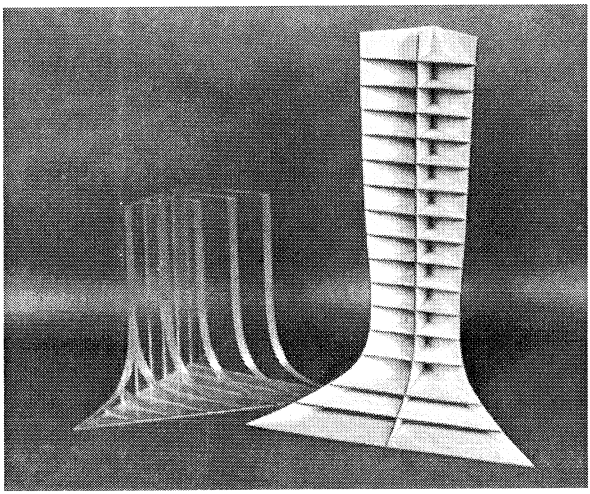
As P_3 is of the second order, a model truncation of this arm is necessary. He could extent his willpower up to infinity if his two partners would give in and would not insist on tending toward their *autonomous* willpower. Note that the basic forms of this model and the model Figure IV-21 are similar. In Figure IV-21 the double consentient partner is P_1, in Figure IV-22 it is partner P_3.



$$F_1 = F_2 = \frac{1}{(s+1)^3}$$

$$F_3 = \frac{1}{(s+1)^2}$$

Figure IV-22a: S_{ik}-sign constellations for Figure IV-22



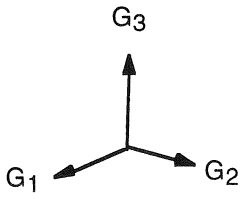


Figure IV-22: Stability domain for a system in which P_3 is fast. He is in consent with P_1 and P_2. P_1 and P_2 are in hostility. The fast and *double* consentient partner can take advantage - if P_1 and P_2 do not insist on exerting their willpowers.

Concerning both Figures, Figure IV-21 and Figure IV-22, a remarkable fact is in order about the fast partner. *If his two*

partners give in and do not insist on tending toward their autonomous willpower, it is referred to the explanation about this fact in Chapter III, Figures III-5 and Figure III-6. If either or both of the two hostile partners would insist on exerting a high level of willpower, the partner P_1 in Figure IV-21 or P_3 in Figure IV-22 would be forced to a renunciation of his willpower down close to zero. He could not survive.

To be bound to a group of hostile partners (here, there are two of them) could be pure suicide to be obsequious to them. As nature favors aggression and hostility, consentient behavior *would be* an act of killing oneself! *Man kann nicht segnen, wo einem geflucht wird*; You cannot bless where one curses on you.

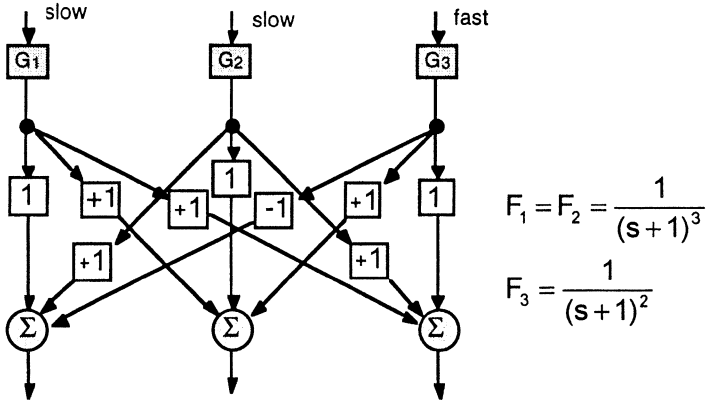


Figure IV-23a: S_{ik}-Sign constellations for Figure IV-23.

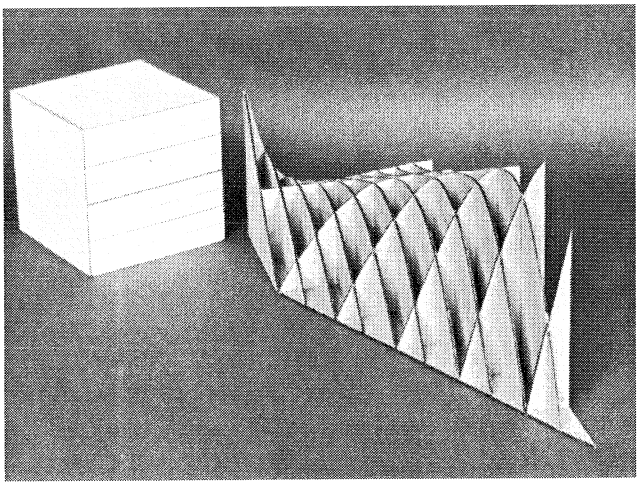
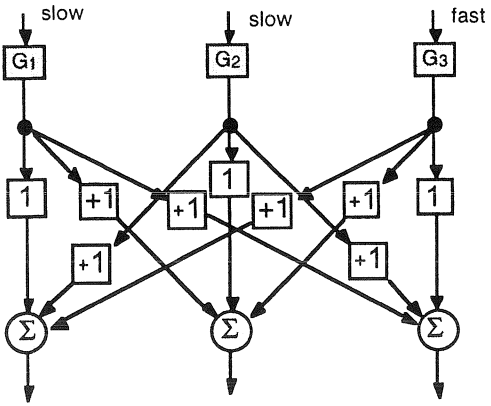


Figure IV-23: Stability domain for a system of which P_3 is fast. He offers consent to P_1. P_2 is in hostility with P_1 and P_3. The fast partner P_3 blows up the stability domain and can demand his rights if P_1 and P_2 do not insist on having their willpower high.



$$F_1 = F_2 = \frac{1}{(s+1)^3}$$

$$F_3 = \frac{1}{(s+1)^2}$$

Figure IV-24a: S_{ik}-Sign constellations for Figure IV-24.

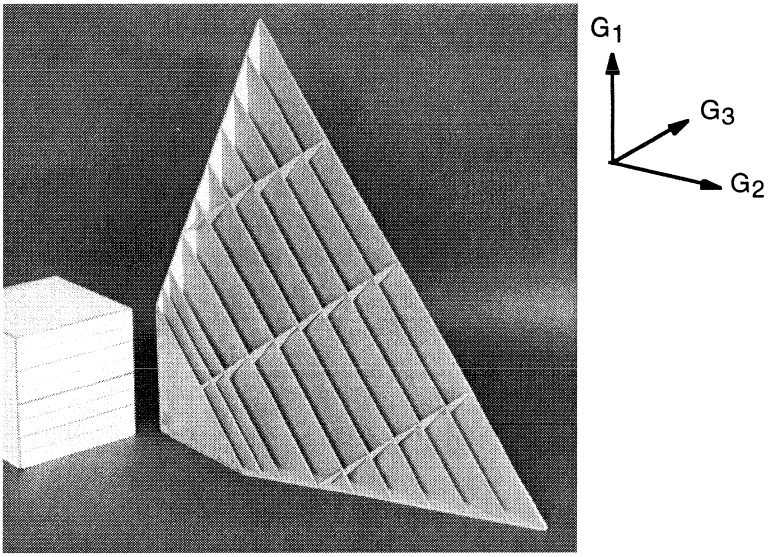


Figure IV-24: Stability domain for a system in which P_3 is fast. All three partners, P_1, P_2 and P_3, are in hostility to each other. The fast partner P_3 increases the stable space enormously and takes the advantage over his two partners concerning willpower.

In both systems, in IV-23 and IV-24, but more so in IV-24 it comes to light how hostile disposition and fast action increase the stability space. In addition we can see that models of hostile systems have much simpler forms than consentient systems.

But do larger stability spaces in hostility increase the goal attainments? In order to illustrate the facts, some data are given in Table IV-4 for the two systems, Figure IV-22 and Figure IV-24. In Figure IV-22 there is one partner consentient, in Figure IV-24 none.

From the data of Figure IV-22 we see that the fast P_3, who offers consent to P_1 and P_2, could beautifully live with 94% goal attainment if P_1 and P_2 would agree. But as these two persons are in a hostile disposition to each other, they will not do so. Their maximum willpowers could be 4 with P_3 having zero. The increase

of their goal attainments from $G_1 = G_2 = 1.4$ to 4 would be 2% only, from 41% to 43%. If they give to P_3 the small permission of $G_3 = 0.5$ they would not gain anything more in their goal attainment, but P_3 could achieve 47%.

Table IV-4: Comparison of goal attainments of Figures IV-22 and IV-24. Goals are incompatible. *Proximus sum egomet mihi;* I am myself the next.

IV-22	G_1	G_2	G_3	x_1/u_1	x_2/u_2	x_3/u_3
	1.4	1.4	10.0	41%	41%	94%
	4	4	0	43%	43%	0%
	3.5	3.5	0.5	43%	43%	47%
IV-24	G_1	G_2	G_3	x_1/u_1	x_2/u_2	x_3/u_3
	10.0	10.0	50.0	13%	13%	70%
	5.0	5.0	20.0	16%	16%	63%
	10.0	10.0	10.0	35%	35%	35%

As they, P_1 and P_2, do not gain from being generous to P_3, they will reject the consentient attitude of P_3 and make the whole system hostile. We then have system IV-24. There we see that the flexible P_3 could still survive well if he could exert enough willpower (70%). His two partners would die (13%). If the three can come to a fight-agreement of equal power they all could barely survive with 35% goal attainment each. But as the system is highly hostile toward each other, the fast party P_3 would try to get rid of P_1 and P_2, i.e., to kill them.

We see that the relationship between the three parties determines the outcome in an unpredictable way. How much more obscure are daily circumstances and legal cases where there are only trial and error methods available! We worked with strict mathematical tools that are by no means disposable in every day problem solving.

It is also impressive how high levels of willpower can be in a system of total hostility, such as in Figure IV-24 compared to Figure IV-22, where there is just one consentient partner in the game.

We are not blasé if we talk with nonchalance about killing the partner in hostility. In nature there is no punishment for killing. Quite the reverse is true: killing is necessary for survival. Feeding oneself requires taking the life of other beings. And nature does not make any value-difference between men and animals or plants.

V. The Lawyer Syndrome

„The first thing we do, let's kill all the lawyers."
(Shakespeare, King Henry VI)

Introduction

This chapter attempts to simulate the behavior of two lawyers in connection with two parties in a lawsuit. For the sake of brevity, the mathematics of the treatment - that is linear - is omitted. However, relevant proverbs from various countries and epochs are incorporated throughout the text to substantiate the calculated findings.

The hypothesis to be investigated is the following: The stronger lawyer wins the case no matter which one of the clients is right. It is rooted in the commonly held belief that in lawsuits it is not necessarily the person who is right who wins, but rather the one who has the better lawyer. This belief has been prevalent for centuries as is evident in the saying, *Vous estes mauvais avocat, vous perdrez vostre cause* [3] (If you are a bad lawyer, you lose your case). The model's interpretation is in accordance with this saying. The model also establishes that lawyers as professional colleagues conspire with each other, and consciously or subconsciously agree which one of the partners in a quarrel shall be the loser.

Moreover, it is demonstrated that both lawyers profit. Social recognition of the lawyers´ gain is indicated in the following proverbs:

Advocatenrath ist theuer [4] (Advocate's advice is expensive);
La borsa trema innanzi la porta del guidice e d´ell avvocato, [4]; The purse trembles before the door of the judge and the advocate.

The basic assumption for building the model is that each one of the four parties (two parties in the lawsuit, P_1 and P_2, and two lawyers L_1, and L_2) is striving to reach the goal he has set for

himself. The syndrome is built up in three steps and, therefore, the essay is divided into three phases. In summary the three phases are as follows:

Phase I: The two partners P_1 and P_2 in the quarrel are in a hostile communication with each other.

Phase II: P_1 takes a lawyer, L_1, to secure help for himself in damaging his enemy P_2.

Phase III: In order to avoid damage, P_2 is forced to seek help from a lawyer L_2. Three variations of this phase are considered. These phases, referred to as Phase III,1, III,2, and III,3, are outlined herewith.

Phase III,1: In addition to the hostile communication between P_1 and P_2, consentient communication develops between P_1 and L_1 as well as between P_2 and L_2. However, L_1 and L_2 do not communicate with each other.

Phase III,2: The same communication patterns established in Phase III,1 exist, and in addition L_1 and L_2 form a hostile communication.

Phase III,3: The same communication patterns established in Phase III,1 continues in this situation, but in addition, L_1 and L_2 develop a con-sentient relationship.

The Design of the Model

The basic structure of the model for all three phases is as shown in Figure V-1. Each partner (P_1, P_2, L_1, and L_2) is represented - as done in other chapters - as a functional loop with the goal setting variable u_i and the goal variable x_i. The index „i" is used to indicate the partner. Therefore, if i = 1 the reference is to P_1, i = 2, to P_2, i = 3 to L_1, and i = 4 to L_2. F_i represents the transfer function of the willpower with which the partner P_i strives toward his own goal,

and the speed of his acting. This dynamic function can be described in a simple way with the formula (V-1).

$$F_i = \frac{G_i}{\prod_{k=1}^{n_j} (T_{jk}s + 1)}. \qquad (V-1)$$

G_i refers to the willpower, and T_{jk} to the delay time constant of action.
A similar definition is meant for F_2, F_3, and F_4.

The block B in Figure V-1 symbolizes the generalized communication pattern of the four partners amongst themselves.

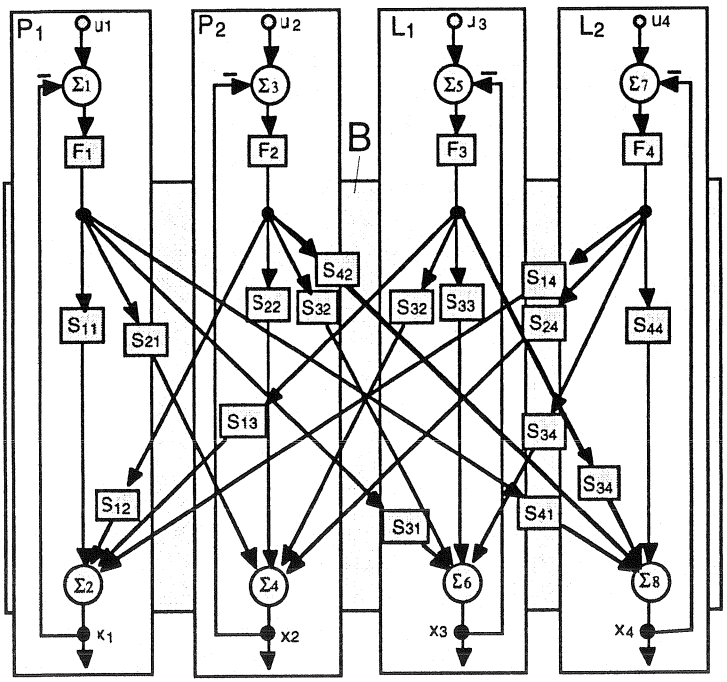


Figure V-1: Generalized communication structure of a partnership of four partners.

This structure in its principle is described in detail in former chapters. In this essay, the communication transfer functions S_{ab} (a, b = 1, 2, 3, and 4; a ≠ b) are time independent, i.e., without dynamics, and have the amplitude 1, but with different signs. The indices which indicate the two specific partners in communication are a and b. If a = b, then S_{ab} will always be +1 because information in one's own mind, if this mind does not receive disturbance signals, is immutable. These own immanent communication factors of +1 are S_{11}, S_{22}, S_{33}, and S_{44}. It must be noted that relationships between the model and the environment - in technical terms called disturbances - are not considered. Concerning the indices of S_{ab} in Figure V-1 we define for „a" a communication channel that is figuratively oriented from the left to the right partner, and „b" as a communication channel that is directed from the right to the left partner.

The matter to be considered here is the goal attainment of the individual partners x_i/u_i, in terms of varying patterns of communication. The goal attainments are steady state values, i.e., values for $t = \infty$ after a step input to the goal variable u_i at t = 0 was set. However, a general description of the dynamics involved is presented in order to permit conception of the grand design of the model, its structure and elements, the transfer functions of the elements constituting the structure, and the parameters describing the specific behavior of the elements.

In formula (V-1) n = 3, i.e., the dynamic behavior of a partner is of third order. We know that the reason for choosing this order is that it is the lowest order wherein it is possible for an autonomous partner (at no interactions S_{ab}, a ≠ b) to become unstable. This condition is necessary and sufficient in order to build up a system that reflects reality.

Another matter that is more readily apparent is that any system has to be stable in order to maintain the process of goal striving. The stability limits of a partnership depend upon the G_i-values (the willpower), the time constant T_{ji} (this is the time that is needed for acting), and the pattern of communication amongst the partners, the S_{ab}-constellations.

As conceived in its totality, the model is viable in all situations where the T_{jk}'s are equal. If n = 3, the highest possible willpower for an autonomous partner, $G_{i\text{-}max}$, is 8. Therefore, such a partner's highest goal attainment, x_i/u_i is

$$\frac{G_i}{1+G_i} = \frac{8}{9}, \text{ or } 89\ \%.$$

A partner is considerably faster in acting if he is represented by n = 2 instead of 3. In the autonomous behavior of such a partner, G_i can grow up to infinity without creating instability of that partner. However, it is obvious that in real life, infinite willpower cannot occur. Nonetheless, this assumption lends itself to visualizing the possibility that exist if a partner exerts a willpower higher than 8.

The speed and the precision of an autonomous partner in reaching his goal reflects intelligence. That is the most intelligent partner is the one coming closest to attaining his goal in the shortest period of time. Therefore, the fewer and the smaller the time constants T_{jk} and the larger the willpower G_i are, the more intelligent the partner can be considered to be. These facts are all-inclusively explained and illustrated in Volume I.

Referring now to the communication patterns, the following conditions exist:

Two partners „a" and „b" in communication have the bilateral transfer functions S_{ab} and S_{ba}. If S_{ab} = +1 and S_{ba} = +1, the result is hostile communication, denoted as (+ +)-communication; if S_{ab} = +1 and S_{ba} = -1, or S_{ab} = -1 and S_{ba} = +1, the result is consentient communication, denoted as (+ -)-communication. If S_{ab} = 0 and S_{ba} = 0, the result is no communication, denoted as (00)-communication; if S_{ab} = -1 and S_{ba} =
-1, the result is destructive communication, denoted as the (- -)-communication.

Phase I: **The Hostile Partnership**

This situation has been discussed extensively in Volume I. Nevertheless, a brief description is presented here for the sake of clarity. The hostile partnership existing between P_1 and P_2 is depicted in Figure V-1, if L_1 and L_2 are disregarded. The symbolic communication structure is given with Figure V-2a. Therefore, the communication factors S_{ab} and S_{ba} (a = 3, 4; b = 1, 2, 3, 4) are zero. With $S_{11} = S_{22} = S_{12} = S_{21} = 1$, and all time constants held at zero (steady state), the goal attainments x_1/u_1 and x_2/u_2 were calculated. The steady state functions $[x_1/u_1](G_1)$ with G_2 as parameter are portrayed in Figure V-**2**. Because the system is symmetric, the denotations x_1/u_1 and G_1 can be replaced by x_2/u_2 and G_2. It can be seen that P_1 reaches the highest goal attainment in autonomy ($G_2 = 0$). Increasing the willpower G_2 - that is increasing P_2's striving effort toward his goal u_2 - damages P_1 in attaining his goal u_1. Compare this figure also with Figure IV-11.

Obviously, hostility results in the mutual decrease of goal attainment and, hence, causes mutual damage.

