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Mother Scheme, Rival Scheme and Ethogenetic Rule

The Three Phases of the Prenatal Psychic Development of Moods and of Preshaped Inner Objects

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Abstract: Because we look at psychic development as organized in stages, the question arose if this is valid for prenatal psychic development as well. Rherefore results from ethology, phylogeny, and the analysis of children's men drawings have been integrated into our knowledge of prenatal somatic ontogenesis. Children's head-legs-drawings represent a *mother scheme* (as counterpart to the baby scheme) with the task to release clinging behavior and the feeling of basic trust in primates. But this is only one of the aspects of the old frontal animal scheme (FAS), whose first task was to signal a rival or a predator approaching. As the biogenetic rule in its modified form as *ethogenetic rule* (Müssig, 1994) is valid for behavior as well, we should find the same sequence in prenatal development. The fusing of the eyelids in the third month and its re-opening at the end of the fifth deliver 3 phases of prenatal ontogeny we can parallel with corresponding stages of phylogeny: Seeing primal mistrust (including reptiles), blind trust (Insectivora and Prosimiae), seeing primal trust (higher Primates). The objects of intrauterine primal mistrust and trust can be looked at as preshaped inner objects and the core of the archetypes. The question of mothers' prenatal traumatic experience childrens' symptoms (i.e. early childhood autism) will be discussed.

Zusammenfassung: *Mutterschema, Rivalenschema und ethogenetische Regel.* Da wir psychische Entwicklung als in Stufen organisiert betrachten, schien die Frage legitim, ob dies auch für die pränatale psychische Entwicklung gelte. Daher wurden Ergebnisse aus Ethologie, Phylogenese und der Analyse kindlicher Menschzeichnungen in Phasen der somatischen Embryogenese integriert. Kopffüßlerzeichnungen bilden das Mutterschema ab (das Gegenstück zum Kindchenschema), welches bei Primatenjungen Anklammerverhal-

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ten und die Stimmung des Urvertrauens auslöst. Dies jedoch stellt nur eine der Aufgaben des phylogenetisch alten Frontalen Tierschemas (FTS) dar, welches ursprünglich die Funktion hatte, vor Feinden (Rivalen, Raubtieren) zu warnen. Da die biogenetische Regel in ihrer von mir modifizierten Form als ethogenetische Regel auch für Verhalten gilt, sollten wir in der pränatalen Entwicklung die gleiche Abfolge finden wie in der Phylogenese. Das Schließen der Augenlider im dritten und ihr Wiederöffnen am Ende des fünften Monats liefert uns drei Phasen der pränatalen Ontogenese, die wir mit entsprechenden Phasen der Phylogenese parallelisieren können: Sehendes Urmißtrauen (einschließlich Reptilien), blindes Urvertrauen (Insektivoren) und sehendes Urvertrauen (höhere Primaten). Rivalenschema und Mutterschema bilden die langgesuchten präformierten inneren Objekte der Psychoanalyse, den eigentlichen Kern der Archetypen Jungs und dem Archetyp der guten Gestalt. Mögliche Zusammenhänge zwischen seelischen Belastungen schwangerer Frauen, der Entwicklungsphase des ungeborenen Kindes und seinen später auftretenden Symptomen (z. B. frühkindlicher Autismus) werden diskutiert.

Introduction

The first time I was confronted with prenatal psychology was in 1970 during the therapy of a 4-year-old autistic boy. I learned that his mother must have experienced a condition of latent panic during her pregnancy, when she mentioned to me in passing that Wolfgang would surely murder them all. She gradually revealed that she was afraid that in Wolfgang she might give rebirth to her father, who had died shortly before she became pregnant. She had experienced this father as a murderer because he had slaughtered the rabbit which for her had been her baby and baby ego. In the sixth month she had contrived to fall out of a tram and broken her leg. This allowed her to spend the rest of her pregnancy up to the birth in the safety of a hospital. Was there, then, any connection between her mistrust of the child and the child's primal mistrust of his mother and therefore of the world? Were there any specific links between particular phases of embryonic development, the manifestation of traumatic experiences on the part of the mother, and disturbances in children? Three points proved to be helpful:

