Modelling and Effect of Anticipation and Perseverance in Human Behaviour

Prof.Dr.Dr. Rudolf Starkermann
Juchstrasse 22, CH-5436 Wuerenlos,
Switzerland, rstarkermann@access.ch

Abstract
Darwin's basic postulates for surviving are willpower and speed. These two characteristics will be demonstrated firstly for a single person in the autonomous state with regard to his self-realization. Self-realization is the ultimate goal of a living being. Secondly, and more important, it will be demonstrated how the individual characteristics evolve in a partnership of two persons. It is a fact that a person does not lose his individual characteristics when he enters a relationship (The leopard cannot change his spots). But his characteristics dissolve into the partnership. The partnership shows its own feature, depending on the individual partners´ characteristics and the specific information exchanged between the two constituents. Such exchange happens unconsciously and consciously. The partners´ self-realization becomes dependent on the partnership's character as a whole.
Keywords: Partnership, willpower, speed, anticipation, perseverance.

1 Introduction

The following questions will be answered.
(a) Concerning his goal as a function of his willpower: what is the success of a single person, with and without anticipation, and with and without perseverance?
(b) what is the success in a dualism of such two people if
(b1) they have the same pattern of motion (speed of acting), and if
(b2) they have a different pattern of motion?
In both cases, (b1 and b2), each person strives toward his own survival, his own realization, with his willpower. In the (b)-cases the investigation is scrutinized with and without anticipation and with and without perseverance.

There is a tremendous difference in the outcome whether the togetherness is in a hostile (aggressive) or in a consentient (conciliatory) disposition. It is assumed that aggressive and conciliatory attitudes are embedded in the unconscious, and that attitudes between partners become exchanged in the form of information transfer.

Hostility results in mutual damage. The damage is tremendous. The person of high willpower destroys the weak person. Consent brings mutual help. But the help is meagre. The weak person gains some help from the strong one, whereas the strong person gets only very negligible support from the weak one. The synergetic relation of willpower and pattern of motion of the partners have to operate within the domain of homeostasis (dynamic stability), i.e., the partners have to strive toward their goal in a

stable partnership. This synergetic relation -- the product willpower times speed—can be considered as a rudimentary definition of success in striving after self-realization. We say: the more willpower and the more speed, the more self-realization. We also say: The degree of attainment of self-realization is proportional to intelligence.

Some further findings are:

1. In the partnership, when the two persons have the same pattern of motion and when they exert equal power, then

a) the maximum power within the homeostatic domain is about twice in aggression compared to the power in consent;

b) the aggressive dualism acts twice as fast as the consentient one;

c) the aggressive dualism is almost impenetrable to outside influences, whereas conciliatory systems are highly sensitive with respect to disturbances. (Wars are extremely fast acting and very stable and insensitive for any peace endeavour. Democracies are slowly acting and can easily be disturbed, - corrupted.)

d) the domain of homeostasis - and so the potential for survival - is considerably larger in aggressive than in consentient friendship;

e) surprise: two persons (or parties, or nations) outside their domain of homeostasis, and thus, incapable to strive toward their goal in an autonomous state, can form a stable, aggressive but not a consentient relationship.

2. If the two persons have a different pattern of motion it will be shown:

a) in friendly relations, if the slow person executes his willpower to the utmost, the swift person cannot execute his will;

a1)   the togetherness acts slower than the slow person in autonomy. The friendship will - has to, according to nature - change into a hostile relation if the slow person does not reduce his demand for power, i.e., is insisting on his will and does not let the fast person lead; or the dualism has to break off - if it can, if it is not legally bound;

b) in stable aggression the slow person can exert a power which is higher than the power of the fast partner and again;

b1)   the domain of homeostasis is much larger in aggression than in consent.

3. Supplying the fast person with anticipation, i.e., making the fast even faster, worsens the situation for him in the friendly relationship if the slow person sticks to his will, although, due to the anticipation of the fast person, the potential to increase his will becomes considerably enlarged. This is so, because his anticipation enlarges the domain of homeostasis. In aggression, the benefit is for the slow, insisting person.

4. Supplying the fast person with anticipation and the slow one with perseverance (also called stubbornness) brings only advantage for the stubborn one and only in the aggressive relationship.

Anticipation is modelled with the time-derivative action of the internal shortfall signal of a person. The shortfall is the remaining distance between the actual attainment and the wanted self-realization. Perseverance is modelled with the time-integral action of the similar internal signal, i.e., the eagerness to reduce this signal „shortfall" for attaining his goal fully. - As introductory step the model of the autonomous person has to be sketched.

2 The One-Goal Cause-Effect-Cause *Circumitus*, the Single Partner

Each human has an ultimate goal, his self-realization. This fact has to be kept in mind in every thinking process about social order and endeavour to realize such order. Furthermore, the being has not only to have self-control of his doing in order to be aware of his interaction with the environment; he has to have continuous cognition, or continuous feedback of his own doing; he has to have consciousness. The single person with regard to a second person is depicted in Fig. 1.
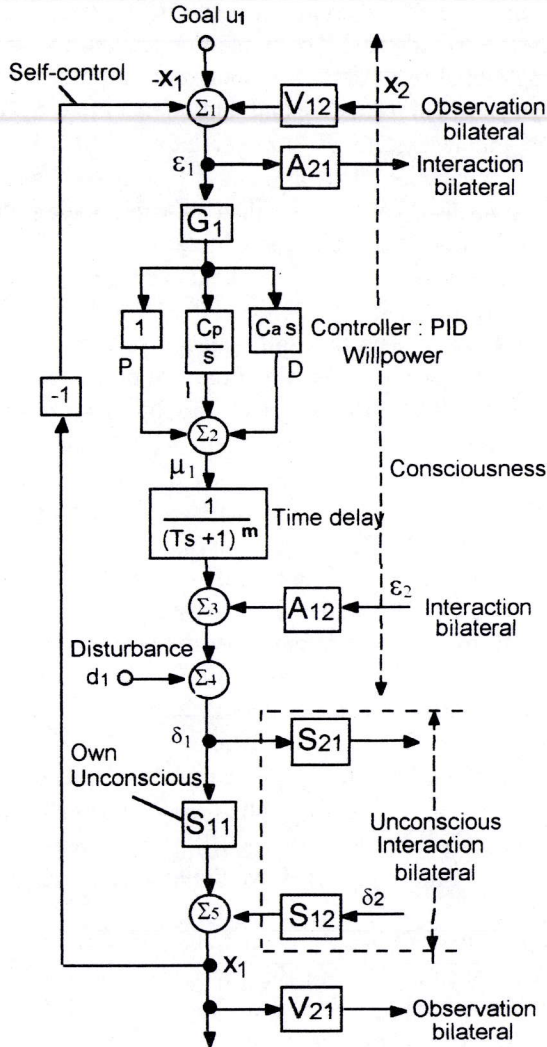

Fig. 1: The model of the individual, the social unit.