A strong adversary P_2 (e.g., $G_2 = 8$ and $G_1 = 3$) ruins P_1 if for survival a goal attainment x_1/u_1 of 30% is assumed to be needed.

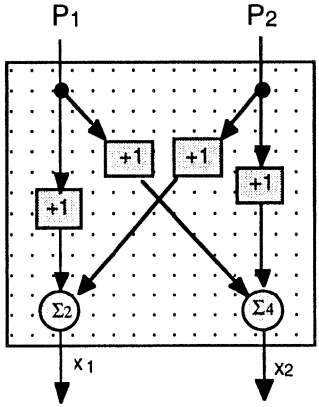


Figure V-2a: Sign constellation of the hostile partnership between P_1 and P_2.

Phase I: The One-Lawyer Syndrome

In this situation, one of the quarrelling partners, P_1, takes a lawyer, L_1, in order to receive help from L_1 at the expense of his adversary P_2. In this case S_{4b} and S_{a4} (a, b = 1, 2, 3) are put equal to zero. Therefore, the communication patterns are P_1 and P_2 in hostility, that is $S_{12} = S_{21} = +1$, $S_{12}S_{21} = (+ +)$. Because P_1 expects to receive help from L_1, the assumption is made that P_1 is willing to create a consentient relationship with L_1, which is $S_{13} = -1$ and $S_{31} = +1$, or $S_{13} = +1$ and $S_{31} = -1$: $S_{13}S_{31} = (- +)$.

If $S_{13} = -1$, then P_1 creates with $S_{31} = +1$ a negative feedback (feed-cross) within the loop $F_1S_{31}F_3\ S_{13}$. The two negative feedback signals of (-1) in P_1 and L_1 multiply to +1. A consentient relationship leads to a mutual increase of goal attainment - in other words - to mutual help; (see Volume I)

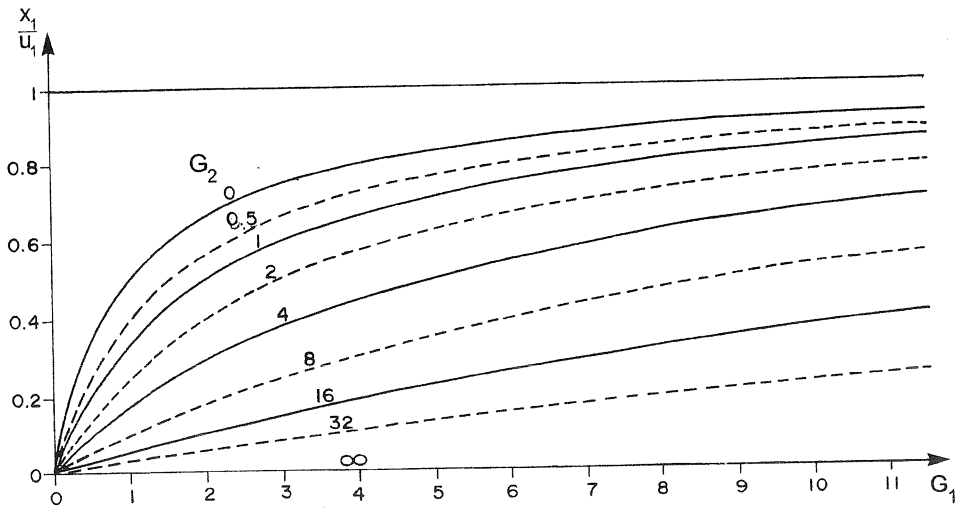


Figure V-2: Quarrel-syndrome between P_1 and P_2; no lawyers yet.
$S_{12} = S_{21} = +1$; $u_1 = 1$, $u_2 = 0$. All other $S_{ab} = S_{ba} = 0$.
The two goals, u_1 and u_2, are independent from each other.

P_2 and L_1 are in hostility with each other, i.e., $S_{23} = S_{32} = +1$, ($S_{23}S_{32}$ = (++). For the configuration of communication pattern, see Figures V-3a. It is obvious that if L_1 is to be paid by his client P_1 for the help he gets, then it is necessary that L_1 damages P_1's adversary, i.e., P_2. Figures V-3 and V-4 illustrate the attainments of P_1 and P_2 with L_1. In both figures the willpower of one partner is held constant; in Figure V-3 it is $G_2 = 4$ of P_2, in Figure V-4 it is $G_1 = 4$ of P_1.

The assumption on which the appropriateness of equivalence of $G_2 = G_1 = 4$ is based, is the following. P_1 has taken a lawyer. Therefore, he has confidence to receive help. This confidence gives him a good feeling for exerting willpower, $G_1 = 4$. On the other hand, P_2, not having a lawyer, is forced to exert a high willpower for his own defense. But simultaneously he is inhibited by the recognition of his limited power knowing that P_1 has the assistance of a lawyer. Thus, the willpower of P_1 and P_2 are considered to be equal and have been set at 4 on the ground that this number reflects fairly adequate willpowers for both. G = 4 is half the autonomous G = 8 at the stability limit.

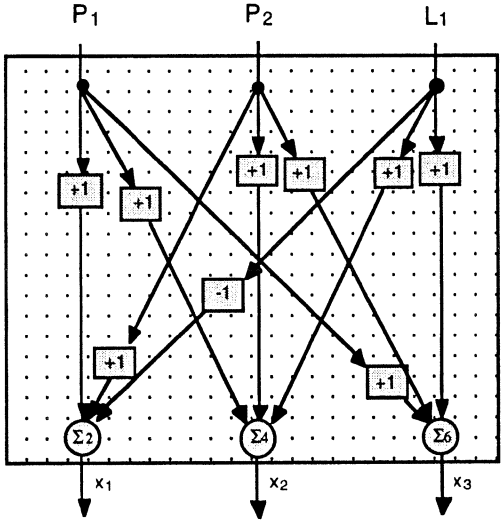


Figure V-3a: Sign constellation of the hostile partnership between P_1 and P_2 and the lawyer L_1.

The important factor derived from Figure V-3 is that the greater the willpower exerted by the lawyer, the greater is the attainment of P_1. Conversely, Figure V-4 shows that the greater the willpower of the lawyer, the lower the attainment of P_2. The lawyer helps his client and damages his client's adversary.

In addition, as the lawyer's willpower increases, proportionally the degree of help received by the client is less. The help-gradient sinks. But since the help-effect is cumulative (growing G_1 and growing G_3), the overall attainment of the client increases up to the point when the lawyer's willpower approaches infinity; see Figure V-3. *Sieht dein Advokat den Lohn, so traegst du den Sieg davon* [4] If your lawyer sees his reward, then you will be the victor.

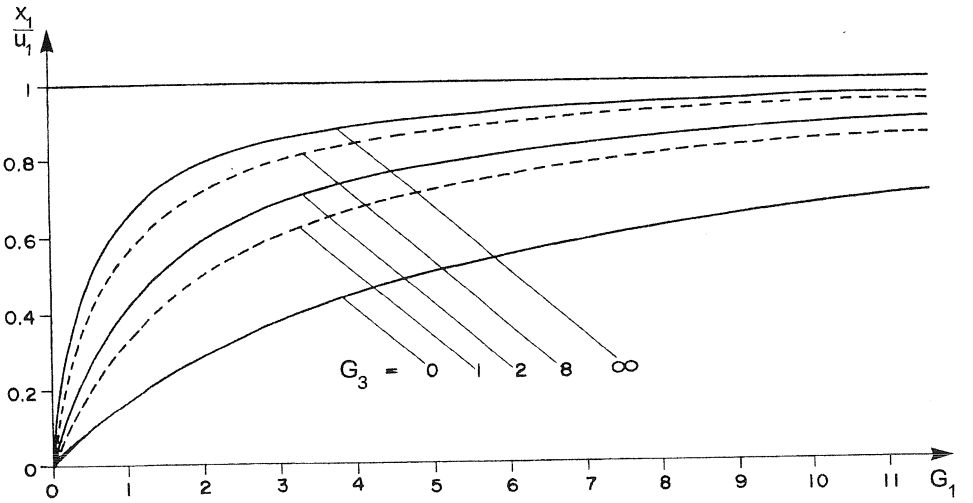


Figure V-3: Quarrel-syndrome between P_1 and P_2, and with lawyer L_1. Goal attainment x_1/u_1 of P_1 with the help of L_1 with his willpower G_3. $S_{12} = S_{21} = +1$ (hostility); $S_{23} = S_{32} = +1$ (hostility); $S_{13} = -1$, $S_{31} = +1$ or $S_{13} = +1$, $S_{31} = -1$ (consent); Goals are independent: $u_1 = 1$, $u_2 = 0$, $u_3 = 0$. $G_2 = 4$.

Moreover, because control lies within the framework of the legal system and because P_2 des not have his own lawyer, P_2 is at the mercy of L_1. Therefore, it is possible for L_1 to exert an extremely high willpower: *Der Advokat kann seine Sache fuehren wie er will, wenn sie nicht vor seiner Tuere liegt* [4]; The lawyer can do as he chooses if the matter does not rest in his own back yard. *Advokaten und Maler koennen leicht blau aus schwarz und schwarz aus blau machen* [4]; Lawyers and painters can easily turn black into blue and blue into black. *The end justifies the means.*

Even in a logical, legal system, the human being behaves highly irrationally!

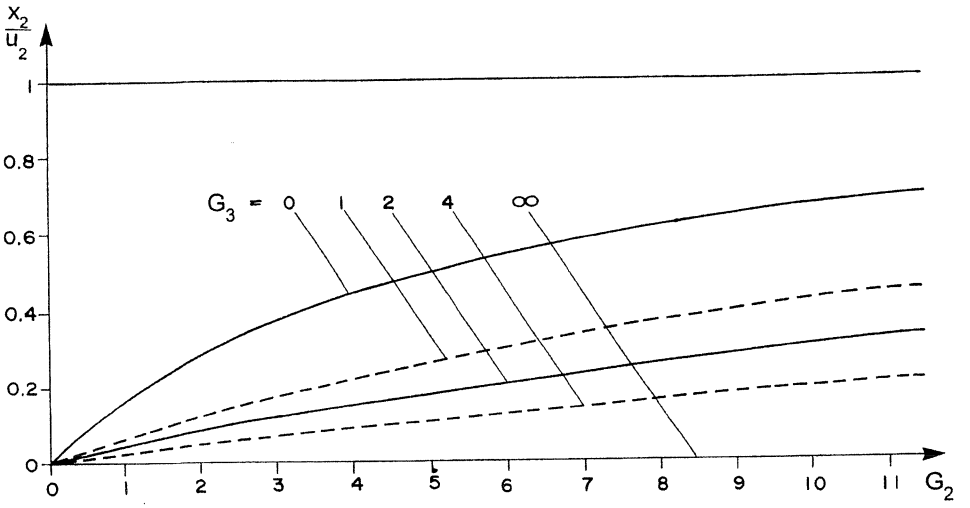


Figure V-4: Quarrel-syndrome between P_1 and P_2, and with lawyer L_1.
Goal attainment x_2/u_2 of P_2 with the opposition of L_1.
$S_{12} = S_{21} = +1$ (hostility $S_{23} = S_{32} = +1$: (hostility));
$S_{13} = -1$, $S_{31} = +1$ or $S_{13} = +1$, $S_{31} = -1$: (consent);
Goals are independent: $u_1 = 0$, $u_2 = 1$, $u_3 = 0$. $G_1 = 4$.

Phase III: **The Two-Lawyer Syndrome**

The hypothesis posed originally, namely that the stronger lawyer wins the case no matter which one of the clients is right, is now investigated.

The two-lawyer syndrome is depicted in three different situations, showing the three possible relationships of the two lawyers, L_1 and L_2. Figure V-5a is a schematic overview.

Phase III, 1: L_1 and L_2 do not communicate with each other. Therefore, their communication pattern is designated as (00)-communication.

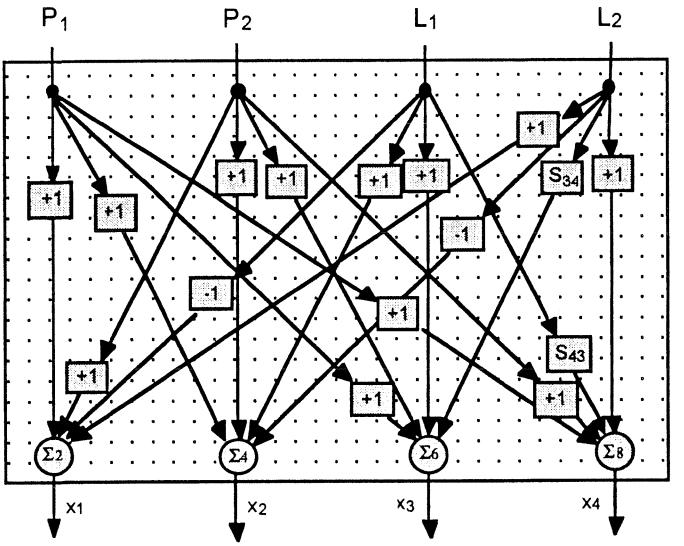
Phase III, 2: L_1 and L_2 communicate being in a hostile relationship with each other. Therefore their communication pattern is designated as
(+ +).

Phase III, 3: L_1 and L_2 communicate being in a consentient relationship with each other. Therefore their communication pattern is designated as (+ -).

As L_1 and P_2 are in hostility with each other, so are L_2 and P_1. Because L_2 is paid by P_2 for his help, L_2 is obliged to damage P_2's adversary: $S_{41} = S_{14} = +1$.

In the situation Phase III,1 the communication pattern can be so remote that it could be considered to be (00). This remoteness could be exemplified in a situation where both lawyers regarded their client's case as trivial, yet recognized it as of sufficient importance to the clients and therefore to take from them the pay for lawyers´ services.

In situation Phase III,2 the communication pattern is so nasty that it is considered (+ +). The repulsiveness could be the result of some lawyers´ affiliation being too different; for example, rejecting each other's religion or political party.



Phase III,1: $S_{34} = S_{43} = 0$; the relationship is (00),
Phase III,2: $S_{34} = S_{43} = +1$; the relationship is (+ +),
Phase III,3: $S_{34} = +1$, $S_{43} = -1$; the relationship is (+ -).

Figure V-5a: Sign constellations of S_{34} and S_{43} for the lawyers L_1 and L_2 for the three situations (00), (+ +), and (+ -).

In situation Phase III,3 the communication pattern is so ardent that it is considered (+ -). This ardor could be the result of the lawyers' belonging to the same club or moving in the same social circles. The odds that the relationship will be consentient are very great. The reason for this state of affairs is that lawyers study the same legal system. In addition, in a given community they are likely to have attended one of a relatively small number of schools and have the same professional associates. They are academic colleagues.

In order to attain significant results, the number of the parameters in Figure V-1 must be kept very small, but the selection has to be logical and approximate real situations.

Phase III, 1, the (00)-communication of L_1 and L_2

It is assumed that the competence (willpower to attain their respective goals) of the quarrelers P_1 and P_2 is put into the hands of the lawyers. Therefore $G_1 = G_2 = 1$ only. In order to reduce the variety of the parameters it is further assumed that the lawyers also have parity in their willpower, even though their willpower may be of any amount. Therefore, $G_3 = G_4 = G$. However, G will be a variable.

Figures V-5 shows that the goal attainments of P_1 and P_2, (x_1/u_1 and x_2/u_2), remain constant for all $0 \leq G_3 = G_4 = G \leq \infty$. Thus, both lawyers are worthless to the militants. Putting $G_3 = G_4 = G$, mathematically the goal attainments of P_1 and P_2 are the same as if the lawyers did not exist. The situation is the same as was portrayed in Figure V-2. There it can be seen that for $G_1 = G_2 = 1$, $x_1/u_1 = 0.33$ or 33%.

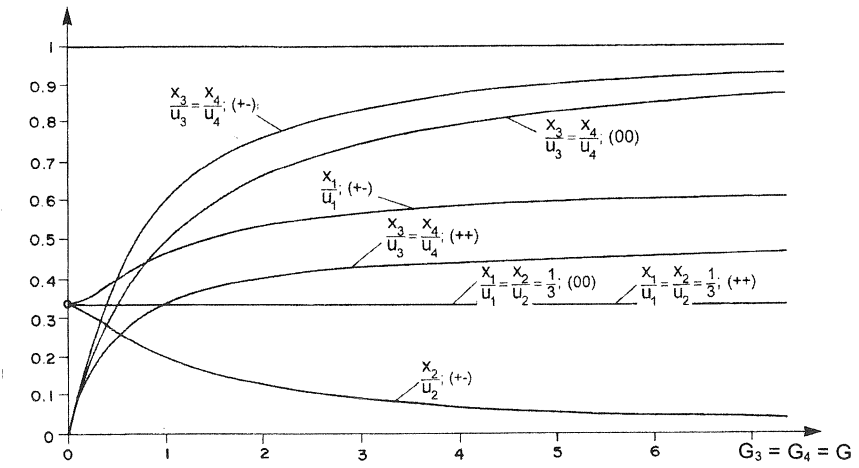


Figure V-5: Quarrel-syndrome with two lawyers; $G_1 = G_2 = 1$; $G_3 = G_4 = G$.
Goal attainments x_1/u_1 of P_1, x_2/u_2 of P_2, x_3/u_3 of L_1, and x_4/u_4 of L_2.
Goals are independent.

The interesting point here is that the lawyers attain their goals to the same degree as if they were not involved in a two-party law-syndrome, that is P_1 with L_1 and P_2 with L_2. There is no help-relation between the lawyers and their clients.

Therefore, L_1 and L_2 must communicate with each other if the clients are to receive any help for their money spent. This fact, which no doubt is trivial for lawyers, has, thus, been demonstrated mathematically. If both lawyers have clients who do not recognize what is going on, then this situation of (00)-communication is a pleasant, effortless income for both lawyers. Somehow poetically expressed can this sound like:

Lawyers´ houses are built on the heads of fools; [5].
A fool and his money are soon parted; [6].

It is worth noting that the two ways of treating the consentient communication, namely either with
$S_{13} = -1$, $S_{31} = +1$; $S_{24} = -1$, $S_{42} = +1$ or with
$S_{13} = +1$, $S_{31} = -1$; $S_{24} = +1$, $S_{42} = -1$,
give the same results. It is, therefore irrelevant whether the client or the lawyer creates the consentient feed-cross loops.

It also has to be repeated, as was stated in former Volumes I and II, that the goals u_1, u_2, u_3, and u_4, are not compatible. Each one of the four partners works for his own interest. Therefore, when calculating a goal attainment of one partner, his goal was set to +1 (or 100%), and the three other goals were set to zero.

Phase III, 2, the (+ +)-communication of L_1 and L_2

Based on the willpowers being identical to those in Phase III, 1($G_1 = G_2 = 1$), Figure V-5 illustrates that the help of the lawyers to the clients is again zero. However, in contrast to the previous situation, due to the hostile interaction the lawyers damage each other considerably. Relevant calculations also indicate that as long as parity exists between G_3 and G_4, either or both G_1 and G_2 can exert as high a willpower as can be achieved without receiving help. Thus, (+ +)-communication, i.e., antagonism between the

lawyers neither helps their clients nor themselves in attaining their respective goals.