The question here is, even if these links do exist, how could phases of this kind be inferred? There was the strange and previously unexplained fact that in the fourth and fifth prenatal months the fetus' eyelids fuse together so that three phases result: open – closed – open. Was there a similar sequence in phylogeny: seeing – blind – seeing? Was it permissible to draw parallels between these phases (Müssig, 1985)? Must Haeckel's biogenetic rule (1866) apply not only to somatic development but also to that of behaviour? When I finally managed to identify the childish head-legs drawing as a representation of the inherited mother scheme (1988a,b; 1989), I had also found the first preshaped inner object, the scheme of the good mother, a visual scheme which must at least exist during the final third of embryonic development.

Since terminology from completely different paradigms come together in this work, I would like to provide clarification from the outset: scheme and innate releasing mechanism (IRM) are concepts used in ethology, while inner object and preshaped inner object come from psychoanalysis. I use the term "inner object" here only for human beings even though there are also inner representations of personally known clan members (deriving from schemes and experience) at least

in subhuman primates. But before we address the central question, we must give more detailed attention to the biogenetic rule and the head-legs scheme.

From the Biogenetic Rule to the Ethogenetic Rule

Haeckel's biogenetic law (1866) states tersely, leaving room for misinterpretation: "Ontogeny is a brief recapitulation of phylogeny." This claim to absolute right has been considerably reduced in the meantime, and today we prefer to speak of the biogenetic rule.

Riedl (1975) has also addressed this topic in detail. In 1994, I summarized his ideas as follows:

In the early phases of prenatal ontogeny (embryogenesis), morphogeny (the development of somatic qualities) recapitulates the corresponding early stages of evolution, whereby old final stages (metaphenes) in blueprints become new intermediate stages (interphenes).

Epigeny (the chain of genetic information that came into the genome over the course of evolution) affects embryogenesis in this same order. Older organs can be further developed, be modified, become rudimentary or be replaced. New organs develop from older ones. This chain must never be interrupted, or the program breaks down.

Now I would like to formulate it like this: the embryonic development of a species recapitulates in major traits the basic blueprints – which continually become more complex – of those species in phylogeny from which the recent species is directly descended.

Nobody is perfect, not even Nature, there are exceptions, which do not, however, call the principle itself into question.

Now we can turn to the question posed by several authors, namely, whether the biogenetic rule is also valid for human behaviour. The question itself is questionable: there can be no special rules for human behaviour. And more importantly: somatic evolution takes place interdependently with the evolution of behaviour, and the genes for both are stored in the genome and related to each other. This is not only true on the lowest level such as coordination of movement, but also for instinct patterns and even moods on the highest level (Müssig, 1994).

One of the above-mentioned authors is Medicus (1992). His two main arguments are that

- brain development is completed at birth and that human behavioural patterns do not appear (become phenotypic) in the same order as they do in phylogeny
- in somatic development, older organs will become intermediate stages (interphenes) of new ones. But "no behavioral interphenes have been identified thus far". (p. 6)

With regard to his first argument, this is indeed true for primal mistrust and primal trust (an example he does not in any case cite): babies are born with primal trust (and smile at their mothers) before they show the phylogenetically older fear of strangers. However, if you take into account only the time from the beginning of warm-bloodedness onwards, the biogenetic rule is valid again. (Some interpretations thus are merely a function of interpunction.) Furthermore he has not

taken into account that information represents a different and higher category than substance and morphological form. When an extremity becomes a foot or a fin, this is irrevocable. In our brains, however, different information systems are switched one over the other, just as in a computer. This takes the force out of the second argument as well: There are no behavioural interphenes because information systems such as mistrust of foreigners remain useful for all living creatures up to human beings and are activated according to the demands of the situation.

The areas of the brain which control behaviour and which I have termed innate behavioural information substrates (IBIS; Müssig, 1994) are formed in the brain in accordance with the genetic programme during embryonic development. Their appearance after birth (becoming phenotypical) is however dependent on level of maturity and situation, and thus on their usefulness for the individual's success in life, his fitness.