There are three bilateral interactions shown:
a) the unconscious interaction, the signals $\delta_1 S_{21}$, and $\delta_2 S_{12}$;
b) the mutual observation of each other's doing, the signals $x_1 V_{21}$, and $x_2 V_{12}$; and
c) the physical communication as talking, fighting; the signals $\varepsilon_1 A_{21}$, and $\varepsilon_2 A_{12}$.
b) and c) are assumed to be conscious.

As the unconscious is extremely stronger and excessively domineering over the conscious rational actions, as there are observation and talking, only the attitude information $\delta_1 S_{21}$, and $\delta_2 S_{12}$ is considered in this essay. - By way of introduction to the single partner, it is to explain a few terms in order to find the quantitative basis for comparison the two fundamental behavioural patterns, aggression and consent, in the attempt of attaining each partner's goal, i.e., in their endeavour for survival.

Fig. 1 depicts a single-goal self-controlling loop, our partner P_1. The goal survival in mind is u_1. The momentary achievement as a function of time is $x_1(t)$, in short, x_1. The self-control of the momentary state of survival happens at $\Sigma 1$; $\Sigma 1$ determines the amount that is still to be achieved. This amount is $u_1 - x_1(t) = \varepsilon_1(t)$. This term ε_1 is called error in technical terms. In here it is called shortfall, the amount which is still to be reduced, or even, if possible, to be eliminated totally so that x_1 becomes u_1. In order to keep the terms simple, it is assumed that u_1 remains constant, i.e., u_1 does not change as a function of time. The signal $-x_1(t)$ is called the negative feedback. An extremely important point is the following: The shortfall ε_1 becomes emphasized by the willpower (also called volition). This is by G_1. G_1 is one of the two prime factors for survival. That is, ε_1 becomes multiplied with the willpower G_1 to $G_1 \varepsilon_1$. Two more influences can be added to this shortfall signal, the anticipation feeling $Ca(d\varepsilon_1/dt)$ and the perseverance enforcement $Cp\int \varepsilon_1 dt$. Ca and Cp are magnitudes of anticipation and perseverance, respectively. G_1 can also be called intensity factor for self-realization.

As actions need time to perform, F_1 indicates the required time. This time factor determines the speed of action, or the pattern of motion. Speed is the second prime factor for the survival of a P_1. The signal d_1 is a disturbance that enters the loop - the circumitus - from the further environment. Disturbances are always present in our complex world. S_{12} and S_{21} indicate the evaluation of the attitude-information being transferred unconsciously between two partners P_1 and P_2. It is assumed that attitudes between partners become transferred within a field, with the two-field variables $\delta_2 S_{12}$ and $\delta_1 S_{21}$. S_{11} is a factor of evaluation of P_1's own unconscious urge for survival when the circular control-information - the shortfall - passes through him. $\delta_2 S_{12}$ and $\delta_1 S_{21}$ establish the social interrelation between P_1 and P_2, hate or love, aggression or consent, war or peace. With UC we denote further down the totality of unconscious information flow within the dualism.

The feedback loop with its self–control and its self–sustenance is the very basic element for building organisms. Due to the limited space available, for the further description of the single partner it is referred to [Starkermann, 1994].

The three main questions to be answered are:
A) How much of the desired goal u_1 can be achieved? This is the final attainment $x1/u_1$.

B) What is the effect of a disturbance d_1 entering the person, the loop? This is x_1/d_1.

C) What is the domain of stable behaviour, the homeostasis, on the way to the goal u_1, once the goal u_1 is set?

2.1 The Final Goal Attainment x_1/u_1 and the Final Effect of Disturbance x_1/d_1

It is known that anticipation, as we define it, increases the speed of action, but not the final attainment x_1/u_1. And perseverance renders a final goal attainment of 100%. The final effect of a disturbance d_1 is the same, with or without anticipation, but the final effect of a disturbance is zero with perseverance acting undisturbed toward 100% goal attainment.

A) The final goal attainment x_1/u_1 without consideration of anticipation and perseverance

The human being has willpower to realize himself, G_1. The question is: how much does he achieve with a weak willpower, how much with a strong willpower? In other words, how close does x_1 finally come to u_1? The goal attainment is represented with the expression x_1/u_1. This magnitude is dimensionless. But if u_1 is set to 1, then x_1 gives directly the attainment as a fraction of 1. Fig. 2 depicts the goal attainment as a function of the willpower G_1. Goal attainments and effect of disturbances are steady states values, i.e., final values of a process with unchanged system parameters u_1, d_1, and G_1 during the process. This is definitely not conforming with reality where parameters can change depending on different life situations. The aim here is to establish fundamental patterns of social behaviour.

Fig. 2 with x_1/u_1 shows results that go almost without saying. With no willpower, $G_1 = 0$, no information flows through the loop. The loop does nothing, it achieves nothing. *De nihilo nihil*: From nothing, nothing comes. *Velle non discitur*: Where there is no will, there is no way. One has to do something in order to achieve something. If G_1 is 1, the achievement is 50% of the desired quantity u_1. This is not much, although enough for survival if, say, 30% of u_1 is necessary to make a living. (Nature does not know anything about social security and does not give any guarantee for survival!) At the same time this value 50% can serve for a basis of comparison. $G_1 = 1$ might stay for going easy. (We know that social values cannot be measured. But comparison is possible. It can be said, e.g., that an individual with $G_1 = 5$ has five times more willpower to realize himself than an individual with $G_1 = 1$.)