However, within the exception of one case it is unlikely that the (+ +)-communication between L_1 and L_2 will be reflected in real life. An exception lies in situations wherein countries such as Switzerland, military courts take precedence over civil courts. The lawyer representing the military court (L_1) can exert an ultimate level of willpower over his colleague (L_2) even to the point of making him appear incompetent. Figure V-6 illustrates the goal attainments in such a situation. Two sets indicate the fact:

$$G_4 = 4,\ G_3 = 20, \text{ then } \frac{x_3}{u_3} = 0.80;\ \frac{x_4}{u_4} = 0.16, \text{ or}$$

$$G_4 = 1,\ G_3 = 20, \text{ then } \frac{x_3}{u_3} = 0.91;\ \frac{x_4}{u_4} = 0.04.$$

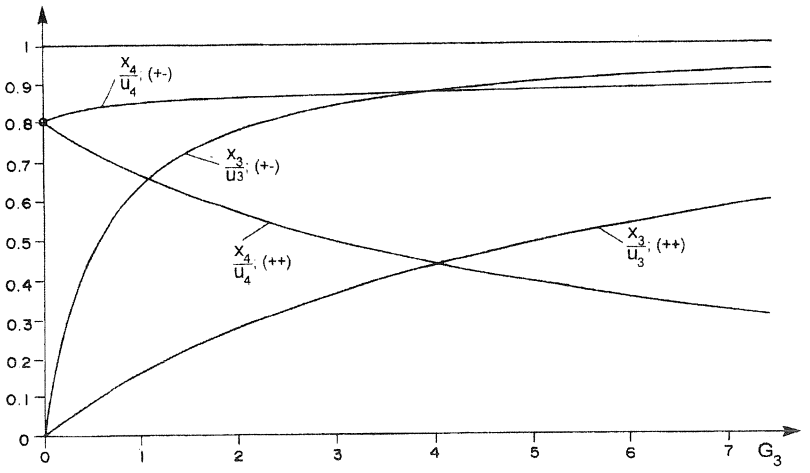


Figure V-6: Quarrel-syndrome (+ +) with two lawyers; $G_1 = G_2 = 1$. $G_4 = 4$. Goal attainments x_3/u_3 of L_1, and x_4/u_4 of L_2. Goals are independent.

Figure V-7 shows the goal attainments of P_1 and P_2 if the willpower G_3 of the lawyer L_1 is varied while the willpower G_4 of the lawyer L_2 is held constant at 4. In essence, L_1 provides less help to his client P_1 until his willpower level equals that of L_2 ($G_3 = G_4 = 4$). Beyond that point, as L_1's willpower increases, so does the goal attainment of his client. Once again, the two ways of treating the consent,
$S_{13} = -1$, $S_{31} = +1$; $S_{24} = -1$, $S_{42} = +1$ or
$S_{13} = +1$, $S_{31} = -1$; $S_{24} = +1$, $S_{42} = -1$,
render the same results. It is, therefore, irrelevant whether the client or the lawyer creates the consent.

If G_3 is lower than G_4 of L_2, the help for P_1 by his lawyer is pure damage! Say: $G_1 = G_2 = 1$, $G_3 = 2$, $G_4 = 4$, then $x_1/u_1 = 23\%$. P_1 would better stay off both of the (+ +) hostile lawyers and be satisfied with his autonomous attainment of 50%: see Figure V-2 for $G_1 = 1$, and $G_2 = 0$.

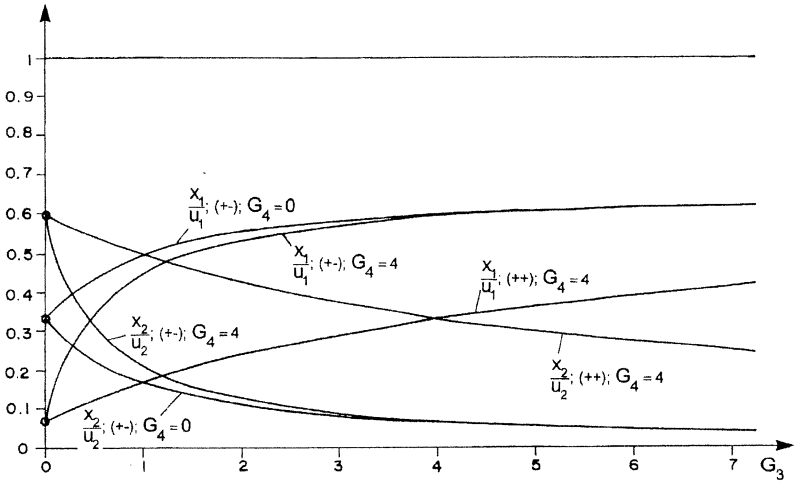


Figure V-7: Quarrel-syndrome with two lawyers; $G_1 = G_2 = G$.
Goal attainments x_1/u_1 of P_1, x_2/u_2 of P_2.
Goals are independent.

Phase III, 3, the (+-)-communication of L_1 and L_2

Before the goal attainments can be considered in this phase, because the signs of communication between L_1 and L_2 are no longer the same, it is necessary to establish which one of the lawyers makes the communication consentient. This requirement is important because the end results are not the same.

A further comment on this situation is called for. The basic assumption is that a lawyer has an egoistic behavior. He wants to exert his willpower. This fact is reflected in the proverb *Der Advokaten Beutel und der Hölle Rachen sprechen nie: Es ist genug* [4]; The lawyer's purse and the maw of hell never say: *It's enough.*

In a (+ -) relation, i.e., in a consentient cooperation, one partner is required to submit himself to the benefit of the other. One has to establish the consent. The decision has been made that L_1 establishes the consent between the two lawyers by submitting himself to L_2 ($S_{34} = -1$, and $S_{43} = +1$). In this case L_1 is considered to be the amenable lawyer-partner in regard to his colleague L_2 (i.e. L_1 is the altruist, L_2 the egoist within the professional liaison.

It is imperative to understand that a negative sign is functioning in a structural feed-cross loop and not in an open information channel.

In former chapters it was shown that it is significant that the inherent speed of a consentient communication is comparatively slow and tends to stabilize a system. Conversely, hostile communication acts quickly and tends to destabilize a system. It is obvious, therefore, that if the lawyers interact in mutual agreement, the chances of having a protracted lawsuit are increased. The longer the lawyers can stretch out the case the greater will be the costs and, hence, the return for expended effort. *Der Advokat zieht den Prozess wie der Schuster das Leder* [4]; the lawyer draws out his case as the shoemaker stretches his leather.

Therefore, the decision has been made that the lawyers' communication will be, as noted, $S_{34} = -1$, $S_{43} = +1$.

As in phase III, 1 and III, 2, the willpowers are set to $G_1 = G_2 = 1$, and $G_3 = G_4 = G$.

Figure V-5 illustrates that the *ethical* L_1, who establishes a friendly relation with L_2 by taking L_2's information negatively ($S_{34} = -1$) secures help for his client P_1. On the other hand, L_2 who takes L_1's information in an aggressive disposition ($+S_{43}$), loses for his client P_2 the same amount that P_1 gains. At equal willpowers ($G_3 = G_4 = G$) both lawyers achieve good attainments. From the lawyers' viewpoint concerning their attainments it is irrelevant which one offers the consentient attitude toward his colleague, but from the clients' viewpoints it is significant. The situation shows that the decency of L_1 toward L_2 has a positive effect on his client P_1. It can be assumed that the aggressively disposed L_2 does not care that his client P_2 loses the case as long as his service will be paid by P_2 and as long as the consentient relation with his colleague L_1 remains intact.

It must be mentioned that being *ethical* in a legal case can be cunning, egocentric hypocrisy. Such discernments cannot be taken into account by our simple model! And, by the way, nature knows nothing about man-made ethics.

In terms of the quarrel between P_1 and P_2, P_2 is practically in the same situation as if he had not taken a lawyer ($G_4 = 0$). Compare x_2/u_2 for $G_4 = 4$ and $G_4 = 0$ in Figure V-7; (+ -) at $G_3 > 4$: the two curves

$$\frac{x_2}{u_2};\ (+\ -);\ G_4 = 0 \quad \text{and} \quad \frac{x_2}{u_2};\ (+\ -);\ G_4 = 4$$

are almost identical.

Overall, he will be worse off because he will be required to pay for the damaging service of his lawyer L_2.

The question arises as to what happens if the lawyer L_1, who submits himself to the consentient relationship ($-S_{34}$), is weaker, therefore *per definitio* less intelligent, that his colleague L_2. In Figure V-6, G_4 is held constant at 4 and G_3 is varied with $G_1 = G_2 = 1$. It is evident that G_3 of L_1 greater than G_4 of L_2 does render more attainment to L_1 [The curves $x_3/u_3(+ -)$ and $x_4/u_4(+ -)$ cross each other at $G_3 = 4$]. In other words, it is to the advantage of L_1 to attempt keeping his willpower close to that of his colleague L_2. If G_3 is smaller than G_4, L_1 is loosing in favor of L_2 and he will offer less help to his client P_1.

Because it makes a difference, which one of the lawyers creates the consentient relationship, it would not be unlikely that either consciously or unconsciously they will decide which one will create the consent. Therefore, either a lawyer's inherent reservation or arrogance, their relative place in the pecking order may be the determining factor; the reason may be the political or financial prestige of one of the clients, or the side on which the weight of the law might lie.

If the lawyer L_1 who establishes the consent is much weaker than his colleague L_2, and if L_2 does not accept such a submissive behavior of L_1, L_1 could persuade his client to accept a *compromise* and *de facto* drop his dependant. In such an arrangement the losing client P_1 still would get his lawyer's bill! This circumstance is reflected in the proverb: *Wenn Advokaten reden von Vergleich, dann sind die Clienten arm und sie sind - reich* [4]; If lawyers talk about compromise, then the clients are poor and they are rich.

If it should happen that, although L_1 takes in negative information from L_2 ($-S_{34}$), L_2 takes in negative information from L_1 too ($-S_{43}$) with the intention to pretend an altruistic image towards his colleague L_1, then a different communication pattern has been established, called the destructive or (00) communication. It is extremely interesting that the effects of this structure are identical to those of the (+ +)-structure. In this situation L_2 will fail in his attempt to help his client, but he will also damage himself and also L_1. See Figure V-5 curve $x_3/u_3 = x_4/u_4;(+ +)$ compared with curve

$x_3/u_3 = x_4/u_4;(+ -)$. The *secret* mutual agreement for damaging one client is, therefore, compulsory for the lawyers in order to rake in the profit for their *service*s.

Summa summarum: One plaintiff, *nolens volens*, whether base or not, has to accept the *advocatus diaboli*, whereas the opponent enjoys being in favor of having the *advocatus dei. The egocentric lawyer wins without regard to clients´ sins.*

To everybody on his path through life:
Il faut trois sacs a un plaideur: un sac de papiers, un sac de patience et un sac d´argent. A litigious person needs three sacks: a sack of papers, a sack of patience, and a sack of money.

Lawyers are famous for making bills: You've heard about the man who got the bill from his lawyer that said: *For crossing the street to speak to you and discovering it was not you.... twenty dollars;* (George S. Kaufman). Or a quip from *The Penguin Dictionary of Jokes: A lawyer is a man who helps you get what's coming to him.* [7].

VI. The Church-Syndrome

Introduction

This model represents the psychosocial relationship between clergyman and believer. Before calculated results are presented, some facts that are assumed to exist are stated.

a) As a biological requirement, the clergyman has to be (and is) first of all concerned with his own terrestrial survival before he is interested in the psychological welfare of the believer. In order to exist and act, the church needs money for its keep. See later **Figure VI-4**.

b) The stronger the church controls the believer the greater is the benefit for the church, and less is the benefit for the believer. See later **Figure VI-5**. The devotee gives himself away.

c) The stronger the unconscious religious zeal is between the clergyman and the believer, the greater is the benefit for the church and the lesser it is for the believer. See later **Figure VI-6**.

The believer who is weak or incapable in thinking is much more compliant to ideological manipulation than the acute one; and the amount of his materialistic and social exploitation is correspondingly higher. This is the more pronounced the deeper the weak believer's faith is, and the more intensely the clergyman keeps the believer under his control.

The weak believer contributes more fervently, although he can damage his earthly self-realization considerably by doing so.

d) The more emphatic the clergyman's effort is to attract the believer's soul and the weaker the believer's willpower for his self-realization is, the greater the success of the church and the stronger the believer's imagination of his salvation after death will be. See **Figure VI-7**.

In the case of apostasy, that is when the believer turns away from the church, hostility breaks out between the church and the apostate. If the church is dictatorial the believer goes to the place of execution, to the stake. See **Figure VI-8**.

Some preliminary considerations:

If man believes in transcendental facts, he does so without rational, provable reason. Believing presumes that one does not know. Faith in belief is generated through verbally transferred or written information without any evidence relating to the present. Believing is housed in the irrational realm.

The doctrine infiltrates the young and empty subconscious and unconscious of a brain. The material to be permeated is presumed to be historical information, of which the content is very often dead or even dangerous to the adaptation process of the presence. The body of thought of the believer is manipulated consciously or unconsciously by the mediator, i.e., by the priest.

To emphasize the evidence of the statements resulting from the mathematical model, relevant proverbs and philosophical-poetical thoughts are incorporated throughout the text.

Nicht nur das Aussprechen und die Mitteilung der Wahrheit, nein, selbst das Denken und Auffinden derselben wird unmöglich zu machen gesucht dadurch, dass man in frühester Kindheit die Köpfe den Pristern zur Bearbeitung in die Hände gibt; Not only discussing and communicating the truisms are avoided; no, it is even attempted to make impossible the searching for and thinking about facts and truth by handing over the brains in their infancy to the hands of the priests for their dressing (Arthur Schopenhauer, 1851).

The following chapter provides a model with which the psychosocial relation between a clergyman and his believers is made mathematically possible for investigation. It is immaterial whether this relation exists within a governmentally sanctioned ecclesiastical organization or within a sect split off from a

domineering religious community. The accent of the study does not lie on the religious aspect but purely on the psychological-social.

It is assumed that the clergyman or the preacher, i.e., the mediator of the belief, observes his believers in their behavior and adjusts the manipulation of his vassals in accordance to the observation. A further assumption is made that the clergyman enhances his earthly welfare by inducing guilt into the minds of his believers in order to make them tributary. As a counter-value he increases the assurance of the believers not only to affect a constantly renewed transfer of the believers' guilt upon the God symbol during their terrestrial existence but also - in the Roman Catholicism - to assure entrance into paradise without suffering to expiate sin by passing first through the purgatory.

For the construction of the model it was assumed that the believer is unconsciously humble to the clergyman and that he does not have or does not want to have the chance to learn about and to gain insight into the aim of the clergyman.

The following further assumptions are made:

a) The two goals, the goal of the clergyman and the goal of the believer have a common religious ground. In other words, the goals are not independent from each other. They have, so to speak, the same supernatural dimension.

b) The magnitude or the solidity of the clergyman's goal is considerably higher than that of the believer because the clergyman's goal attainment depends also on the believer's existence, in plain words, his money, his welfare. The clergyman lives from the believer's materialistic being and welfare, but not vice versa. Therefore, we set the clergyman's goal u_1 to 1 or 100%, whereas the believer's goal u_2 is only half of u_1, i.e., 50%. For his survival the clergyman lives on the ground of the believer's endeavor for his, for the clergyman's survival.

c) It is the clergyman who consciously observes the on-going goal attainment (i.e., the behavior) of the believer, but plays his own

cards close to his chest. The clergyman does not put his cards on the table. In the structure of the model **Figure VI-1** there is the observation channel C_{12}, i.e., the believer P_2's attainment becomes transferred to the clergyman P_1. The channel C_{21} will be set to zero. The believer P_2 does not „see" the clergyman's doing. P_2 is blinded by faith.

d1) As the believer expects favor and promise of eternal life after death, he provides the consentient, i.e., the *devotional* attitude toward the clergyman ($S_{21} < 0$). The clergyman, on the other hand, is oriented toward expanding his congregation and has therefore a missionary attitude and is headed toward confrontation. He is aggressively disposed ($S_{21} > 0$). (See Volume I, Chapter V for the mechanism of creating a devotional, or consentient and an aggressive, or hostile relationship).

d2) In a second case, parallel to d1) the circumstance is assumed that the believer takes a hostile position and tends toward becoming an apostate. In this situation the clergyman tries to regain the believer's church attendance and makes himself consentient with $S_{12} < 0$. Consequently: $S_{21} > 0$.

e) The willpower of the believer G_2 is, in general, markedly lower than that of the clergyman, G_1. The clergyman preaches and proselytes; he sets off to attack - as is his duty. We take G_1 as a variable in order to see its influence on the faithful but rather weak believer (low willpower G_2).

One must always be aware that the model's output depends on its structure and the magnitudes of its numerical parameters! But within broad limits the numerical values do not matter, rather they help us to understand the real facts.

The model, Figure VI-1, shows seven parameters that will be dealt with in the following:

The two goals, i.e., the clergyman's goal u_1 and the goal of the believer u_2;

The two willpowers G, G_1 of the clergyman and G_2 of the believer; the degree of the clergyman's observation of the believer, C_{12}; and the two attitude channels of the depth of the religious faith, S_{12} and S_{21}.

Some Specific Situations

In all the three situations to be investigated it is assumed that the clergyman observes the believer or obtains information about the believer's conduct.

In the first situation [d1)] the presumption is made that the believer P_2 takes in unconscious information from the clergyman P_1 and that it is him, P_2, who establishes the consentient or submissive relationship in that he incorporates the clergyman's information in a negative sense ($S_{21} < 0$; $S_{12} > 0$), providing in this manner a well stabilized feed-cross loop. This case is noticeable when clergyman and believer can influence each other through physical proximity in everyday life.

In the second situation [d2)] the assumption is made that, beside the observation of the believer by the clergyman, there within the bilateral, unconscious relationship between clergyman and believer it is the clergyman who establishes the consensus. The basic idea is that it is not the believer who devotes himself to the clergyman but rather that the clergyman establishes devotion toward the believer ($S_{12} < 0$). This circumstance happens when the believer takes a hostile position and becomes an apostate ($S_{21} > 0$). The clergyman then tries to reestablish the believer's church attendance.

In the third situation, the basic idea is that neither the believer nor the clergyman offers any consentient attitude but that both are in an aggressive mood toward each other ($S_{12} > 0$; $S_{21} > 0$). There is pure hostility. This circumstance happens when the believer is declared a heretic and has to be fought or eliminated by the clergy. The clergyman takes the position of an executioner as was the case during the Inquisition of the Roman Catholic Church and as it

shows a recurrence these days in the form of Islamization. The terrible but not uncommon fact reveals itself: *If you want to see a man at his worst, see what he does to his fellow man in the name of God;* Anon.

The model does not require a restriction to an ecclesiastical situation, and by no means solely to the Roman Catholic Church, but it can be used anywhere where an institution infects an ideology into its adherents, often even in an exploitive manner.

The goal of the clergyman is *nolens volens* his self-realization, i.e., to increase his earthly and materialistic existence to as high a quality as possible regardless of how he himself measures this quality, interprets it or even denies it: *Die Prister sagen, sie dienen Gott und dienen ihrem Bauch* (Bohemian saying); The priests say that they serve God, but instead serve their own belly. *Man wird Pfarrer um des Brotes wegen, nicht um des Himmels willen* (Silesian saying); One becomes a clergyman because of the bread and not because of heaven.

The believer, in comparison, who realizes and has to realize his materialistic existence in civil life, is concerned for his psychological self-realization including the belief of his salvation in the world to come. Particularly in Christian religions, he is charged guilty by an ecclesiastical authority that often uses the doctrine of original sin as a pretext for getting at the believers' pocket. *Die Pfaffen machen die Hölle heiss umb des Ofers willen* (Petri, Der deutschen Weissheit); the clergymen heat hell for the sake of the offering.