If we restrict our comparison between phylogeny and ontogeny to behavioural patterns in vertebrates, then neuronal correlates of this stage would be formed as early on as week 4, when the spine and pharyngeal arches (precursors of the gills) arise. From this point on, neuronal centres (IBIS) are formed stepwise for behavioural patterns and signals that are species-specific for our direct predecessors in the sequence fishes, reptiles, insectivores, and primates. This also indicates the IBIS for the frontal and lateral animal schemes (FAS and LAS), the progenitors of preshaped inner objects.

Let me summarize:

For the phylogeny of behaviour, I suggest the following modification of the biogenetic rule, and call it the ethogenetic rule: The development of IBIS in ontogeny recapitulates their development in phylogeny (the epigeny). We must clearly distinguish this phase from the phase where such patterns become phenotypic after birth. These events will be determined by their usefulness for fitness. Functional patterns of behaviour may be modified, but their IBIS will never be interphenes, but become part of the parliament of instincts (Lorenz, 1963) and will be activated if necessary (Müssig, 1994).

As far as capacity to learn and development of intelligence are concerned, this means that embryos and fetuses have at their disposal the same capacity to learn as do the representatives of this developmental stage who are alive today: no more, but no less either!

Preshaped Inner Objects: The Head-Legs Scheme as: Mother Scheme – Baby Scheme – Frontal Animal Scheme (FAS) and Living Creature Scheme

The Development of Children's Early Drawings of Human Beings

Independently of the problems of prenatal development, in the 1970s I also turned my attention to early childhood drawings of human beings, especially the head-legs drawings. I restrict this designation to those touching, comical creations which consist of a head, eyes, (most often a mouth) and legs. In this point I differ from the English school of experimental psychologists around Freeman (1980), who use the term "tadpole" to include all imperfect drawings (i.e., head-legs and transition phase), and who understand this structuring as a cognitive organisational problem.

Other authors who have also concerned themselves with head-legs forms include Meili-Dworetzki (1957, 1982), Kraft (1982), and Shapiro and Stine (1965). But up to now, nobody has been able to provide satisfactory answers to the following questions:

1. Why do children all over the world draw a head-legs figure as their first representation of human beings even though at this age they quite clearly know what human beings look like (Meili-Dworetzki 1957). Is this really just an "error" on the child's part?
2. Why is it so difficult for children to develop from this stage to the basic scheme that corresponds to reality, i.e. to integrate arms and trunk?
3. Why are the heads too big? Is it, as Freeman (1980) says, because there has to be enough space for the eyes and mouth?

To clarify these points, in 1974 I requested drawings of human beings from 69 children aged between 3.6 and 6.8 years attending two nursery schools (Müssig, 1988a,b, 1989a,b, 1991) (Fig. 1).

It is well-known that children begin with a scribbling phase. Occasionally children as young as 2 years draw head-legs figures. The form itself never varies (worldwide), while there is great variance in the proportions of head to legs. I call this the *head-legs phase*.

This stage is followed at between $3^1/_2$ and $4^1/_2$ years by a *transitional phase*: the children are now faced (as I shall explain later) with the task of integrating their external perception of the human form in the inner perception of the head-legs scheme. Here, each child looks for its own solution to integrating arms and trunk into the scheme according to the principle of trial and error. I could distinguish at least ten variants. One boy aged 4.4 years added animal features (ears) to his drawing.

At the age of $4^1/_2$ years, normal children seem to have reached the stage of the *basic scheme*, namely, head with eyes and mouth, trunk, arms, and legs.

The Head-Legs Scheme – a Mother Scheme?

It finally became clear that all the questions listed above could be resolved with a single answer: we are obviously faced with two different categories of perception. On the one hand we have the inherited, intrinsic perception of the head-legs scheme that is monotone worldwide, while on the other hand we have the extrinsic perception of external reality in the basic scheme. If we now regard the head-legs figure as an inherited scheme, what does it represent? Head-legs figures (and early human drawings) seem to us touchingly childlike. But what use would it be to a neonate to be born with a baby scheme? From an ethological point of view, however, everything points towards a mother scheme that provides a signal for the newborn young of subhuman primates, indicating where they should cling after birth in order not to fall to their death, i.e., under the face with eyes, on the trunk where the breast is!