Fig. 2 indicates that with increasing G_1 the goal attainment x_1/u_1 increases as well. But the attainment never reaches 1, i.e., 100%. There is always a remaining portion to be wanted, there is always a shortfall. This is a very true life-situation. One always would like to get more than what one already has. The closed loop in its mathematical-physical functioning behaves like real life! Another reason that 100% is not possible is - already pointed out - the fact that negative disturbances always show up and try to move x_1 away from its purpose u_1. Disturbances always act. In order to reduce the effect of disturbances, the loop has to have self-control of what it does and what it achieves. - It

has to be noted that a disturbance in our model stays on, but the effect of the disturbance upon the individual has to be fought, to be reduced and this, indeed, as much as possible. Because each being requires more from the environment than it can give or wants to give, omnipresent competition, jealousy, miserliness, and greed can occur and disturb; and they certainly do so.
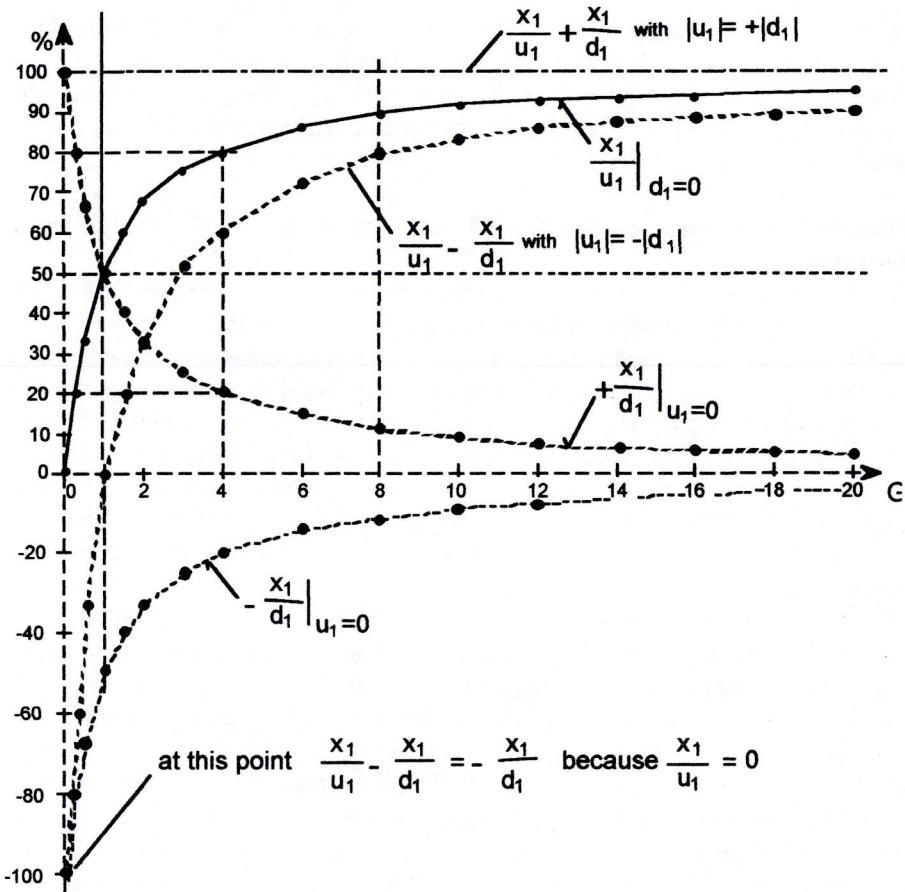

Fig. 2: Final values of the attainment $x_1/u_1|_{d1=0}$, and of the effect of disturbance $x_1/d_1|_{u1=0}$ as a function of the willpower G_1 (Final values and steady state values are identical terms.)

B) The final effect of disturbance: x_1/d_1

What does a disturbance signal d_1 bring about, and what can the loop do to prevent the disturbance's influence? The illustration is also given with Fig. 2.

The lasting effect of the disturbance, when it arrives with the value 1 or with 100%, i.e., when it comes in with the same positive magnitude as the goal u_1, is the mirror image of the goal attainment curve x_1/u_1, i.e., x_1/d_1

The image is around the horizontal line at 50% of u_1. It can be said that effect of positive disturbance plus goal attainment equals 1, shown with equation (1).

$$\frac{x_1}{u_1} + \frac{x_1}{d_1} = 1 \tag{1}$$

Goal attainment plus positive effect of disturbance are summed up 100%. This is correct under the assumption that the weight, or the importance, of both, the goal u_1 and the disturbance d_1, are equal in size and orientation. But under this circumstance the disturbance is help and not damage to the goal u_1. However, a disturbance d_1 in the general meaning is a signal that is not u_1-related in a helping sense. But a disturbance can be help or damage, depending on the effect d_1 has. The effect is what counts. If d_1 is positive it adds to x_1/u_1. On the other hand, if d_1 is negative with reference to u_1, it means damage. Its effect deducts from x_1/u_1. This is shown in Fig. 2 too. The general social assumption is that d_1 is in opposition to u_1. In Fig. 2 it can be seen that if the willpower G_1 is nil, the negative effect of the disturbance on the individual is -100%. The individual becomes the victim of the disturbance. But the stronger the will for self-realization, less is the influence of the disturbing information. As the desired goal never can be reached by 100%, so the influence of a disturbance can never be made zero - if there is no perseverance present and acting (up to $t = \infty$).

The disturbance - this is to be emphasized - stays on as input signal into the loop. But its effect on the individual will be reduced by the willpower G_1. - If, as a simple example, the neighbour runs his music out through his window into the environment, you can close your window and plug your ears. The music stays on, but the influence on you is reduced. This is possible if you have self-control. Yet, there are many and more and more severe disturbances that interfere with your way of life than the neighbour's music! Therefore, have willpower if you want to realize yourself!

Due to the time involvement in life, willpowers cannot grow to too high levels. The restriction is now that the time delay in the partner's action shall be represented with the simple expression (2). *Tempus rerum imperator*. Time is sovereign over all things.

$$\frac{1}{(Ts+1)^3}, T = 1 \tag{2}$$

It's a series of three linear first order delay elements.