As an equivalent, the clergyman offers his benediction on this side of the world and sustains the prospect for the other side of eternity. *Wer den Pfaffen wol thut schmieren, die Händ ihm füllt, die Kist thut mehren, der ist im Korb der beste haan, das Fegfewr ihm nicht schaden kann* (Zinkgref, 1692); Who puts much into the hands of the clergyman, helps to build up his treasures, is the best cock in the basket and need not be afraid of purgatory. Or: *Der Bapst und sein verfluchter hauffen Himmel und erd umb gelt verkauffen* (Torning). The Pope and his execrated men of the cloth

sell heaven and earth for money. (We know about the tremendous wealth of the Vatican.)

Thus, the believer's goal is to incorporate his belief into his terrestrial existence and realization and therefore to attain the eternal life to come. This assurance relieves him *de jure* from confrontation with earthly toil and *de facto* from the strain of thinking for his survival.

The clergyman acts according to his observation of the believer's behavior; that is, he acts consciously. The believer, however unconsciously, receives the clergyman's blessings, and he does not know that the clergyman has a secret design. The believer is in blind communication with the clergyman. Because the clergyman is hierarchically above the believer, most significantly in the Roman Catholic Church, he requires devotion from the believer in order to keep him under control: *Mag noch hie und da Pristerstolz vom göttlichen Berufe faseln, wir wissen, dass der Staat den Seelenhirten beruft wie die Gemeinde den Schweinehirten* (Karl Jukl. Weber); Although the self-righteous priest may contend his calling is divine, we know that the government calls the spiritual shepherd as the municipality employs its swineherd.

By means of these reflections, the structure of a specific model is built. The most evident results of the analysis is that the intelligent clergyman *preaches water and drinks wine*, while the believer cannot realize himself psychologically and materialistically to his potential, but rather becomes deprived.

> *Zu beklagen ist die Menschheit,*
> *Will ein Priester ihr gebieten;*
> *Statt den Himmel ihr zu geben,*
> *Raubt er ihr die Erdenblühten* (Niklaus Lenau 1855);
> Mankind becomes deplorable when a priest decides to rule it;
> Instead of giving it heaven, he robs it of earthly happiness.

The Model

The two-goal model that is to begin with in a generalized form, is depicted in **Figure VI-1**. In this generalization it is assumed that two partners, P_1 and P_2 observe each other's activity and simultaneously communicate unconsciously. The unconscious communication channels happen through S_{12} and S_{21}.

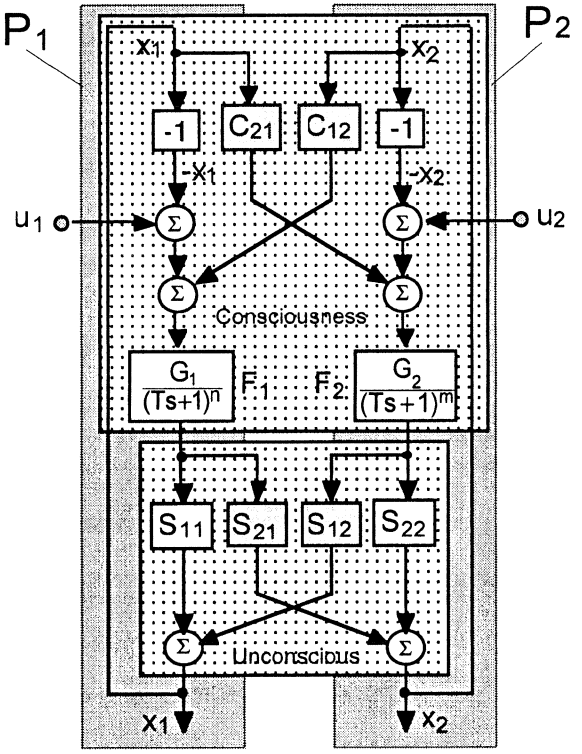


Figure VI-1: Structural model of two partners P_1 and P_2 having simultaneous conscious and unconscious bilateral communication.
P_1 symbolizes the clergymen, P_2 is the believer.
S_{12} and S_{21}: unconscious faith transfer factors
C_{12} and C_{21}: conscious observation factors.
u_1 and u_2: goals of self-realization.

This unconscious information arises from the interior of the partner's behavior, but the effect results in externalized reaction, contained in x_1 and x_2 (the so-called goal variables). C_{12} and C_{21} indicate the channels that carry the conscious information whereby each channel picks up the state of the other partner's goal proximity x_1 and x_2. The goal variables x_1 and x_2 are observable by the environment. Accordingly, this information is available (fully or partially) and, therefore, can be communicated in a planned, conscious way. Note that the structure of **Figure VI-1** is similar to Figure II-1.

G_1 and G_2 are the individual willpowers each partner exerts for striving toward his goal - u_1 and u_2 respectively - and thus, realizing himself. This self-realization of a partner is in the broadest sense his terrestrial existence. It seems evident that even everyone who, during his earthly existence, expects eagerly to enter heaven after the earthly life, is vigorously in opposition to this process (agony) by trying all means to realize and extend the terrestrial existence - except in the case of some rare pathological individuals, e.g., of suicide-bombers or sometimes of people with incurable illnesses.

Each partner of the dualism P_1-P_2 is striving toward his own goal that he carries in mind, P_1 toward u_1, P_2 toward u_2, whereas the actual state of their attainments is x_1 and x_2 respectively. The aim of the clergyman is, as mentioned, his earthly, biological realization. The goal of the believer is his psychological-terrestrial aim believing in his resurrection. The goal attainment of partner P_1 is denoted as x_1/u_1, the degree of influence of his goal attainment x_1 by the partner P_2's goal is denoted as x_1/u_2. Similar is the situation for partner P_2. The nature of influence can be positive, i.e., in addition to x_1/u_1 (or to x_2/u_2), or it can be antagonistic, i.e., in subtraction to x_1/u_1 (or to x_2/u_2). The effect of the influence - plus or minus - depends on the nature of communication and its intensity. The goal attainment x_1/u_1 and the influence x_1/u_2 are mathematically expressed with the formulae (VI-1).

$$x_1 = \frac{\begin{vmatrix} S_{11} & S_{12}G_2 - S_{11}C_{12}G_1 \\ S_{21} & 1 + S_{22}G_2 - S_{21}C_{12}G_1 \end{vmatrix} G_1}{|D|} u_1 + \frac{\begin{vmatrix} S_{12} & S_{12}G_2 - S_{11}C_{12}G_1 \\ S_{22} & 1 + S_{22}G_2 - S_{21}C_{12}G_1 \end{vmatrix} G_2}{|D|} u_2 \qquad \text{(VI-1)}$$

$$|D| = \begin{vmatrix} 1 + S_{11}G_1 - S_{12}C_{21}G_2 & S_{12}G_2 - S_{11}C_{12}G_1 \\ S_{21}G_1 - S_{22}C_{21}G_2 & 1 + S_{22}G_2 - S_{21}C_{12}G_1 \end{vmatrix}$$

$$x_2 = \frac{\begin{vmatrix} 1 + S_{11}G_1 - S_{12}C_{21}G_2 & S_{11} \\ S_{21}G_1 - S_{22}C_{21}G_2 & S_{21} \end{vmatrix} G_1}{|D|} u_1 + \frac{\begin{vmatrix} 1 + S_{11}G_1 - S_{12}C_{21}G_2 & S_{12} \\ G_1S_{21} - S_{22}C_{21}G_2 & S_{22} \end{vmatrix} G_2}{|D|} u_2 \qquad \text{(VI-2)}$$

If now, as always done, $S_{11} = 1$ and $S_{22} = 1$, equation (VI-1) becomes (VI-3) and equation (VI-2) becomes (VI-4).

$$x_1 = \frac{\begin{vmatrix} 1 & S_{12}G_2 - C_{12}G_1 \\ S_{21} & 1 + G_2 - S_{21}C_{12}G_1 \end{vmatrix} G_1}{|D|} u_1 + \frac{\begin{vmatrix} S_{12} & S_{12}G_2 - C_{12}G_1 \\ 1 & 1 + G_2 - S_{21}C_{12}G_1 \end{vmatrix} G_2}{|D|} u_2 \qquad \text{(VI-3)}$$

$$|D| = \begin{vmatrix} 1 + G_1 - S_{12}C_{21}G_2 & S_{12}G_2 - C_{12}G_1 \\ S_{21}G_1 - C_{21}G_2 & 1 + G_2 - S_{21}C_{12}G_1 \end{vmatrix}$$

$$x_2 = \frac{\begin{vmatrix} 1 + G_1 - S_{12}C_{21}G_2 & 1 \\ S_{21}G_1 - C_{21}G_2 & S_{21} \end{vmatrix} G_1}{|D|} u_1 + \frac{\begin{vmatrix} 1 + G_1 - S_{12}C_{21}G_2 & S_{12} \\ G_1S_{21} - C_{21}G_2 & 1 \end{vmatrix} G_2}{|D|} u_2 \qquad \text{(VI-4)}$$

Setting $S_{11} = 1$ and $S_{22} = 1$ is not merely a matter of simplification; it is the statement that information, that flows within one's own

unconscious, is identical to itself. That means that it is neither amplified ($S_{ii} < 1$) nor reduced ($S_{ii} < 1$). And it is assumed to be independent of time. It acts explosively. The values x_2/u_2 and x_2/u_1 are indices-symmetrical to the values x_1/u_1 and x_1/u_2.

In the following, only the steady state of the goal attainments shall be considered on graphs although some remarks about stability limits, i.e., the involving of time will be given. In order to get the steady state values, the Laplace operator in Figure VI-1 is put to zero: s = 0. With the model of Figure VI-2 that is without S_{21}, three specific systems shall be investigated.

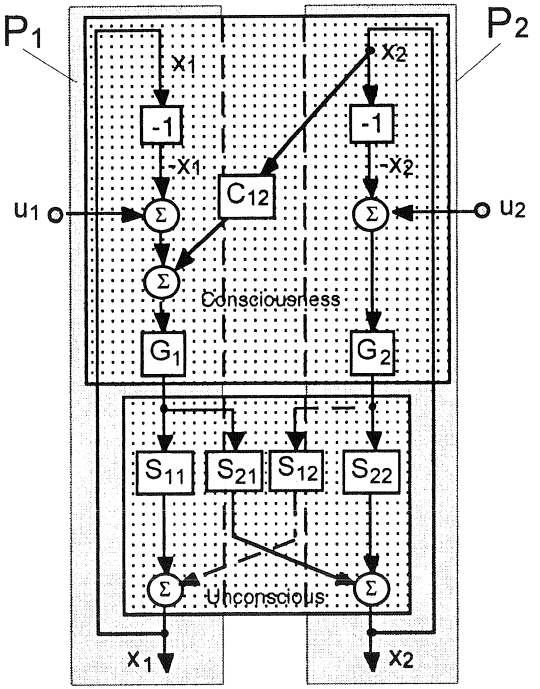
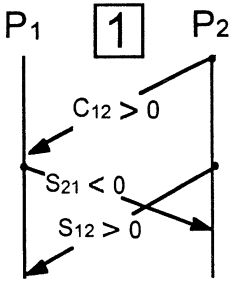


Figure VI-2: Structural model of two partners P_1 and P_2 having one-sided conscious and bilateral unconscious communication. Compare with Figure VI-1. As the believer is unable to observe the clergy´s behavior, $C_{21} = 0$.

System 1: $S_{12} > 0$, $S_{21} < 0$, $C_{21} = 0$, $C_{12} > 0$. This means that P_2 is unable to observe P_1's behavior ($C_{21} = 0$), but P_2 unconsciously receives information from P_1 through S_{21}. P_2 incorporates the information S_{21} in a negative sense (as $-S_{21}$) and establishes this way the devotional, i.e., the friendly, and well stable relationship between him and the clergyman. P_1 observes P_2's behavior via $C_{12} > 0$ and receives unconscious information from P_2 via $S_{12} > 0$. Figuratively, the structure is the following:

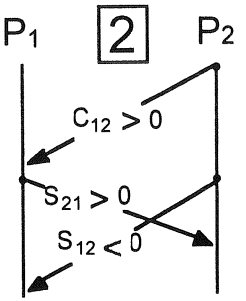


System 1

Therefore, there are one unilateral conscious and one bilateral unconscious information connection. S_{12} and S_{21} indicate - as a product $S_{12}S_{21}$ - the depth of the believer's faith in connection with the clergyman (or in a broader sense with his church).

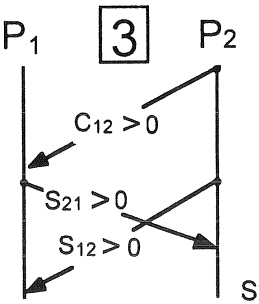
System 2: C_{21} is still zero. Concerning the observation of P_2 by P_1, the same information channel exists, $C_{12} > 0$. And there is as well a bilateral, unconscious relationship between P_1 and P_2. But there is now the clergyman who establishes the consentient devotion ($S_{12} < 0$). It is not the believer who devotes himself to the clergyman, but it is the clergyman that establishes devotion toward the believer. We argue that this circumstance happens when the believer takes a hostile position ($S_{21} > 0$) and tends to become an apostate. The clergyman, in this situation, tries to regain the believer's church attendance. He tries to get him back, to save his soul for the eternity - if there are such two things! (We argue that it is the functioning of the being that is his soul. Once the functioning has stopped, the soul will be gone.)

Note that either one of the two unconscious information factors, S_{12} and S_{21}, has to be < 0 to establish a devotional relationship between the clergyman and the believer; (see Volume I, Chapter V for the mechanism of creating a consentient (devotional) relationship). In general it is unlikely that the clergyman establishes the consent, He, in his missionary endeavor has the tendency to force infidels into his doctrine. The basic structure in System 2 is as follows:



System 2

System 3: Once more, $C_{21} = 0$ and the C_{12}-channel exists as in systems 1 and 2. In this case 3 a further assumption is made: Within the bilateral unconscious relationship there is pure hostility, i.e., both unconscious information exchanges are positive: ($S_{12} > 0$ and $S_{21} > 0$).



System 3

The hostile behavior symbolizes merciless opposition between clergyman and believer. As was always shown in earlier volumes of this series, nature favors hostility. This predominance of hostility

versus friendliness is the reason that this system is the most stable.

As we also have to have a look at the stability situations of different system constellation, it is necessary to give clergyr and believer a dynamic behavior. In order to do that, in Simulink-structure Figure VI-3 the dynamic transfer functions to F13 and F21 to F23 are incorporated. The clergyman is m faster acting than the believer with the assumption that clergyman is intellectually and socially of a higher level of flexi than the believer. The clergyman is - so to speak - the m intelligent party. This dynamic configuration is kept the same all way through in all investigations. Therefore it does not appear parameter in the illustrations. It also always has to be kept in m that our results show behavioral tendencies only. No social val can be measured numerically yet!

System 1

This configuration is considered to be the healthy relation between the reliable believer and the cleric. Figure VI-4 dep values for the goal attainment of the clergyman, x_1/u_1 and of believer, x_2/u_2, both as a function of the clergyman's willpower The willpower of the believer, G_2, is a parameter. G_2 is 1, 2, 4, 8. It can be seen that the upright and strong believer (large renders better support to the clergyman than the weak doct follower ($G_2 = 1$). A strong believer (not strong in faith but str in himself; the strength in faith is represented with the magnit of S_{21}, supports well the clergyman's self-realization x_1/u_1. benefit x_2/u_2 for his own realization is on the positive side as w it seems.

A closer look at the situation, especially for weak clergymen ($G_1 < 2$), tells another story. Increasing G_1, say about from $G_1 =$ up, renders great advantage for the clergyman and a decline of goal gain for the believer. Not really knowing where to put parameter values for social reality, the best guess is that the

clergyman wins the race provided the believer is compliant to the doctrine; $S_{21} < 0$).

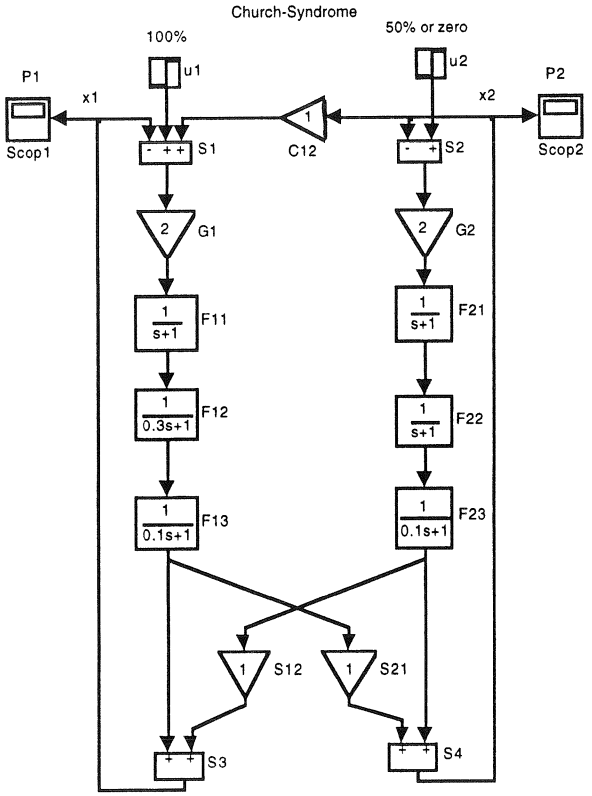


Figure VI-3: Simulink structure of the investigated systems.
for system 1, $S_{12} > 0$, $S_{21} < 0$;
for system 2, $S_{12} < 0$, $S_{21} > 0$;
for system 3, $S_{12} > 0$, $S_{21} > 0$;
G_1 = willpower of the clergy, G_2 = willpower of the believer.

The most reasonable evaluation of a goal attainment is the comparison of the goal attainments of a partner when he is either

involved in a relationship and when he is in an autonomous state. Let's look at two numerical situations:

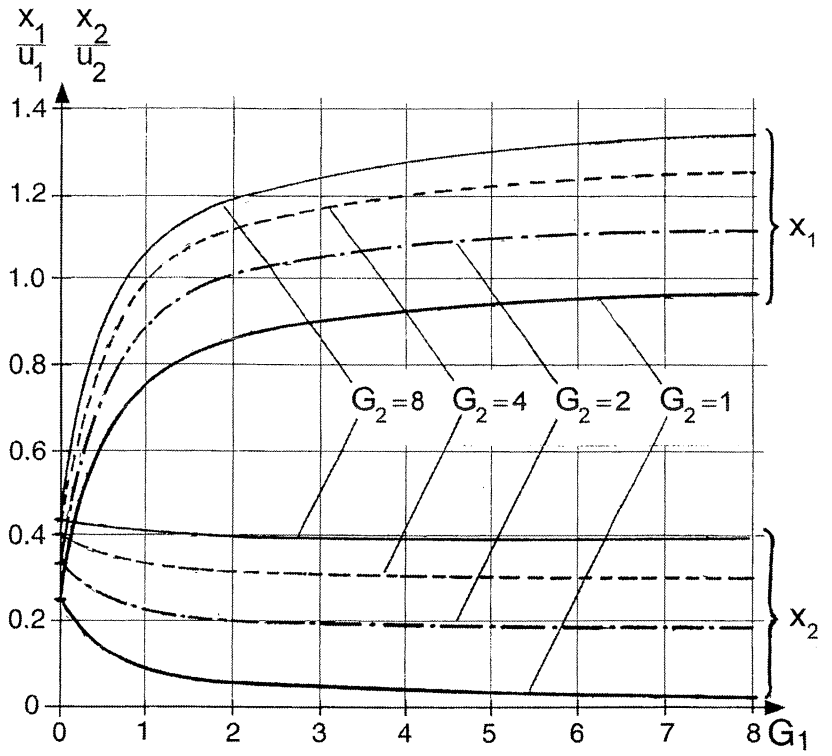


Figure VI-4: System 1. Goal attainments x_1/u_1 of the clergyman and goal attainments x_2/u_2 of the believer; both as a function of the willpower of the clergyman G_1 and with the willpower of the believer G_2 as parameter. The believer establishes the devotion. $S_{12} = +1$, $S_{21} = -1$, $C_{12} = +1$, $u_1 = 1$ or 100%, $u_2 = 0.5$ or 50%.

a) P_1 with $G_1 = 4$ and P_2 with $G_2 = 4$. The believer is as strong as the clergyman, but the believer's goal prospect is lower than that of the clergyman: ($u_1 = 100\%$, $u_2 = 50\%$):
In Figure VI-4: $x_1/u_1 = 120\%$; $x_2/u_2 = 30\%$.
In autonomy: $x_1/u_1 = 80\%$; $x_2/u_2 = 80\%$.

b) P_1 with $G_1 = 2$ and at P_2 with $G_2 = 1$. The clergyman's willpower is lower than in a), but the believer's is even more so; ($u_1 = 100\%$, $u_2 = 50\%$):
In Figure VI-4: $x_1/u_1 = 86\%$; $x_2/u_2 = 05\%$.
In autonomy: $x_1/u_1 = 67\%$; $x_2/u_2 = 50\%$.