Comparing now four different cases at the stability limit for situations without and with anticipation and perseverance, we show Table I. The expression ω is a measure of speed of action. For detailed information, see [Starkermann, 1994].

Table I: Comparison of four cases, a) to d).

case	ω	G_1	Cp	Ca	x_1/u_1	$\omega\, x_1/u_1$
a)	1.7	8.0	0	0	89%	151
b)	1.5	6.1	0.25	0	100%	150
c)	2.4	20.0	0	0.2	95%	221
d)	2.3	14.9	0.25	0.2	100%	**230**

Case a) serves as reference: no anticipation, no perseverance. Cases b) and d) indicate that perseverance has the potential to render high goal attainment of 100% (if the time of acting lasts infinitely long!), but it reduces speed of acting ω. Cases c) and d) reveal that anticipation increases the speed of acting ω.

If speed ω and $x1/u_1$ are multiplied with each other to form a term of qualification, then case d) makes the run: fast and close to the goal u_1.

The general formula for goal attainment is given with equation (3).

$$\frac{x_1}{u_1} = \frac{G_1(C_a s^2 + s + C_p)}{G_1(C_a s^2 + s + C_p) + s(Ts + 1)^m}; \quad (S_{11} = 1) \tag{3}$$

And the general formula for the measurement of speed ω for all four cases a) to d) is equation (4).

$$\omega = \frac{1}{T}\sqrt{\frac{G_1 + 1}{3}} \tag{4}$$

3 The Dualism in Hostility and Consent

The structure of two partners exchanging attitude information is given with Fig. 3. Partner P_1 can be provided with anticipation ($Ca > 0$), partner P_2 with perseverance ($Cp > 0$). In addition, Partner P_2 can be made slower in his pattern of motion ($T_2 > T_1$).

If the interacting loop, the so called feed cross loop

$$C_1\text{--}F_1\text{--}S_{21}\text{--}R_2\text{--}C_2\text{--}F_2\text{--}S_{12}\text{--}R_1\text{--}C_1$$

results in a positive sign (in the sense of positive feedback), the self-realizations x_1/u_1 and x_2/u_2 become damaged. This state is called aggression or hostility. The partners damage each other. If this feed cross loop results in a negative sign (in the meaning of a negative feedback aspect), the self-realizations x_1/u_1 and x_2/u_2 become increased. This state is called consent or friendship. The partners help each other unconsciously. The deeper sense of the feed cross property is not elaborated herein.

The characteristic equation (5) of the dualism shows that the two attitude information transfer factors S_{12} and S_{21} appear as a product:

$$1 + C_1F_1S_{11} + C_2F_2S_{22} + C_1C_2F_1F_2S_{11}S_{22} - C_1C_2F_1F_2\mathbf{S_{12}S_{21}} = 0; \quad (R_1 = R_2 = -1) \tag{5}$$

Therefore, if $S_{12}S_{21}$ is positive, the dualism is in a state of aggression or hostility: It takes two tp make a quarrel. If $S_{12}S_{21}$ is negative, the dualism is in a state of consent or compliance: *D'un côté ne vient pas l'amitié; il faut que l'autre soit de moitié.*
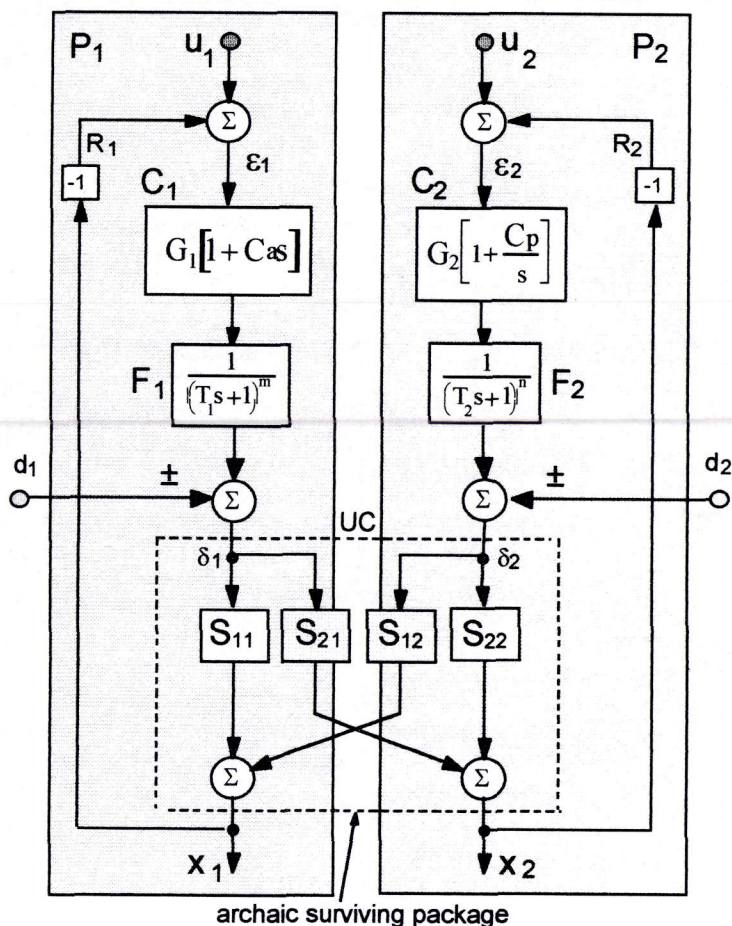
Fig.3: Two partners with attitude information exchange $\delta_2 S_{12}$ and $\delta_1 S_{21}$.

A) The partners´ self-realization and the effect of disturbance within the dualism

Fig. 4 depicts P_1's self-realization, x_1/u_1, and the effect of the disturbance on him, x_1/d_1, with G_1 as variable and G_2 as parameter. It can be seen that the damage in hostility is tremendous (x_1/u_1 for $S_{12}S_{12} = +1$), whereas the help in consent is rather minor (x_1/u_1 for $S_{12}S_{21} = -1$). A very strong P_2 ($G_2 = 32$) kills a weak P_1 inevitably (indicated at $G_1 \sim 4.3$). Friendship, on the other hand, is mutual help, although little. Aggression is mutual damage, and enormous. These influence, damage and help, happen unconsciously, just by existing close together as a partnership!

The effect of a disturbance is major in friendship (x_1/d_1 for $S_{12}S_{21} = -1$), and it is the higher the weaker P_1 is. But it is very little in aggression for a strong P_1 (x_1/d_1 for $S_{12}S_{21} = +1$). Quarrels and wars do not want to be disturbed. They want to be lasting.
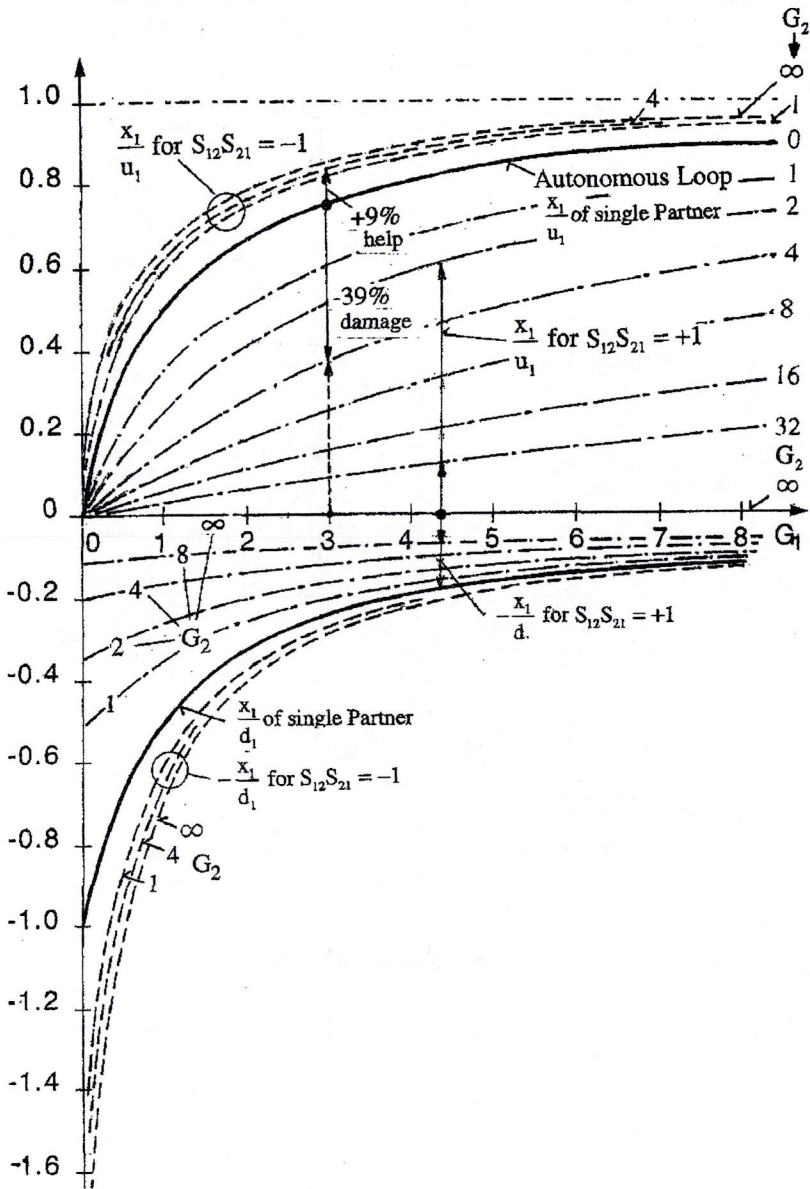
Fig. 4: Steady state values for self-realization x_1/u_1, and the effect of the disturbance x_1/d_1 as a function of G_1, and with G_2 as parameter.

B) The domains of homeostasis (dynamic stability) for different cases of partnerships

Case A): Hostility and Friendship, both partners have the same pattern of motion.
$T_1 = T_2 = 1$, $m = n = 3$, $Ca = Cp = 0$; Fig. 5.

Case B): Hostility and Friendship, P_1 is fast, P_2 is slow.
$T_1 = 1$, $T_2 = 2$, $m = n = 3$, $Ca = Cp = 0$; Fig. 6.

Case C): Hostility and Friendship, P_1 is fast, P_2 is slow. In addition, P_1 has anticipation.
$T_1 = 1$, $T_2 = 2$, $m = n = 3$, $Ca = 0.2$, $Cp = 0$; Fig. 7.

Case D): Hostility and Friendship, P_1 is fast, P_2 is slow. P_1 has anticipation, P_2 has perseverance.
$T_1 = 1$, $T_2 = 2$, $m = n = 3$, $Ca = 0.2$, $Cp = 0.25$; Fig. 8.

Case A, Fig. 5: Of special interest is the situation where the two willpowers G_1 and G_2 have the same magnitude, $G_1 = G_2$, i.e., when there is parity of willpower (volition). The values can be found on the 45°-line as indicated in the figure. For the restriction of $S_{12}S_{21} = \pm 1$ it can be seen that the willpowers in aggression are twice those in consent. In aggression, $G_1 = G_2 = 4$, whereas in consent, $G_1 = G_2 = 2$.

Hostility interaction offers the feeling of twice the power than consent does. Aggression can afford to have twice as much willpower to realize itself as consent. Nature favours aggression!