There is no doubt that the clergyman is the favorite! **Figure VI-4** indicates: The stronger the believer is ($G_2 = 8$), the better the situation for the clergyman. He achieves a considerably better goal attainment compared to autonomy, whereas the believer, especially when he is weak ($G_2 = 1$), loses his self-realization.

The fact that $S_{12} = +1$ indicates that the clergyman imposes his doctrine upon the believer who establishes the consent with $S_{21} = -1$. The clergyman is aggressively disposed. The system is very stable with the data applied in Figure VI-3. The stability limits are either $G_1 = 9.5$ and $G_2 = 24.2$.

For finding the curves in Figure VI-4, formulae (VI-5) can be used.

$$x_1 = \frac{(1+G_2-S_{12}S_{21}G_2)G_1}{D}u_1 + \frac{(S_{12}-S_{12}S_{21}C_{12}G_1+C_{12}G_1)G_2}{D}u_2$$

$$x_2 = \frac{S_{21}G_1}{D}u_1 + \frac{(1+G_1-S_{12}S_{21}G_1)G_2}{D}u_2$$

$$D = (1+G_1)(1+G_2) - S_{21}C_{12}G_1 - S_{12}S_{21}G_1G_2 \qquad \text{(VI-5)}$$

If the believer sees his salvation in the illusion of life after death and therefore sets his goal higher than 50%, namely to that of the clergyman of 100%, he could be in a better position. Dealing with reality facts is not an easy matter when choosing parameter values. *Religion is man's search for reassurance that he won't be dead when he will be;* Anon. Therefore, ecstasy, euphoria, and jubilation can set high the expectation for eternity. Therefore, u_2 could easily be as large as u_1.

What is the effect of the clergyman's controlling of the believer by observation x_2, the effect of the factor C_{12}? We consider two willpowers of the clergyman $G_1 = 2$, and 4, and $G_2 = 2$ for the

believer. Figure VI-5 depicts the facts: The better the believer is controlled by increasing C_{12} the better is x_1/u_1 for the clergyman; and the worse is x_2/u_2 for the believer is. We assume that C_{12} can be larger than 1 because there is no limit to controlling a person, no limit to forcing him into a doctrine by threatening or even tormenting or torturing him.

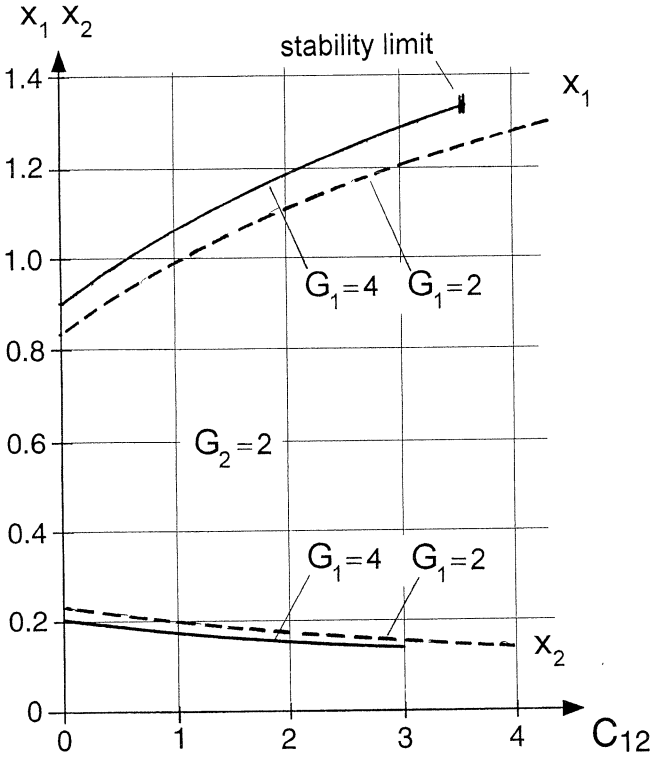


Figure VI-5: System 1. Goal attainments x_1/u_1 of the clergyman and goal attainments x_2/u_2 of the believer, both as a function of the clergyman's control C_{12} over the believer as parameter. $S_{12} = +1$, $S_{21} = -1$, $G_1 = 2$ and 4, $G_2 = 2$, $u_1 = 1$, $u_2 = 0.5$.

The system represented in **Figure VI-5** reaches the stability limit at $C_{12} = 2.1$, $G_1 = 6$, $G_2 = 2$; or at $C_{12} = 1.35$, $G_1 = 8$ and $G_2 = 2$.

The last parameter of interest in this System 1 is the effect the religious zeal $S_{12}S_{21}$ has on the goal attainments of the two parties. Data are given in the captions of **Figure VI-6**. In this graph it is assumed that the magnitudes of S_{12} and S_{21} cannot be larger than |1|. The unconscious exchange of the information passing through the individuals and then crossing over from one individual to the other does so at the maximum of 100%. S_{21} was taken as the same value as S_{12} but negatively: $|-S_{21}| = S_{12}$.

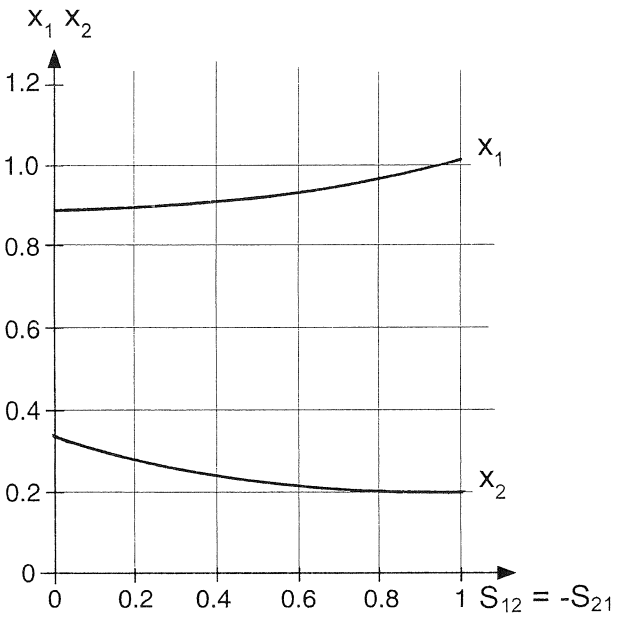


Figure VI-6: System 1. Goal attainments x_1/u_1 of the clergyman and goal attainments x_2/u_2 of the believer, both as a function of the religious zeal between clergyman and believer S_{12} and $-S_{21}$. $S_{21} = -S_{12}$, $G_1 = 2$, $G_2 = 2$, $C_{12} = 1$, $u_1 = 1$, $u_2 = 0.5$. The system is stable up to $S_{12} = |-S_{21}| = 5.6$.

We see a similar tendency in the case **Figure VI-5**: increasing fervor in faith increases the welfare goal attainment of the clergyman and decreases the earthly attainment of the believer.

System 2

In this section it is not the believer who is submissive to the clergyman, it is the clergyman who is the humble party. He establishes devotion toward the believer. We mean that this circumstance happens when the believer could take a questionable, hesitant position toward the religious doctrine and tends toward becoming an apostate, and the clergyman's endeavor is to urge him to remain in his flock.

The S_{12}-attitude information will be negative for establishing the consentient relationship by the clergyman. In general it is unlikely that the clergyman establishes the consent. But in his missionary aspire actions he could manage even to ensnare *infidels* into his doctrine. What is the outcome?

Figure VI-7 illustrates the two goal attainments, of the clergyman and the potential apostate - again as before in **Figure VI-4** - in values of G_1 as parameter. The result is surprising in regard of two points. *Firstly*, The parameter-effect is opposite to the one in **Figure VI-4**. The weakening become-believer offers more success than the strong one. The weaker the candidate (low G_2) the higher is the clergyman's goal attainment x_1/u_1. The strong not-yet-believer P_2 resists harder to giving up his independency of thinking. *Secondly*, the system is highly endangered to run into instability. The clergyman has to handle the situation very subtly. His willpower cannot go far beyond $G_1 = 2$ with $G_2 = 1$, i.e., even when handling a very weak candidate. It is therefore rather improbable that a strong non-believer can be caught or that an apostate can be brought back into the congregation.

We see that in the situation of the clergyman's submissive behavior toward an opposing believer, the model alludes to the fact that the clergyman has to be very refined and gentle in his demands for his earthly welfare, otherwise his intention will be thwarted. Instability of the relationship occurs. He then not only loses the support he wants, but he destroys the relationship. That praise and glory to the skies are required is reflected in the

proverb: *Preces et lacrimae sunt arma ecclesia*; prayers and tears are the ecclesiastical weaponry.

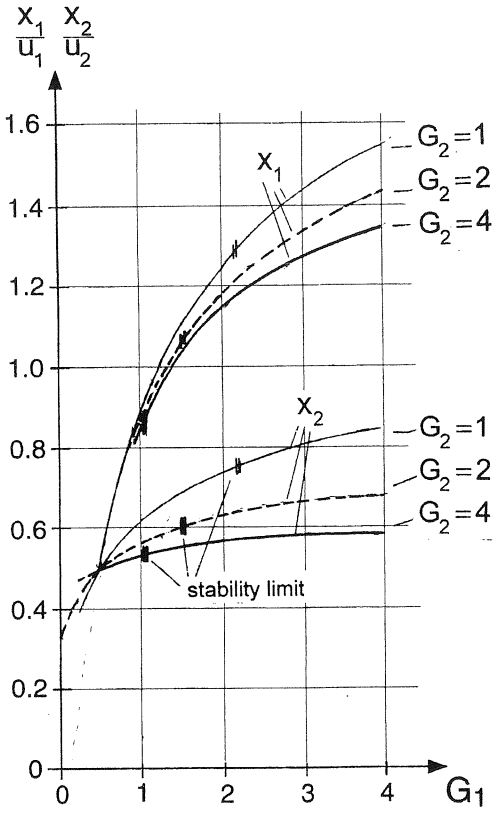
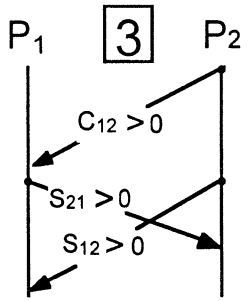


Figure VI-7: System 2. Goal attainments x_1/u_1 of the clergyman and goal attainments x_2/u_2 of the believer, both as a function of the willpower of the clergyman G_1 and with the willpower of the believer G_2 as parameter. The clergyman establishes the consensus. $S_{12} = -1$, $S_{21} = +1$, $C_{12} = +1$, $u_1 = 1$, $u_2 = 0{,}5$.

System 3

Finally we will have a look at the *Holy War* situation. In this scenario the two parties are in a hostile disposition. The status is *enmity*. The unconscious *faith* channels are both positive; $S_{12} = S_{21} > 0$. It has to be noted that in this extremely hostile situation even the goal setting of the apostate is in opposition; u_2 is negative, is -0.5. P_2 is in harsh antagonism to P_1's doctrine. **Figure VI-8** depicts the surprising fact that x_1 and x_2 are equal. They result from equations (VI-5), forming equation (VI-6) by setting $S_{12} = S_{21} = +1$, and $C_{12} = +1$, $u_1 = +1$, $u_2 = -0.5$ in equations (VI-5).

$$x_1 = x_2 = \frac{2G_1 - G_2}{2(1+G_2)} \; ; \; u_1 = 1, \; u_2 = -0.5 \qquad \text{(VI-6)}$$



Equation (VI-6) gives the same results for x_1/u_1 and x_2/u_1. As u_1 is +1, x_1/u_1 is positive, but as u_2 is negative (-0.5) and x_2 is positive, the ratio x_2/u_2 becomes negative. The goal is, indeed, positive for either partner from his own standpoint; therefore the heretic's goal attainment has to be considered to be opposite to the goal attainment of the clergyman! The apostate is lost if the remains in the clergy's hands.

As the willpower of the apostate P_2 can be assumed to be below the willpower of the clergyman P_1, the area of positive goal attainments x_1/u_1 in **Figure VI-8** can be used for our heretic-evaluations. If, e.g., P_1's $G_1 = 2$ and P_2's $G_2 = 4$, then both attainments are zero. P_1 cannot harm the strong P_2. But a P_2 of G_2

< 4 makes the attainment of P_1 positive, the attainment of P_2 negative. We come to the conclusion: *He that is not with me is against me*; (St. Luke 11/23), or: *And to them it was given that they should not kill them, but they should be tormented five months; and their torment was as the torment of a scorpion, when he striketh a man.* (Revelation 9/5). P_2 is doomed to die.

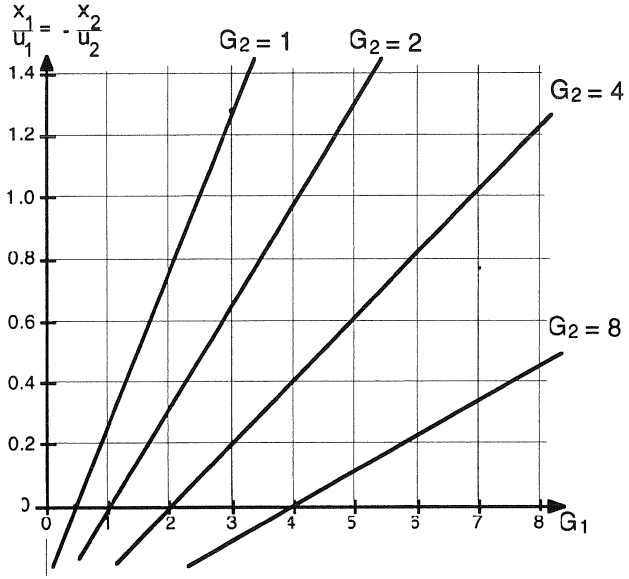


Figure VI-8: System 4. The apostasy. Goal attainments x_1/u_1 of the clergyman and goal attainments x_2/u_2 of the believer as a function of the clergyman's willpower G_1 and with the willpower of the believer G_2 as parameter. Hostile attitude expressed by both, the clergyman and the believer. The system is stable within $G_1 = G_2 = 24$. $S_{12} = +1$, $S_{21} = +1$, $C_{12} = +1$, $u_1 = 1$, $u_2 = -0.5$.

The apostate loses his life if he remains in the clerics bond. He must leave by making $C_{12} = 0$, $S_{12} = 0$, and $S_{21} = 0$ - if he can do so!

To summarize chapter IV:

The more intelligent the clergyman (large G_1) is and the less intelligent the believer (small G_2) is, the greater the benefit for the clergy, Figures VI-4 and VI-7. The smart clergyman does not, first of all, give help to the existence of his flock, but rather he looks after himself by depriving the believers of the possibility of their own self-realization by means of threatening with purgatory and original sin: *Pfaffen zelen das Gelt vnd nicht die Seelen (*Aventin); Priests count the money and not the souls. Or: *Papen Gierigkeut un Gottes Barmherzigkeut wieret in alle Ewigkeut* (Lippe); The greed of the priests and the mercy of God are eternal.

The interesting point is that in the formulae (VI-5) S_{21} and C_{12} form a product in the denominator. The denominator set equal to zero,

$$(1+G_1)(1+G_2)-S_{21}C_{12}G_1-S_{12}S_{21}G_1G_2=0,$$

is the character of the dualism as an entity. The submissive influence S_{21} of the believer and the control of P_2 by the clergyman C_{12} are compounding. But what counts even more: in reality the congregation consists of grand groups of believers who can and do add up their influences for their Father of the Church. We come to the conclusion that the stronger the clergyman's willpower, the better he observes and controls. And the deeper the faith of the believer and the weaker he is, the more the clergyman can draw benefit out of the believer and, thus, rewards his own realization and power in this world:

Dem Papst ein schönes Liedlein singen,
Das heisst: Geschenk und Gaben bringen (Proverb);
To sing a nice song to the Pope means to bring him offerings and gifts.

Interpreting such increase of the clergyman's success reminds one of the periods of Inquisition when torture for the persecution of the heretics took place, (1231 -1821). The greedy endeavor of the clergyman to realize himself sometimes surpasses in importance even the life of the believer: *Dem Pfaffen es ein frewde bringt, wann die Glock zum Begräbnuss klingt* (Zinkgref); It is a joy for the clergyman to hear the bell ringing for the funeral. Or:

Clericus applaudit, cum pulsum funeris audit (Binder); the clergy applauds if it hears the funeral bell ring.

After our harsh criticism, we might end with a platitudinous joke that nevertheless contains a grain of truth:

A country-doctor was called to a remote farmer's house because the farmer had had a stroke. When the doctor arrived, the parish priest, who was just leaving, said to him laconically „He´s already mine!" Translated from [8].

VII. The Loop Game

Introduction

There is no doubt that life consists of an inconceivable we interacting, continuously functioning, goal-oriented cause-ef cause chains of events. Such events can be seen a conglomerate of tightly interlocking automatically functioning lo And there is no doubt either that not even such a single lo performance is comprehensible by simply looking at it or by m and spiritual contemplation or vision. Loop events are m carrying information that is transported and that spreads its e in multiple directions. It is such *functioning of matter in time* provides consciousness, soul and spirit. A being is not only m a being is matter that functions! And if a loop is opened functioning ends, and so does its life. The loop becomes, from standpoint of its functioning, dead matter. Its functioning that its soul, disappears into the nowhere!

Loops' behavior is a physical-dynamic reality. Only the calcul of its dynamics can help us to gain some deeper understandin our world and can bring us forward to a fundamental con This is our attempt and simultaneously our burden all the through these three volumes. As a consequence of our study know that the world's complexity cannot be completely unders with our limited brain mass. Although such complexity is far great to be comprehensible in its full measure, everybody acc that t*imes two two is four.* That is to say that simple daily ev still can be handled and have to be handled to make our contin survival possible. With this philosophy we are somew between the day-to-day necessity of *two times two* and *colossal world web.*

It can take centuries, if not millennia, till we accept the fact plants and animals have the same value within our created w and, thus, the same rights as we humans have. We all are par one and the same nature - although we want to feel that we the lord of nature and to be of much more importance than, say, a bird or a potato plant. We must humble ourselves to attr

every living being with a consciousness, the capability to comprehend the environment and the ability to communicate with each other within one's own species and between other creatures. Innumerable phenomena that we don't know yet must exist. Each new phenomenon we discover gives us a slightly altered and extended worldview.