Plato said: *Toute grandeur est dans l'assaut*. When you attack you feel superior.
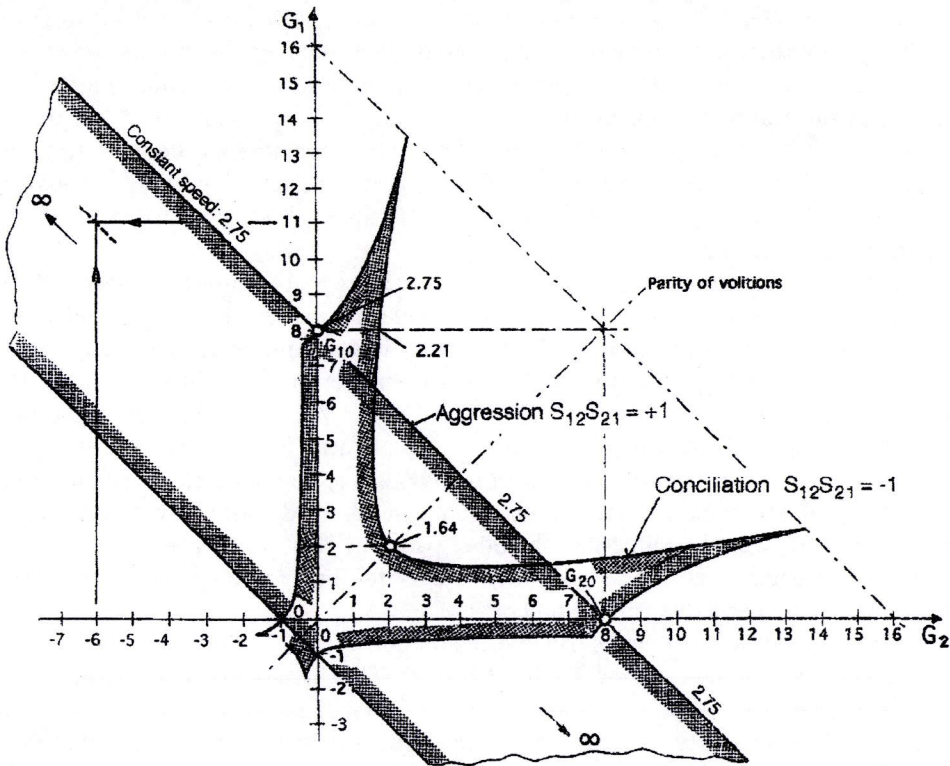

Fig. 5: Domains of homeostasis for aggression and consent. P_1 and P_2 have the same pattern of motion.

In addition, aggression acts almost twice as fast as consent. The oscillation frequency for aggression is (with the assumed time constants) 2.75 per time unit (/tu). For consent it is only 1.64/tu. Aggression is fast, consent is slow. Again: Nature favours aggression! The speed of action in aggression is as fast as the speed of the autonomous individual, 2.75/tu (tu means time unit). This fact is indicated in Fig. 5 at $G_2 = 0$ and $G_1 = 8$.

In aggression the speed of action is constant along the upper line of the limit area, namely 2.75/tu - independent on the willpowers G_1 and G_2 - as long as $G_1 + G_2 = 8$.

Aggression is always ready for fast action. Speed and aggression go hand in hand! - A natural law! Consent requires a diminution of speed and power.

A bold attack is half the battle is an English proverb.

The demonstration of aggression in connection with speed is visible clearly on the highway: Aggressive drivers want to pass. The more horse-powers are packed into the motor, the greater is the feeling of might! (Such power, which can be bought for money, becomes transfigured into the drivers' unconscious.)

In nature, the faster hungry aggressor survives. The slowly moving partner becomes the prey. Aggression is survival! This is true in the biological as well as in the monetary world.

Peace-fighters (e.g., UN's combat-ready forces) make every possible effort to hold on to their belief that peace on earth is possible despite the overwhelming evidence of deep-rooted necessity of aggression for survival. In nature there is neither peace nor war, there is survival by fight or flight.

In Fig. 5, the aggressive domain is infinite, the conciliatory domain tiny in comparison. (The fact that the domain in hostility is infinite is a singularity: P_1 and P_2 have to be dynamically equal, and $S_{12} = S_{21} = +1$, i.e., $S_{12} S_{21} = +1$. If $S_{12} S_{21} > +1 \pm 10^{-12}$ the domain becomes finite.)

It also becomes obvious that the situation in consent is much more complicated than in aggression. In consent if one partner claims a willpower which is large, and even larger than the willpower in autonomy (in autonomy it is maximum at 8), e.g., $G_1 = 9.5$, the other partner has to give in to a willpower G_2 smaller than 1.6. In such a case, P_1 with a G_1 larger than G_1 of parity (which is 2 at $G_1 = G_2$) is called the egoist, and the one who has to be satisfied with a G_2 smaller than G of parity is called the altruist.

In a well functioning consent one partner of the two has to be the leader, the egoist, the other part has to adapt, the altruist. If both would give in, the dualism would not survive because each part would assume that the other part will do it. Each one would expect the other to push forward. The goal attainments for both partners would become negative; the system as a dualism would collapse.

The altruist, the weaker part, gains somewhat from the egoist. And the egoist gains also from the altruist, although extremely little (Fig. 4). The egoist can exert a willpower that is lager than the willpower in autonomy ($G = 8$). The egoist in the consentient relationship could be called the unconscious initiator. A numerical example makes this clear:

Let's assume that G_1 is 1.5 and G_2 is 10 at $S_{12} S_{21} = -1$. Then $x_1 = 0.74$ or 74%. If P_1 were fully on his own, i.e., $P_2 = 0$, then x_1 were only 60% with a G_1 of 1.5. The help the

altruist P_1 gains from the egoist P_2 is 14%. -- What does the egoist gain from the altruist? The calculation says $x_2 = 94\%$. In autonomy with $G_2 = 10$, P_2 would make 91%. Therefore he gains 3%. P_2 in autonomy with G_2 larger than 8 were unstable. The altruist offers the egoist willpower larger than he could exert in autonomy!

What would happen with the weak G_1 in aggression, i.e., if P_1 with $G_1 = 1.5$ would change the conciliatory behaviour into an aggressive one? With $G_2 = 10$ and $S_{12}S_{21} = +1$, P_1 would achieve an x_1 of only 8%! P_2 would take 58% away from P_1 (74% - 8% = 58%). P_1 would have to die! (With our assumption of F1 and F_2, G_2 could be maximum 6.5 and not 10.) It can be seen that consent also has its advantages.

Another point of corroboration of life situations:

Aggression has a much larger stability area than consent. This can be seen in the next three figures as well. Aggression is, it seems, more favoured by nature than consent. In many regards aggression has much more potential for survival.
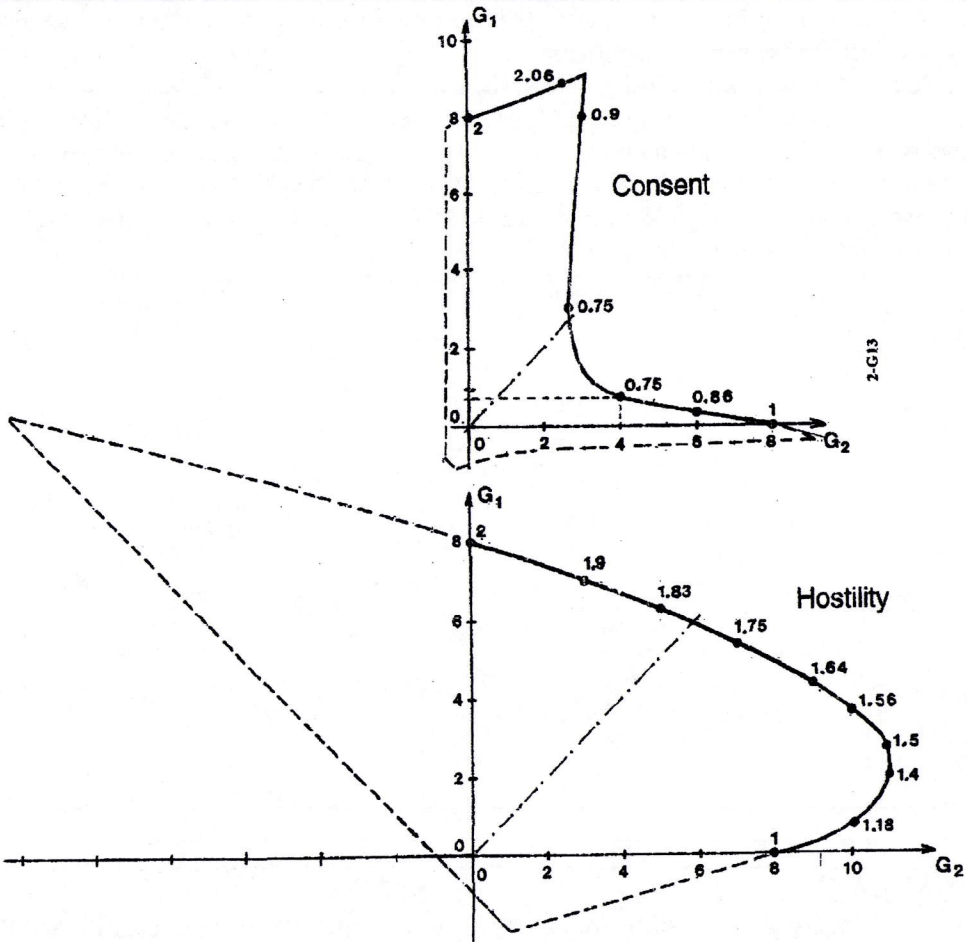

Fig. 6: Domains of homeostasis for aggression and consent. P_1 is faster than P_2.

Case B, Fig. 6: P_1 and P_2 are no longer dynamically symmetric. P_1 is fast, P_2 is slow. $T_2 = 2T_1$. The top figure is for consent, the lower figure for aggression. In consent, if the slow partner, P_2, is satisfied with a low willpower, say, $G_2 = 2$ or less, P_1 can dominate, and the system can act even slightly faster than when P_1 is in the autonomous state. The slow P_2 helps to increase the speed of the dualism by 3%, or 6%, depending whether it is considered relative to P_1 or relative to P_2 (speed = 2.06).

If the slow partner, P_2, enforces willpower of 6, P_1 has to come down to willpower of 0.3. The flexible, i.e., the fast partner has to suppress his willpower almost completely so that the slow one can exert his will. And the speed of the dualism is slower (speed = 0.86) than the slow P_2 in his autonomous state (speed = 1). Such a situation will, generally, not last long, and the „consentient" dualism runs into instability with an increase of P_1's willpower. The partnership collapses. The domineering slow partner is tormenting the fast acting being, although we talk about friendship that offers mutual help! A friendship has more aspects than just being nice to each other! Friendships require willingness to make sacrifices.

He travels fastest who travels alone, if the partner is slow.

In aggression the situation is quite different. The slow partner P_2 can exert willpower G_2 that is larger than in autonomy. G_2 max is 11. At parity of willpowers the speed of acting is 2.4 times larger than in consent! Aggression is fast! Again: Nature favours aggression! The stability domain of aggression is considerably larger than that of consent, but it is no longer infinite.
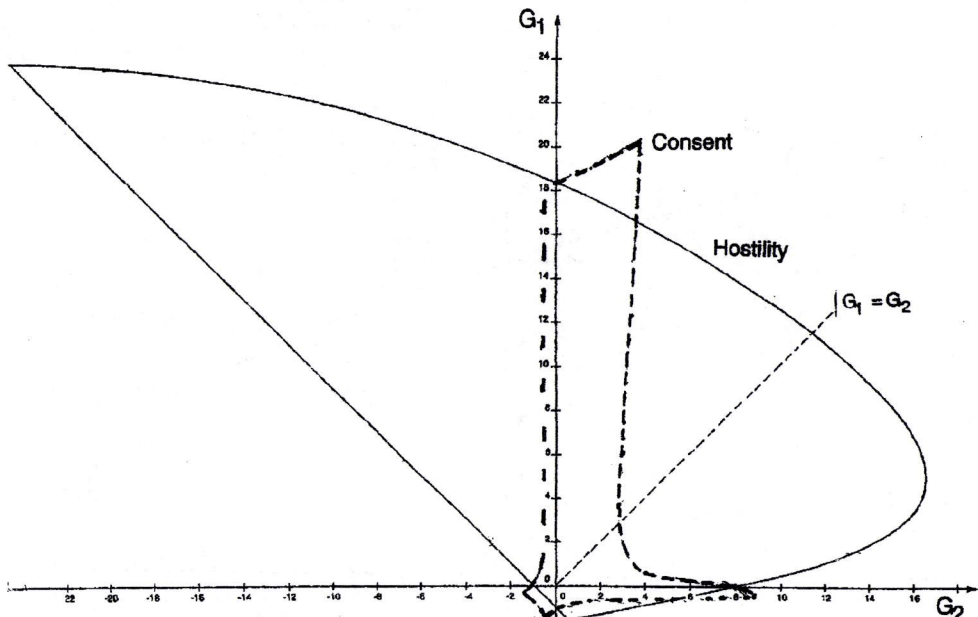

Fig. 7: Domains of homeostasis for aggression and consent. P_1 is faster than P_2, and P_1 has anticipation.