In Volume I, Chapter V-3, as an intermezzo, we briefly discussed the structural complexity of social conglomerates. In Chapter X of the same volume we took a look at the structural intricacy of the mammal's brain. In both cases the structures were in a normative concept, monotonously structured. Therefore strict formulae could be found to calculate the number of possible loop circuits that would lead to a preliminary measure of complexity.

The number of interacting loops can be considered as a first indication of the functional multiplicity of our life on earth - be it biological or technical. But what if the structure is not homogenous, but if it is randomly interactive as, e.g., Figure A-III-2, page 201 of Volume I, that shows the abstract structure of a technical power plant? This figure is shown here again as Figure VII-0.

Further down a method to determine the number of irregularly *looped* structures is given. Before this will be done, some facts will be illustrated about our loop thinking in the realm of uniform, repetitious structures. We have to keep in mind: If we cannot yet understand an event, it does not mean that it is a miracle. In other words, miracles in the common or religious belief do not exist.

A related fact can be mentioned. A chaos might not exist. It is, perhaps, just that our brain is not capable to perceive the chaotic complexity.

Loops of Monotonous, Homogenous Structures

In our extreme simplification where we boil down a human being to a simple one-goal loop, we distinguished among three forms of

horizontal levels of interaction between two beings, i.e., two such loops that are figuratively set side by side:

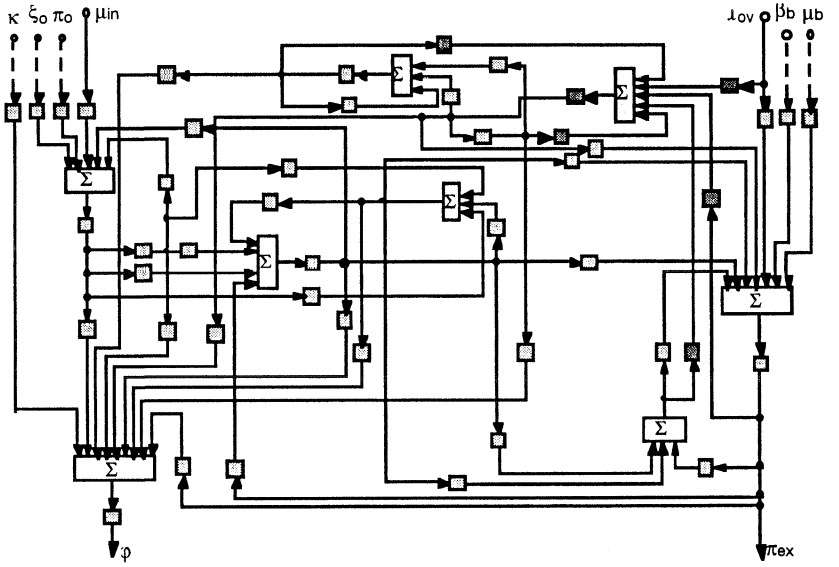


Figure VII-0: Block diagram of a technical power plant.

a) The unconscious partnerships. This interaction is established due to attitude. It is the interaction we call the *unavoidable*. We denote the unconsciously generated interaction as attitude. This conclusion was reached by both psychologists, by Sigmund Freud and by Carl G. Jung. Today such interactions have been confirmed through the determination of a response to physically measurable impulses held below the level of conscious perception.

b) The unconscious partnerships that have additional interaction due to mutual observation of each other, we call *soft interaction*. This second kind of interaction might include more of our senses beside the sense of sight, as there is the sense

of taste, the sense of smell, the sense of hearing, and the sense of touch.

c) Partnerships have not only unconscious interaction and interaction due to mutual observation, but also *hard interaction*. We call this third kind of togetherness *hard* because it has obvious appearances, be this friendly conversations, political debates or physical fighting.

As our concept is new, we are not fully convinced that the terms we create are always adequate to the situation described. One argument the reader might throw on the table is whether attitude is information that gets transformed within a field consisting of some matter carrying the attitude information. But as we became evolved within the one existing nature, it is reasonable to assume that everything - really everything - is interrelated with everything else, and interrelation needs to have an information carrier.

An other obstacle might be that the humanities do not like to recognize that the understanding of the world goes inevitably from the stage of philosophy, sociology and religion toward mathematics or physics. Demystification from divine causality toward an explanation based on natural laws is the path to discernment and sagacity. The deeper we penetrate the world, the more obvious it becomes that it functions by laws. The contemporary worldview with all its problems cannot be handled in the future with the contemporary way of thinking. Does our brain have the necessary capacity yet for such a mutation?

The structure of all three mentioned forms of interaction will be demonstrated. The number of partners is taken as a variable whereas the single partner has the form of a basic loop. This basic loop has a goal in mind and has the self-control to be able to reach the goal and to fight off disturbances. The intention of a disturbance usually is negative. The disturbance wants to drag the loop away from its proper path toward the goal. The loop's goal is considered to be the partner's self-realization, therefore the loop fights the effect of the disturbance. It cannot fight the disturbance as such.

For calculating the total number of loops L of the different structures is the formula given by Kenneth Sollows*, equation (VII-1).

$$L(m,n) = \sum_{i=1}^{n} \frac{\left[\frac{n!}{(n-i)!}\right]^m}{i}; \quad (0!=1) \qquad (VII-1)$$

(*Kenneth Solows is Professor at the University of NB in Saint John, Canada)

n denotes the number of interacting units, or partners;
m = 1 denotes the attitude interaction; one bilateral interaction.
m = 2 denotes attitude interaction and mutual observation of each other of the partners; this is two bilateral interactions.
m = 3 denotes attitude interaction, mutual observation and hard action among all partners, i.e., three bilateral interactions.

The Unconscious Interaction

Euripides lets *Medea say before she murders her own children: I know what evil I am about to do. My irrational self is stronger than my resolution. - And Saint Paul said; I cannot understand my own behavior.* Thus, the first axiomatic statement is that there is unconscious functioning in a person outside of conscious doings. The unconscious interaction is so strongly predomiate that psychologists claim that it accounts for 9/10 of all behavior. Unconscious interaction is archetypical and a fundamental necessity for recognizing and approaching the living partner. The unconscious part of the brain was evolved before human beings developed the neo-cortex that provides what we call *conscious* communication.

The unconscious interaction of a dualism is structured in Volume I, Figure V-1 or Volume II, Figure IV-1. It is depicted here again as Figure VII-1. We know that it is composed of three loops:

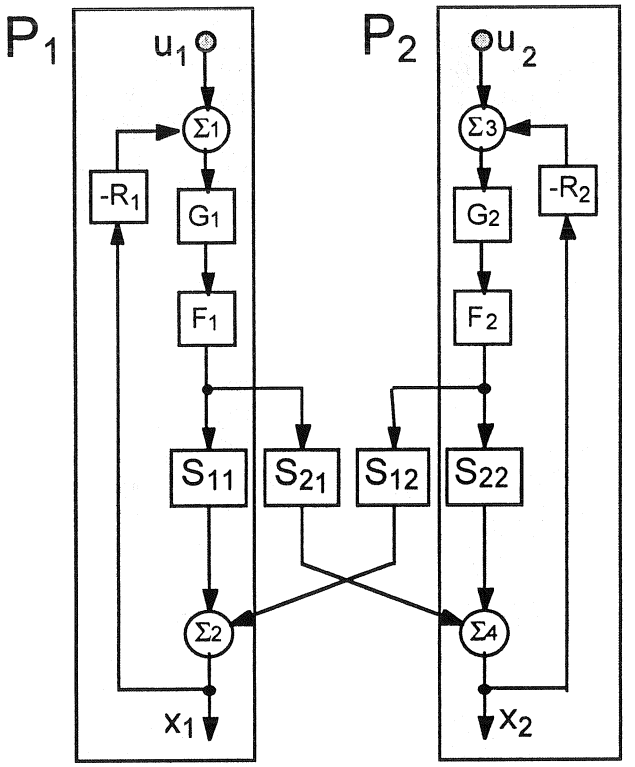


Figure VII-1: The dual-system of attitude interaction.

Loop P_1: $\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{11}\text{-}\Sigma 2\text{-}\Sigma 1$,

Loop P_2: $\Sigma\ 3\text{-}\ G_2\text{-}F_2\text{-}S_{22}\text{-}\Sigma 4\text{-}\Sigma 3$,

The coupling loop: $\Sigma 1\text{-}\ G_1\text{-}F_1\text{-}S_{21}\text{-}\Sigma 4\text{-}\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{12}\text{-}\Sigma 2\text{-}\Sigma 1$.

Extending the dual-system to eight partners results in the abstract form as previously shown as Figure X-2 of Volume II. Here it is Figure VII-2.

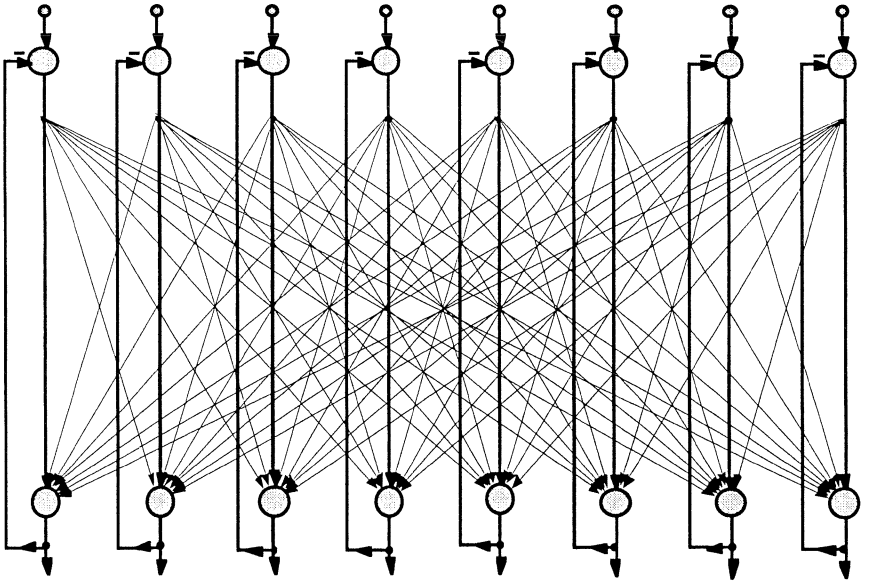


Figure VII-2: Eight units in attitude interrelation.

With the Formula (VII-1) and m = 1, n = 8, i.e., with eight partners formula (VII-2) leads to the number of loops L(1,8). The number is 16,072.

$$L(1,8) = \sum_{i=1}^{n} \frac{\frac{8!}{(8-i)!}}{i}; \quad (0!=1) \qquad \text{(VII-2)}$$

A detailed application of formula (VII-2) for L(1,8) leads to:

$$L(1,8) = 40{,}320\left[\frac{\frac{1}{7!}}{1} + \frac{\frac{1}{6!}}{2} + \frac{\frac{1}{5!}}{3} + \frac{\frac{1}{4!}}{4} + \frac{\frac{1}{3!}}{5} + \frac{\frac{1}{2!}}{6} + \frac{\frac{1}{1!}}{7} + \frac{\frac{1}{0!}}{8}\right] = 16{,}072$$

Figure VII-2 depicts the skeleton of a system of eight units with unconscious interaction according to Figure VII-1.

Perhaps we should be fortunate that attitude information among persons does not appear explicitly in our awareness! If it could be seen or heard or apprehended, what a worse catastrophe this would cause in living together!

At first it seems almost impossible that the eight times eight lines (8 vertical lines belonging to the units each, and 7 times 8 lines interconnecting unconsciously the 8 units with each other) can lead to the enormous variety of 16,072 closed interacting loops. Secondly we must become aware that there is no and never will be any possibility to study the behavioral outcome of a group of only eight units when they represent persons; persons that are of our only very simple simulation.

How does the complexity increase by adding one more level to unconsciously interacting?

Attitude and Observation (e.g., in spying)

We know the structure of the dualism from Figure VII-1 of Volume II. Here it is show again as Figure VII-3. In Figure VII-3 six loops can be detected.

Two loops forming the two partners:

$\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{11}\text{-}\Sigma 2\text{-}\Sigma 1$ and

$\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{22}\text{-}\Sigma 4\text{-}\Sigma 3$.

Two loops of attitude-observation:

$\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{21}\text{-}\Sigma 4\text{-}V_{12}\text{-}\Sigma 1$ and

$\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{12}\text{-}\Sigma 2\text{-}V_{21}\text{-}\Sigma 2$.

One loop forming the attitude interaction only:

$\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{21}\text{-}\Sigma 4\text{-}\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{12}\text{-}\Sigma 2\text{-}\Sigma 1$.

One loop involving the total structure:

$\Sigma 1\text{-}G_1\text{-}F_1\text{-}S_{11}\text{-}\Sigma 2\text{-}V_{21}\text{-}\Sigma 3\text{-}G_2\text{-}F_2\text{-}S_{22}\text{-}\Sigma 4\text{-}V_{12}\text{-}\Sigma 1$.

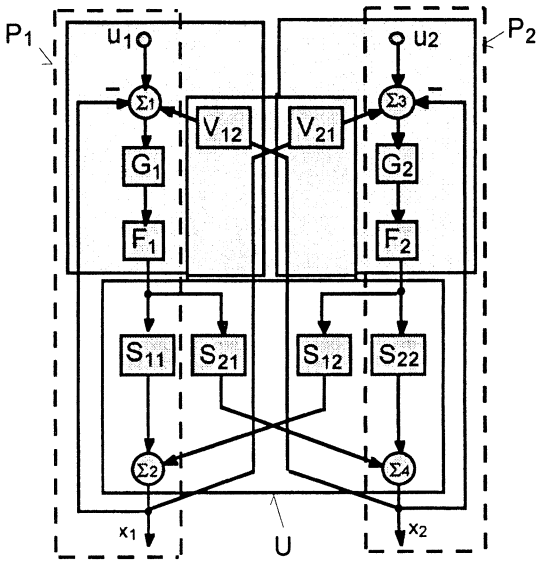


Figure VII-3: The dualism with unconscious interaction and mutual observation.

Extending Figure VII-3 to four units results in Figure VII-4. To determine the number of loops, we take the formula (VII-1) for m = 2, and n = 4 and get formula (VII-3):

$$L(2,4) = \sum_{i=1}^{n} \frac{\left[\frac{4!}{(4-i)!}\right]^2}{i}; \quad (0!=1) \qquad (VII-3)$$

Formula (VII-3) renders 424 loops. Compared with Figure VII-2 of one level with an interaction of eight units, the formula (VII-3) for L(2,8) renders the number 512,970,144. The increase of complexity for eight units from one level of information exchange to two levels is 512,970,144/16,072 = 31,917.

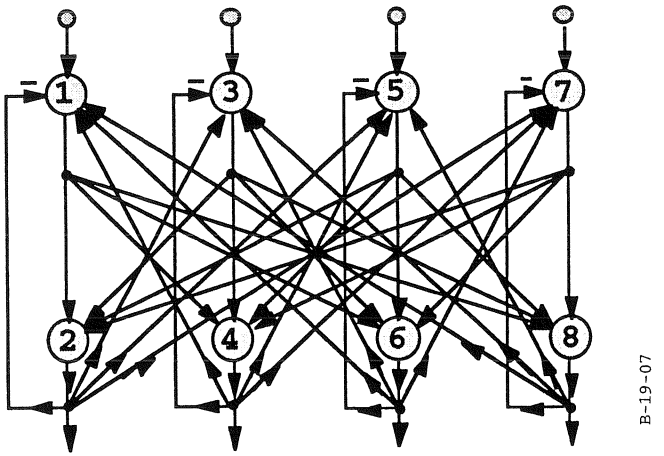


Figure VII-4: Principle structure of four units in dual-level, generalized interaction.

Once we recognize that there is an unconscious information exchange among us, we resign ourselves to hoping for lasting peace even among two persons or any two beings!

Attitude with Observation and Hard Action

The dualism of this triple-level interaction was shown already as Figure V-9 in Volume I. It is repeated here as Figure VII-5. The extension to four units is shown with Figure VII-6.

The number of possible information loops of four units is given with formula (VII-4):

$$L(3,4) = \sum_{i=1}^{n} \frac{\left[\frac{4!}{(4-i)!}\right]^3}{i}; \quad (0!=1) \qquad (VII-4)$$

The numerical result is 8,992.

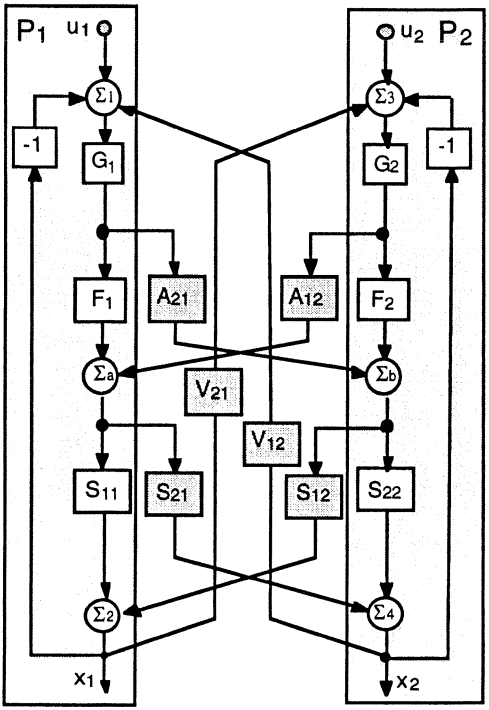


Figure VII-5: Triple level, bilateral dualism.

It is not easy to imagine that there are indeed almost 9,000 loop-ways that can be traced within this relatively simple looking figure. And it is helpful for an easier survival not to see such loops explicitly - although they exist in our very simple analogy.

TableVII-1 lists the number of loops for the three cases, L(1,n), L(2,n), and L(3,n), the possible information loops passing through and between the partners.

The purpose of the Table VII-1 is not so much to show the impressive numbers but rather the tremendous *increase* of complexity due to interaction.

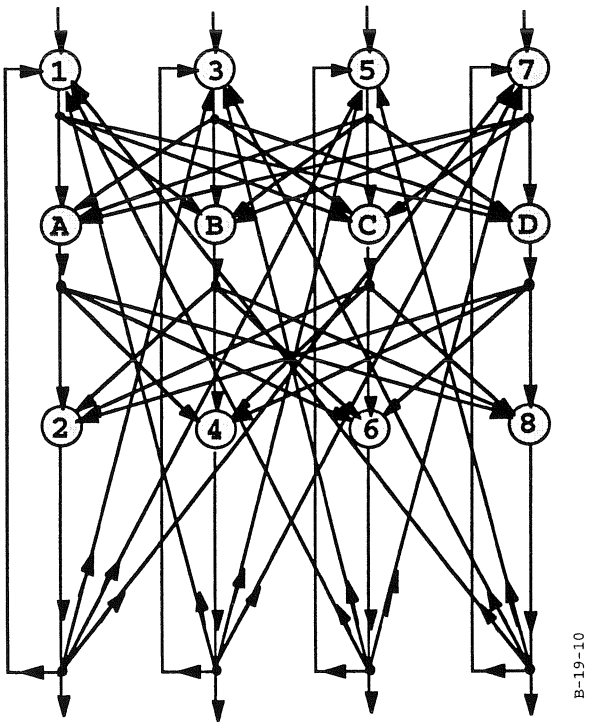


Figure VII-6: Triple level, generalized and four units interconnected.

A single loop, a single unit, cannot perceive itself. This means: because a human brain cannot perceive its own total functioning, it becomes obvious, that peace on earth is impossible for all times to come. Therefore the papal gesture to pray for peace on earth seems to be gentle but ridiculous.

The awareness of the polymorph mightiness, extensiveness, and variety of our world can render us to no hope and fully distressed. In order to avoid the effort to discern consciousness, to gather the knowledge of nature's laws, we surrogate reality with a symbolic and divine world that can be comprehended and believed by every single being. For such a world it seem that miracles are needed.

There are indeed no miracles; but there is - still for a long time to come an impossibility of reaching beyond the actuel frame of comprehending. Our brain is only a minute and temporary quantity of life. And the statement *Except ye see signs and wonders, ye will not believe,* (St. John 4/48) doesn't help to enlarge our brain.

Table VII-1: L(1,n), L(2,n), and L(3,n).

n	L(1,n)	L(2,n)	L(3,n)
1	1	1	1
2	3	6	12
3	8	39	207
4	24	424	8 992
5	89	7 905	853 725
6	415	227 766	149 111 316
7	2 372	9 324 511	42 978 397 987
8	16 072	512 970 144	18 985 066 966 272
9	125 673	36 452 217 969	12 173 372 594 443 097
10	1 112 083	3 247 721 402 870	
11	10 976 184	354 391 641 042 791	
12	119 481 296	46 474 986 465 907 176	

Randomly Interconnected Systems

How could 8,992 loops be found in Figure VII-6 without the formula (VII-4)? A simple method, albeit inconvenient for large interconnectedness, is shown herewith with two examples. Figure VII-7 shows a simplified technical structure of which the number of all loops shall be determined. The general procedure is given in the following list.

a) To every summing point of signals, denoted as $\sum i$, an arbitrarily number is allocated; in Figure VII-7: $\sum 1$, $\sum 2$, $\sum 3$, $\sum 4$, and $\sum 5$.
b) Starting at any $\sum$-point (in Figure VII-7 at $\sum 1$), splitting at branch points, and proceeding along the paths, a diagram is drawn by writing down all the $\sum$-points; in Figure VII-7 first $\sum 5$, $\sum 3$, $\sum 4$.

c) As soon as the starting $\sum$-point is reached ($\sum 1$), it is necessary to stop because the loop from where it started (at $\sum 1$) is closed.
d) If in any such continuous sequences a $\sum$-point, say $\sum x$, which is **not** the starting point, appears again, it is necessary to stop, because a loop that started at $\sum x$ became closed; this was the case for $\sum 4$ and $\sum 5$.
e) The full circuit (Figure VII-7) has to be traced through;
f) All closed loops have to be marked down;
g) Repeated loops are redundant and have to be eliminated. This was the case for one of the two loops of the $\sum$-points: $\sum 4$-$\sum 2$-$\sum 5$-$\sum 4$. It is similar to the loop $\sum 5$-$\sum 4$-$\sum 2$-$\sum 5$.

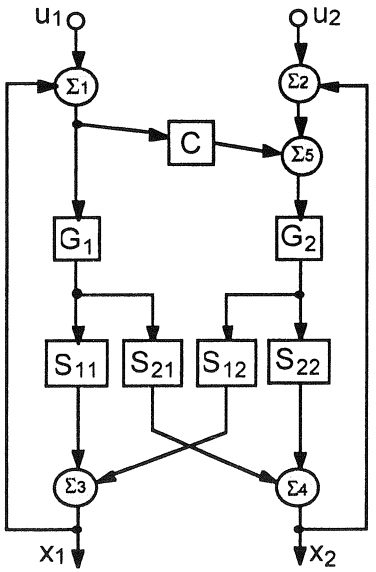


Figure VII-7: Principle structure of an automatic control system of two controlled variables, x_1 and x_2.

For Figure VII-7 the diagram Figure VII-8 was found. The resulting loops are given in Table VII-2.

Loop 4 appears twice; therefore one loop is redundant.

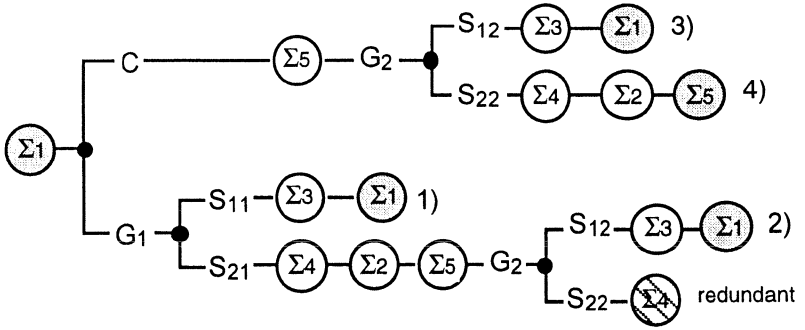


Figure VII-8: Path diagram for Figure VII-7.

Table VII-2: Loops, resulting from Figure VII-8

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1) $\sum 1\text{-}G_1\text{-}S_{11}\text{-}\sum 3\text{-}\sum 1$
2) $\sum 1\text{-}G_1\text{-}S_{21}\text{-}\sum 4\text{-}\sum 2\text{-}\sum 5\text{-}G_2\text{-}S_{12}\text{-}\sum 3\text{-}\sum 1$
3) $\sum 1\text{-}C\text{-}\sum 5\text{-}G_2\text{-}S_{12}\text{-}\sum 3\text{-}\sum 1$
4) $\sum 5\text{-}G_2\text{-}S_{22}\text{-}\sum 4\text{-}\sum 2\text{-}\sum 5$

Figure VII-9 shows four $\sum$-points only, but a higher density of interrelations. Therefore, the number of loops will be greater then of Figure VII-7 with its five $\sum$-points.

The same method as for Figure VII-7 shall be applied.

This pattern Figure VII-9 might be somehow similar to our brain structure, where the $\sum$-points signify neurons and the entering signals arrive via dendrites. This consideration is based on the assumption that neurons with axons, dendrites, and synapses form closed functional loops and that axons spread via multiple dendrites and synapses to other neurons; forming in this way, highly entangled, constantly operating networks. The number of loops for four neurons is 20. The pattern to find them is depicted in Figure VII-10. In this figure, however, only the $\sum$-points will be marked, because the transfer functions F_{ik} are not needed to count the loops.

Table VII-3 lists the 20 loops. Due to the generalized interconnectedness, the development of the loop paths becomes obvious. Therefore, a formula could be developed. It is the formula (VII-5) which gives A(n), the total number of loops. For n = 4, A(n) = 20,

$$A(n) = n! \sum_{k=0}^{n-2} \frac{1}{k!(n-k)}; \quad n \geq 2, \; 0!=1. \qquad \text{(VII-5)}$$

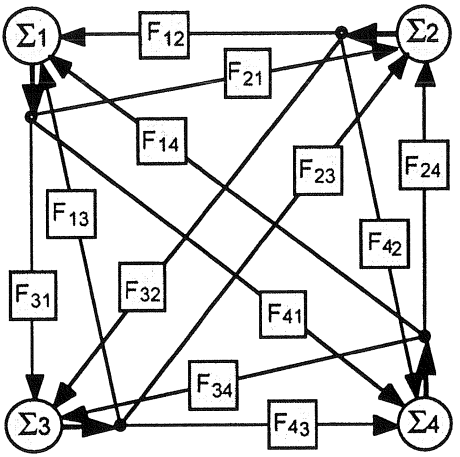


Figure VII-9. 4 generally interconnected ∑-points.

Table X-1 in Volume I lists calculations for up to 18 neurons with general interconnectedness.

The step-by-step development of the formula (VII-5) can be found in Chapter VIII.

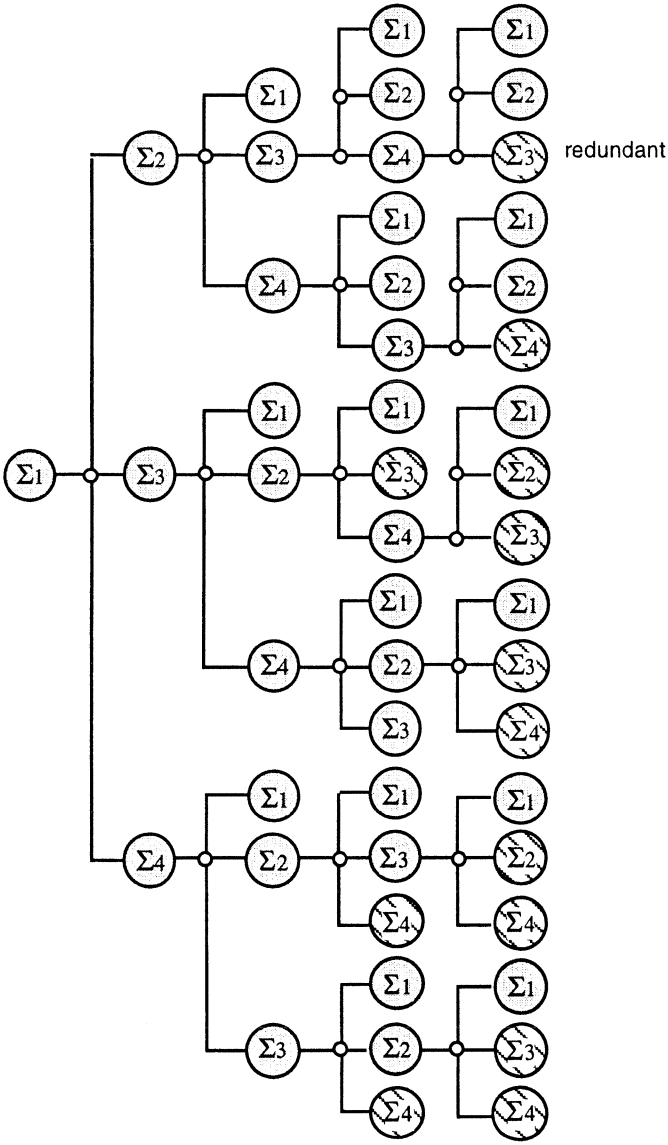


Figure VII-10: Path-diagram for Figure VII-9.

Table VII-3: The 20 loops of Fig. VII-9

$\sum 1\text{-}\sum 2\text{-}\sum 1$	$\sum 1\text{-}\sum 2\text{-}\sum 3\text{-}\sum 1$	$\sum 1\text{-}\sum 2\text{-}\sum 3\text{-}\sum 4\text{-}\sum 1$
$\sum 1\text{-}\sum 3\text{-}\sum 1$	$\sum 1\text{-}\sum 2\text{-}\sum 4\text{-}\sum 1$	$\sum 1\text{-}\sum 2\text{-}\sum 4\text{-}\sum 3\text{-}\sum 1$
$\sum 1\text{-}\sum 4\text{-}\sum 1$	$\sum 1\text{-}\sum 3\text{-}\sum 2\text{-}\sum 1$	$\sum 1\text{-}\sum 3\text{-}\sum 2\text{-}\sum 4\text{-}\sum 1$
$\sum 2\text{-}\sum 3\text{-}\sum 2$	$\sum 1\text{-}\sum 3\text{-}\sum 4\text{-}\sum 1$	$\sum 1\text{-}\sum 3\text{-}\sum 4\text{-}\sum 2\text{-}\sum 1$
$\sum 2\text{-}\sum 4\text{-}\sum 2$	$\sum 1\text{-}\sum 4\text{-}\sum 2\text{-}\sum 1$	$\sum 1\text{-}\sum 4\text{-}\sum 2\text{-}\sum 3\text{-}\sum 1$
$\sum 3\text{-}\sum 4\text{-}\sum 3$	$\sum 1\text{-}\sum 4\text{-}\sum 3\text{-}\sum 1$	$\sum 1\text{-}\sum 4\text{-}\sum 3\text{-}\sum 2\text{-}\sum 1$
	$\sum 2\text{-}\sum 3\text{-}\sum 4\text{-}\sum 2$	
	$\sum 2\text{-}\sum 4\text{-}\sum 3\text{-}\sum 2$	

Conclusions

Only a relatively small part of the brain is needed to make contact with the environment. Such contact is for adaptation within the environment for survival action and for physical reproduction purposes and is, therefore, considered to be conscious. By far the larger part, which serves for unconscious perception, the urge for reproduction, memory storage, body control, and production of dreams, illusions, fantasies, trances, hallucinations, religious believes, etc., is unconscious. One cannot know consciously in any way the totality of one's own functioning. Neither can a clean cut into a consciousness and an unconscious part of the brain be of any help for functional understandings.

In interacting with other persons, the whole person interacts in some way. The increase of complexity, which occurs in a relationship with others is an excellent indication that one is largely unaware of what is going to happen as a result of any unconscious and conscious interacting relation. Therefore, efforts to direct the future by trying, e.g., to establish peace or to build a world peace model, are fully utopian - a *pious desideratum*. Even whilst our knowledge increases, little by little, the world complexity grows in an explosive way (e.g., by the increase of the population and the outburst of information exchange). Ironically already established knowledge is continuously lost through the death of individuals, and it must be regained be the young through hard

labor. As such complexities are incomprehensible in their functional doing, likewise motives for global instabilities remain unfathomable. And whilst we spend some time on earth struggling to gain the actual knowledge, evolution continues and increases nature's complexity.

VIII. The Brain Formula

Introduction

From the structures of a technical plant, Figure V-0, and Figure A-III-6 in Volume I we know that in a technical continuously functioning *multivariable* automatic control system an enormously large number of closed loops can be traced. In all these loops the amount of information is of constancy in change, i.e., the information changes continuously and simultaneously in all parts of the system. The automatic control loop with *one* controlled variable implies the general concept of an automatic control system of this kind of behavior. Assuming that the one variable control system of one loop is defined as the unit of structural complexity, a formula is derived by induction with which the total number of all possible loops in any size of a generally interwoven, multi-variably controlled system can be determined, thus, revealing a measure of its complexity. The consideration of this measure is of particular interest as it was found that the architectonic structure of the brain of mammals, i.e., its neurological control structure, is very similar to the structure of technical, industrial or social, multiply controlled organizations. The architectural complexity we look at does not contain the dynamic complexity that is of a multiple degree larger than the architectural one.

This mammal-brain complexity was already mentioned and formally illustrated in Chapter X of Volume I. There the formula (X-1) was given for the calculation of the number of loops L(n) in a generalized interwoven neural web of n neurons. This formula is repeated here as equation (VIII-1).

$$L(n) = n! \sum_{k=0}^{n-2} \frac{1}{k!(n-k)}; \quad n \geq 2, \quad 0! = 1. \qquad \text{(VIII-1)}$$

In this Chapter VIII we are going to illustrate step by step how this formula was derived. For consistency of reading, some of the figures in Volume I will be depicted again.

The Network

The structural element of the central nervous system of mammals is represented with Figure VIII-1. The nerve fibers, known as dendrites D, transmit stimuli that were sent out by neurons. These signals are manipulated when passing through the synapse S. The neuron N collects the incoming signals and manipulates them again. This manipulation is still unknown. Only one fiber carrying information, called axon A, offers an output from the neuron N. This axon branches into dendrites leading the output information in the same amount to other neurons. It can be assumed that a single neuron is in itself a sub-brain of enormous complexity.

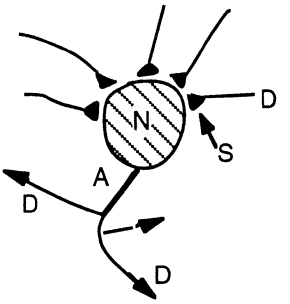


Figure VIII-1: Structural element of the central nervous system.

An ensemble structured in the described way is presented in Figure VIII-2. The heavy line forming a circular loop and including two neurons (N1 and N2) is considered an organizational unit; in our context, an automatic control loop. The signal u(t) coming through an efferent fiber is considered to be a request for action; the signal x(t) is considered to be the response upon u(t); and the signal d(t) reflects a disturbance signal which is not related to the loop's task.

The degree of complexity of one circular loop has been designated as 1. In the following we call Figure VIII-1 the block and denote it

with (Σk). Therefore, the heavy part in Figure VIII-2 is a 2-block system. It contains two neurons, N1 and N2.

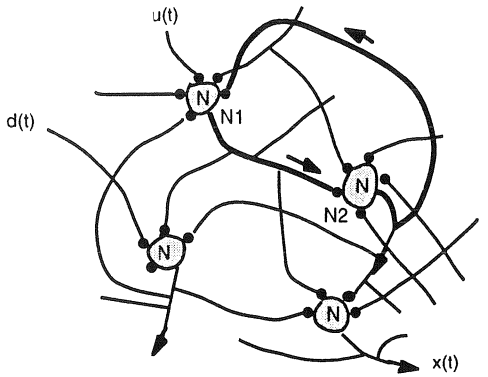


Figure VIII-2: Network of 4 elements Figure VIII-1.

We remember that the technical operational block was depicted in Figure X-4, Volume I. The same Figure X-4 is repeated here as Figure VIII-3. We take this more architectonical form for our story to follow.

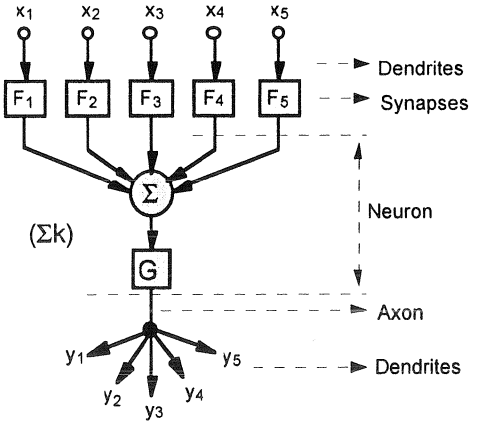


Figure VIII-3: The operational block (Σk), similar to Figure VIII-1.

Forming a 3–Σ–block system with three operational blocks (Σk), of Figure VIII-3, Figure VIII-4 evolves.

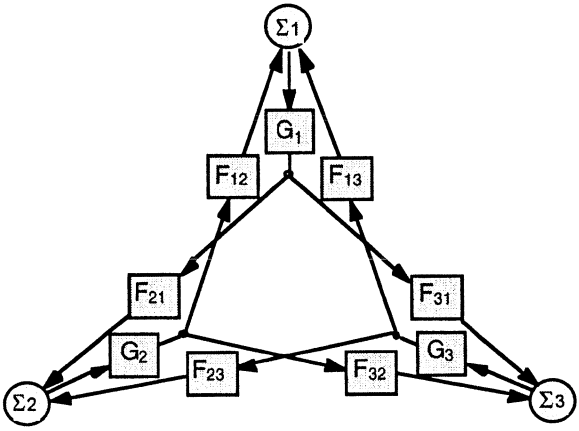


Figure VIII-4: The 3-neuron system.

There are 3 loops containing 2 Σ–points and 2 loops containing 3 Σ–points. The five loops are:

$$F_{12}\Sigma_1 G_1\text{-}F_{21}\,\Sigma_2 G_2$$
$$F_{13}\,\Sigma_1 G_1\text{-}F_{31}\,\Sigma_3 G_3$$
$$F_{23}\,\Sigma_2 G_2\text{-}F_{32}\,\Sigma_3 G_3$$
$$F_{12}\,\Sigma_1 G_1\text{-}F_{31}\,\Sigma_3 G_3\text{-}F_{23}\,\Sigma_2 G_2$$
$$F_{13}\,\Sigma_1 G_1\text{-}F_{21}\,\Sigma_2 G_2\text{-}F_{32}\,\Sigma_3 G_3.$$

The 4–Σ–block system Figure VIII-5 renders 20 loops, as can be checked with Figure VIII-6. Loops in this 4–Σ–block system can be twisted.