Case C, Fig. 7: Does the situation improve for P_1 in consent if he becomes provided with anticipation? Yes, if he can exert his high willpower G_1 of 18. Then the speed is 3 times the speed of the autonomous P_2. But if P_2 sticks to his G_2 of 6, the situation is the same as in Fig. 6. The anticipation of P_1 has no effect. P_1 has to come way down with his willpower in order to save consent from going hostile. If the slow, or less intelligent partner in a friendship clings to his willpower, the fast, or more intelligent partner has to sacrifice his well being, or else the partnership becomes a constant conflict and eventually will brake into pieces.

In aggression the slow P_2 can now exert willpower of 16, which is twice his autonomous willpower of 8. P_1 has to come down, although not as much as in consent, from $G_1 = 18.4$ to 4.5 only. The domain of stability blows up in favour of the slow, „stupid" partner P_2.

Interesting is the comparison in aggression at equal willpowers of P_1 and P_2. In Fig. 6, $G_1 = G_2 = 6$, in Fig. 7, $G_1 = G_2 = 11.5$. Anticipation of the fast P_1 brings tremendous advantage for the slow P_2 but not to him, to P_1.

Case D, Fig. 8: The fast P_1 keeps his anticipation, $Ca = 0.2$. The slow P_2 has perseverance, $Cp = 0.25$. Does this help either of them? Perseverance can be called stubbornness or enforcement. P_2's willpower grows when time goes on: the integral $G_2 \int Cp\varepsilon_2 dt$ augments continuously.

In consent the situation is worse for P_1 if P_2 does not want to do without his willpower. But as he is stubborn, he will not. This is the tragedy of friendship. It has to brake up - or turn over into aggression. The conclusion is: If you are faster than your partner and more so, if you have anticipation and your partner is stubborn, separate and stay alone! Save yourself!

Here comes the long-term tragedy of aggression, the devastation with a partner of unbroken stubbornness, $G_2 \int Cp\varepsilon_2 dt$. Although the domain of homeostasis looks about similar to that of Fig. 7, the misfortune for P_1 emanates from the stubbornness of P_2. With his unbending wilfulness he imposes his motive u_2 in an obstinate way on P_1. Even when strong disturbances d_1 and d_2 break in, they have only a very temporary influence. Whatever P_1's goal u_1 is, P_2 overrides it with his x_2. P_1 does - has to do - what P_2 wants him to do. Therefore P_1 has to become stubborn too - or go. Tit for tat! Otherwise u_1 becomes u_2. This is shown with formula (6).

$$x_1 = \frac{1+(1-S_{12}S_{21})G_2}{(1+G_1)(1+G_2)-G_1G_2S_{12}S_{21}}G_1u_1 + \frac{S_{12}}{(1+G_1)(1+G_2)-G_1G_2S_{12}S_{21}}G_2u_2;$$

$$\text{with } S_{12}S_{21} = +1, \quad x_1 = \frac{1}{1+G_1+G_2}G_1u_1 + \frac{S_{12}}{1+G_1+G_2}G_2u_2; \tag{6}$$

When G_2 grows over time to ∞, or (in real life) when $G_2 \gg G_1$, x_1 becomes u_2.

(the term $\dfrac{1}{1+G_1+G_2}G_1u_1$ shrinks to zero; the term $\dfrac{S_{12}}{1+G_1+G_2}G_2u_2$ grows to u_2).
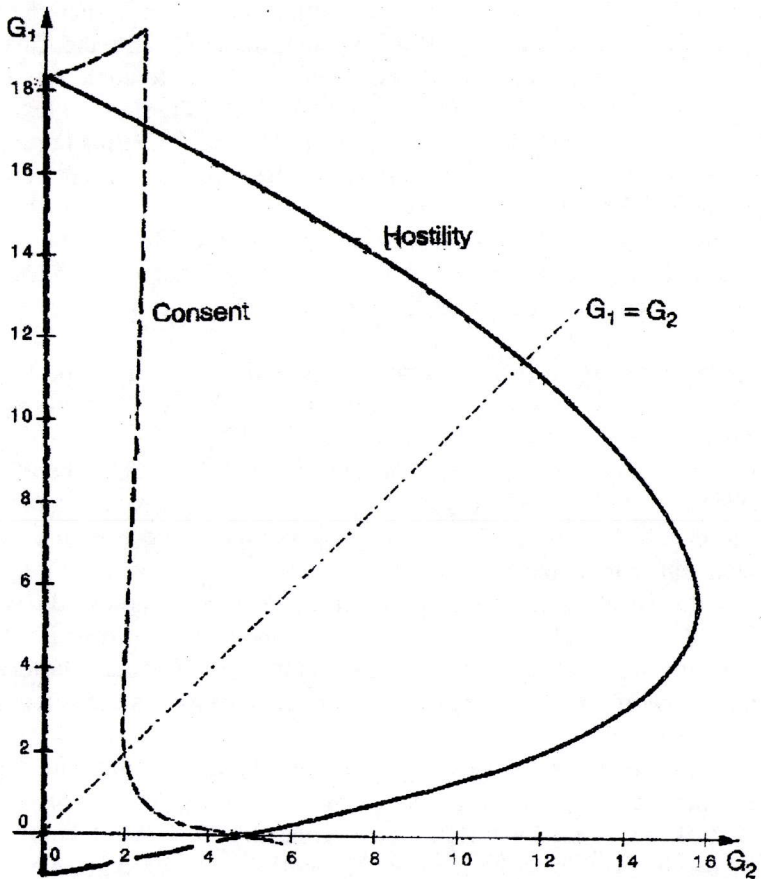
137

Fig. 8: Domains of homeostasis for aggression and consent. P_1 is faster than P_2. P_1 has anticipation, and P_2 has perseverance. Due to the integration of P_2, $G_2 \int Cp\varepsilon_2 dt$, the area for $G_2 < 0$ becomes an area of instability.

Reference

[1] Starkermann, R., „Modelling Invariances of Social Behaviour", Proceedings of the 38th Annual Meeting of the ISSS, 1994, Pacific Grove, California, USA, Vol. I, pp. 687-715.