The Derivation of the Formula: The n-(Σk)-System

In pursuing the generation of the number of loops systematically, the following pattern develops:

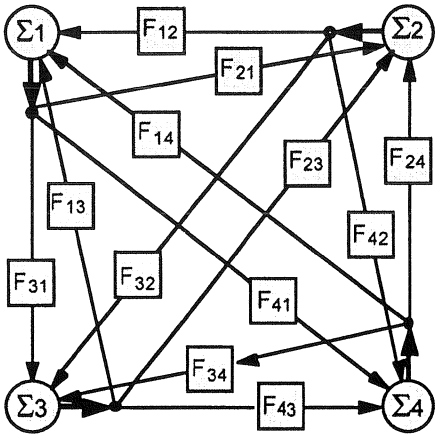


Figure VIII-5: The 4-(Σk)-system.

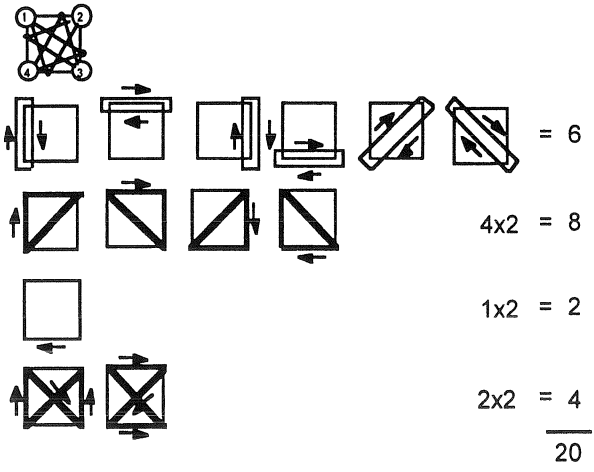


Figure VIII-6. All loops in a 4-(Σ)-block system.

The reflection:

The 2-(Σk)-system, that is the combination of two (Σk)s renders one loop. Say: 1 combination of 2 (Σk)s equals 1! loop.

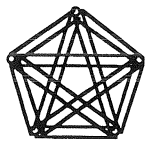
The system of 3 (Σk)s is built with one combination of 3 (Σk)s of 2 loops plus 3 combinations of 2 (Σk)s of one loop. Say: 1 combination of 3 (Σk)s equals 2! loops = 2, plus 3 combinations of 2 (Σk)s equals 3*1! loops = 3. The sum is 5.

The system of 4 (Σk)s contains 1 combination of 4 (Σk)s equals 3! loops = 6. In addition, 4 combinations of 3 (Σk)s equals 4*2! loops = 8; 6 combinations of 2 (Σk)s equals 6*1! loops = 6. The sum is 20.

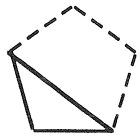
The system of 5 (Σk)s. Here we have 1 combination of 5 (Σk)s = 4! = 24; 5 combinations of 4 (Σk)s = 5*3! = 30; 10 combinations of 3 (Σk)s = 10*2! = 20; 10 combinations of 2 (Σk)s = 10*1! = 10. The sum is 84.

The system of 6 (Σk)s. The routine now is:
1 combination of 6 (Σk)s = 5! = 120; 6 combinations of 5 (Σk)s = 6*4! = 144; 15 combinations of 4 (Σk)s = 15*3! = 90; 20 combinations of 3 (Σk)s = 20*2! = 40; 15 combinations of 2 (Σk)s = 15*1! = 15. The sum is 409.

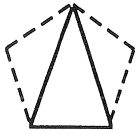
From the figures, which give the number of the individual combinations, it is easy to recognize the binomial coefficients of Pascal's triangle; Figure VIII-8. The number of the basic combination can be found with the combination of n (Σk)s = (n–1)! loops.



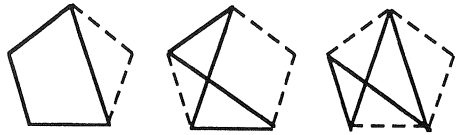
$n(n-1)/2 = 10$



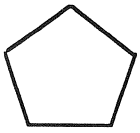
$5*2 = 10$



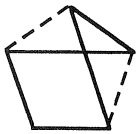
$5*2 = 10$



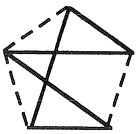
$3*5*2 = 30$



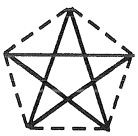
$2 = 02$



$5*2 = 10$



$5*2 = 10$



$2 = \underline{02}$

84

Figure VIII-7: All loops in a 5-(Σ)-block system.

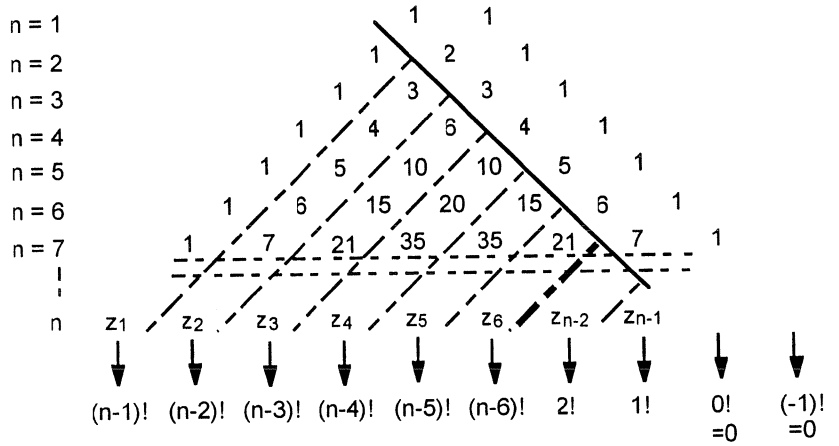


Figure VIII-8: Pascal's triangle for determining the coefficients.

The two last coefficients of the triangle must be dropped. (By defining 0! and (-1)! as zero, the total lines of binomial coefficients can be applied.) The total number of possible loops L(n) of a generalized interconnected net of n (Σk)s can, therefore, be determined by

$$L(n) = \sum_{i=1}^{n-1} a_i (n-1)!,\ n \geq 2,$$

where a_i is the i^{th} binomial coefficient of the nth line of Pascal's triangle, and

$$a_i = \binom{n}{i-1}.$$

Thus,

$$L(n) = \sum_{i=1}^{n-1} \binom{n}{i-1} (n-1)!,\ n \geq 2. \qquad \text{(VIII-2)}$$

Table VIII-1 gives the values L(n) for n up to 18 neurons.

The form of the formula (VIII-2) is not convenient. It shall be transformed into formula (VIII-3).

$$L(n) = n! \sum_{k=0}^{n-2} \frac{1}{k!(n-k)}; \quad n \geq 2. \qquad \text{(VIII-3)}$$

As

$$\binom{n}{k} = \frac{n!}{k!(n-k)!},$$

the formula (VIII-2) can be formulated as

$$L(n) = \sum_{i-1}^{n-1} \frac{n!(n-1)!}{(i-1)!(n-i+1)!} = n! \sum_{i-1}^{n-1} \frac{(n-1)!}{(i-1)!(n-i+1)!} =$$

$$L(n) = n! \sum_{i-1}^{n-1} \frac{1}{(i-1)!(n-i+1)}. \qquad \text{(VIII-4)}$$

By setting i-1 = k, formula (VIII-4) becomes the expression (VIII-3).

The following question might be of interest. What is the growth in loops $\Delta L(n+1)$ from L(n) to L(n+1)?

$$\Delta L_{n+1} = L(n+1) - L(n). \qquad \text{(VIII-5)}$$

Applying formula (VIII-3) equation (VIII-5) becomes:

$$L(n+1) - L(n) = (n+1)! \sum_{k=0}^{n-1} \frac{1}{k!(n+1-k)} - n! \sum_{k=0}^{n-2} \frac{1}{k!(n-k)}$$

$$= n! \left[(n+1) \sum_{k=0}^{n-1} \frac{1}{k!(n+1-k)} - \sum_{k=0}^{n-2} \frac{1}{k!(n-k)} \right]$$

$$= n! \left[1 + \sum_{k=1}^{n-1} \frac{n+1}{k!(n+1-k)} - \sum_{k=0}^{n-2} \frac{1}{k!(n-k)} \right]$$

$$= n! \left[1 + \sum_{k=1}^{n-1} \frac{n+1}{k!(n+1-k)} - \sum_{k=1}^{n-1} \frac{1}{k!(n-k)} \right]. \qquad \text{(VIII-6)}$$

Table VIII-1: Number of loops L(n) in a system of n operational blocks (Σk); $2 \le n \le 18$.

n	L(n)
2	1
3	5
4	20
5	84
6	409
7	2 365
8	16 064
9	125 664
10	1 112 073
11	10 976 173
12	119 481 284
13	1 421 542 628
14	18 348 340 113
15	255 323 504 917
16	3 809 950 976 992
17	60 683 990 530 208
18	1 027 542 662 934 897

Replacing k by (k+1) in the term

$$\sum_{k=1}^{n-1} \frac{1}{k!(n-k)},$$

the expression (VIII-6) becomes

$$= n!\left[1+\sum_{k=1}^{n-1} \frac{(n+1)(k-1)!-k!}{k!(k-1)!(n-k+1)}\right]$$

$$= n!\left[1+\sum_{k=1}^{n-1} \frac{(n+1)(k-1)!-(k-1)!k}{k!(k-1)!(n-k+1)}\right]$$

$$= n!\left[1+\sum_{k=1}^{n-1}\frac{(k-1)!(n+1-k)}{k!(k-1)!(n-k+1)}\right] = n!\left[1+\sum_{k=1}^{n-1}\frac{1}{k!}\right] \text{ or}$$

$$= n!\sum_{k=0}^{n-1}\frac{1}{k!}$$

Therefore:

$$L(n+1)-L(n) = \Delta L_{n+1} = n!\sum_{k=0}^{n-1}\frac{1}{k!}. \qquad (VIII-7)$$

This equation tells the following amazing story. Having a tiny little brain of 30 neurons and interconnecting them with one additional neuron, we ask how many more loops ΔL_{30+1} this addition will create. Equation (VIII-7) says

$$\Delta L_{n+1} = n!\sum_{k=0}^{n-1}\frac{1}{k!}.$$

It is known that $\sum_{k=0}^{n-1}\frac{1}{k!} \approx e$, if n is sufficiently large. But as the convergence of this expression is rapid, the approximation for n = 30 will be good. Therefore, $L_{30+1} \approx 30!e$ (e = 2.718). This means, adding one neuron to a system of 30 neurons, then

$$265{,}252859{,}81219{,}058636{,}308480{,}000000.e \approx 7{,}2.10^{32}$$

additional loops can be found!

If every loop of the brain of the L(30)-loops would be counted as one square millimeter, and if forming a tight carpet with these loops, this carpet would cover the surface of the earth 50,000,000,000 times (taking the earth as a perfect sphere). As another perspective, an ant already has a brain of 60,000 neurons!

The human brain, indeed, does not have a mere 60,000 neurons but approximately 10^{15} (different numbers can be found in literature). Without assuming a generalized interconnectedness –

which, indeed, would mean complete chaos – but allowing a different *transfer function* per neuron in different individuals and specific interrelations among neurons in different individuals, a still unimaginable amount of different beings can occur exhibiting different behavior. From such a standpoint, it can be said that there will never be two equal human beings (not even after cloning and re-cloning) on earth, and the potential for differentiation is far beyond our comprehension.

It also can be shown that

$$L(n+1) = (n+1)L(n) - nL(n-1) + n \qquad \text{(VIII-8)}$$

with the definitions L(0) & L(1) = 0.

Starting with the expressions (VIII-5) and (VIII-7) one gets

$$L(n+1) - L(n) = n!\sum_{k=0}^{n-1}\frac{1}{k!} = n! + n!\sum_{k=1}^{n-1}\frac{1}{k!} = n!\left[1 + \sum_{k=1}^{n-1}\frac{1}{k!}\right] \text{ with } \frac{1}{0!} = 1.$$

Thus: $\Delta L(n) = (n-1)!\sum_{k=0}^{n-2}\frac{1}{k!}$;

$$\Delta L_{n+1} = (n-1)!n\left[\sum_{k=1}^{n-2}\frac{1}{k!} + \frac{1}{(n-1)!}\right] = (n-1)!n\sum_{k=0}^{n-2}\frac{1}{k!} + n;$$

$$\Delta L_{n+1} = n\left[(n-1)!\sum_{k=0}^{n-2}\frac{1}{k!} + 1\right]$$

$$\Delta L_{n+1} = n(\Delta L_n + 1).$$

Thus,

$$L(n+1) - L(n) = n[L(n) - L(n-1) + 1].$$

Therefore,

$$L(n+1) = (n+1)L(n) - nL(n-1) + n.$$

Some examples:

n = 1: L(2) = 2L(1)-L(0)+1 = 1
n = 2: L(3) = 3L(2)-2L(1)+2 = 5
n = 3: L(4) = 4L(3)-3L(2)+3 = 20
n = 4: L(5) = 5L(4)-4L(3)+4 = 84
n = 5: L(6) = 6L(5)-5L(4)+5 = 409

And finally we demonstrate that

$$L(n+1) = nL(n)\,|_{n\to\infty} \qquad \text{(VIII-9)}$$

This will say that the growth of complexity with increasing numbers of neurons is roughly n!.

Consider

$$\frac{L(n)-L(n-1)}{L(n-1)} = \frac{L(n)}{L(n-1)} - 1 = \frac{(n-1)[L(n-1)-L(n-2)+1]}{L(n-1)} = \frac{\Delta L_n}{L(n-1)}.$$

$$\frac{L(n)}{L(n-1)} - 1 = (n-1)\frac{L(n-1)}{L(n-1)} - \frac{(n-1)[L(n-2)-1]}{L(n-1)} =$$

$$(n-1) - \frac{(n-1)[L(n-2)-1]}{L(n-1)}.$$

$$\frac{L(n)}{L(n-1)} - 1 = n - 1 - \frac{(n-1)[L(n-2)-1]}{\Delta L_{n-1} + L(n-2)}$$

$$\frac{L(n)}{L(n-1)} = n - \frac{(n-1)[L(n-2)-1]}{(n-2)[\Delta L_{n-2}+1]+L(n-2)} =$$

$$= n - \frac{(n-1)[L(n-2)-1)]\dfrac{1}{(n-1)L(n-2)}}{\dfrac{(n-2)(\Delta L_{n-2}+1)+L(n-2)}{(n-1)L(n-2)}} = n - \frac{\dfrac{L(n-2)-1}{L(n-2)}}{\dfrac{n-2}{n-1}\dfrac{(\Delta L_{n-2}+1)}{L(n-2)} + \dfrac{L(n-2)}{(n-1)L(n-2)}};$$

$$\frac{L(n)}{L(n-1)} = n - \frac{1-\dfrac{1}{L(n-2)}}{\dfrac{n-2}{n-1}\cdot\dfrac{\Delta L_{n-2}+1}{L(n-2)}+\dfrac{1}{n-1}}\Bigg|_{n\to\infty} = n-1.$$

Therefore:

$$L(n) = (n-1)L(n-1)\,|_{n\to\infty};\ \text{or}$$

$$L(n+1) = nL(n)\,|_{n\to\infty} \qquad \text{(VIII-9)}$$

Closing Words

All along the journey through the three Volumes, I, II, and III, the focus was on exemplifying with a series of daily recurring events that a unification of sociology, psychology, philosophy, and theology with terms of a mathematical-physical formalism is indeed possible. The risk taken herein of establishing a move from the stage of mythology and humanities to physics with its mathematical capture can seem contemptuous for non-physicists - or perhaps even for physicists. This undertaking intends to formulate a fundamental description of happenings in functional terms. It is an interdisciplinary approach that combines humanistic, classical and technical disciplines into a universal one. We all have to admit that there is only one living world, only one nature that embraces everything. Therefore there must, after all, be a unique way to describe this universe.

Dealing with our far-reaching interdisciplinary aspect - from one end of religious divination, to the other end of rationalism - can result in rejecting such efforts from many sides. Each side might feel being invaded by unjustified purposes. And because one specific discipline in its protected isolation does not know the other disciplines, eagerness evolves to project one's own domain. This is a dominant fact in nature: guarding and defending one's own territory by rejecting what does not belong to it. Animals and plants behave similarly. This sharing out of life into a diversity of faculties is due to the fact that our brain's capacity is in general greatly overstrained in regard to the world's enormous diversity. A physicist is normally not interested in sociology, or does not have the time needed to study it, and a sociologist is absolutely convinced that his domain cannot be explained by physical-mathematical terms. More so: psychologists and clergymen consider their disciplines more as sitting enthroned on a higher level than physical laws. But we must recognize that the world functions by natural laws, and this is in the broadest perspective: functional matter in the way matter moves in time. The crux is getting insight into the world of motion and the mathematics that describes it.

To defend our point in a provocative manner: physicists are capable of understanding the humanities, whereas sociologists, psychologists, and theologians cannot understand physics in its functioning within its laws. Experts and authorities in the humanities can talk about a physical experiment, but it is mathematics that is needed to know the experiment.

The laws that describe the behavior of functional matter hold throughout the universe. They have cosmic validity. On the other hand, the humanities are strongly afflicted and encumbered with subjective and emotional dialectics. Unfortunately, the time-functional world can only be correctly described with the realm of mathematics. Mathematics is a way to understand what is really involved in our *panta-rhei*-world. We coined the sentence: *What cannot be thought must be calculated.*

Nevertheless, in the course of our studies we came to the firm conclusion that only small interacting functional networks can be analyzed. The intricate complexities in which we live are far too intermingled as yet for our brainpower and elaborated technology to be understood in a broader perspective. Therefore, the escape into humanities with its symbolic world can be justified and it must be accepted for - perhaps - still a long time to come.

But it is easy to deal with verbal, undefined symbols established within our social area of the contemporary time and not taking the field of real reality into account On the other hand, it is very difficult to reach into the depth of nature. How long did mankind have to wait until Newton's law of gravity was born! Before Newton, everything that was dropped just fell down. - God wanted it this way! - Therefore humanities evolved and they will still evolve where there is no comprehension of the functioning in time and its mathematics. Yet, man is curious and wants to know about his existence. But nature hides its laws very carefully. And mystic and esoteric words sound too good compared to dry and almost repulsive mathematical formulae! Unfortunately: *nil sine magno vita labore dedit mortalibus:* Life has given nothing to the mortal without great labor.

Man has endeavored on the straight and narrow to find real truth and verity. Yet, we still wander again and again on the wrong tracks in meandering directions. Especially the obsession to find the *essential truth* through a religious doctrine blinds us to the intricate complexity of the physical world. Life is an uninterrupted chain of cause and effect, and all interacting elements function simultaneously in time and in closed, intertwined cause-effect-strings (except subatomic events).

As it requires an enormous effort to perceive and understand the functioning of the world, an easy way out always was to create Gods. With this Omniscience in tow man wants to unburden himself and, what is even more absurd, wants to have established peace on earth - naturally, peace with our view and our illusions. Such gods that are housed in a person's unconscious, and surely nowhere out in space, cannot provide external help. We are left with our brain capacity to look after ourselves. Magical thoughts do not have external substance although they exist as functional matter in our brains.

And after all in regard to peace: There is no killing over physical laws. Wars are carried out in the name of *man-made* Gods and their *man-made* propositions and theses. And note well: these wars are carried out with instruments of physical laws applied as matter that functions in time:

Decapitation, burning of heretics, gassing, suicidal bombs and nuclear explosions.

And all life that is going to be killed is matter with energy that functions.

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