This assumption is backed up by further findings, which also include the vertical proportions of head to legs or trunk and legs, respectively. In the humans drawn by 4–5 year olds these proportions were 1:2.6 and in 5–6 year olds they were 1:3.5. Using the distribution-free Mann-Whitney U-test, these values were

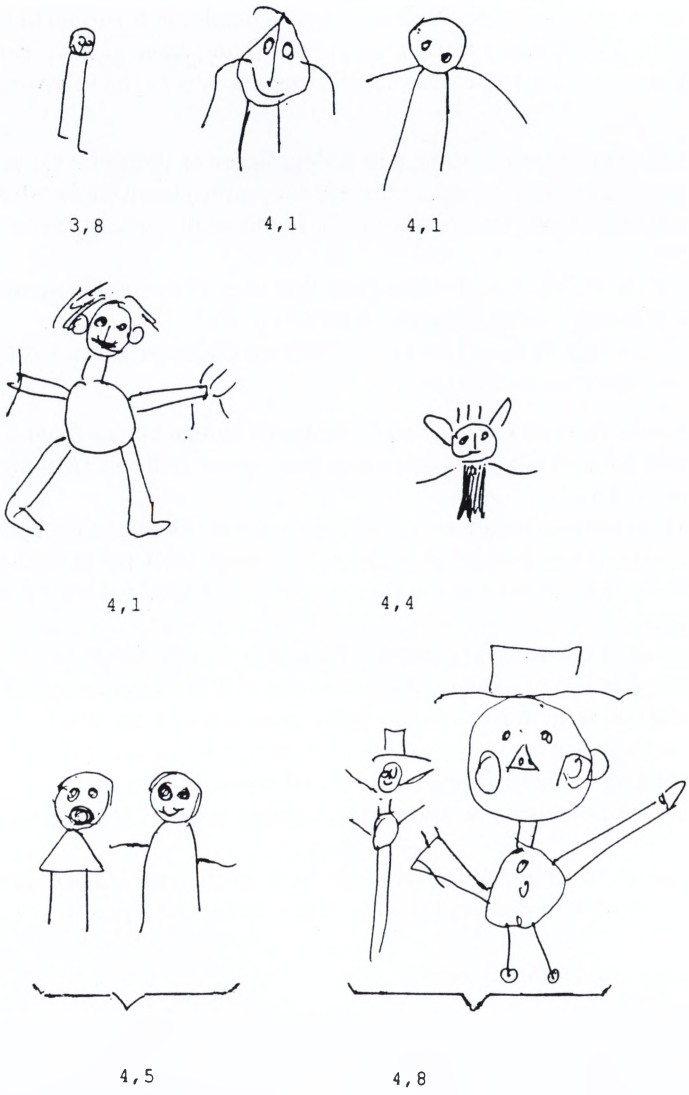

Fig. 1. [from Müssig, 1991]

found to be significant; $p < 0.05$). In comparison, the real proportions in human neonates are 1:3.3, and in 5–6 year olds, 1:4.4. This means the proportions drawn by the children aged under 5 years were *below those of human neonates*, a fact which also indicates the influence of an inherited scheme (Table 1).

With this in mind, I investigated the proportions of chimpanzees seen from the front while seated or walking, i.e. the proportions seen by a young chimpanzee about to cling to the mother. The value I found was 1:2.2, which is only slightly lower than the value in the drawings by 4–5 year olds (1:2.6). This gives weight to the theory that the vertical proportions in all early human figure drawings – head-legs scheme, transitional phase and basic scheme – are strongly influenced by the proportions of the inherited mother scheme: the sitting chimpanzee mother. And

Table 1.

Proportions in drawings v1:v2	Real human proportions v1:v2	Chimpanzee mother seated v1:v2
	Neonates 1:3.3	
3,5–3,11 1:2.6 (n=7)		
4,0–4,11 1:2.6 (n=22)		
5,0–5,11 1:3.5 (n=24)		
6,0–6,8 1:3.0 (n=25)	6 year olds 1:4.4	
	Adults 1:6	1:2.2 (n=10)

v1, head; v2, legs or trunk and legs

now suddenly it becomes possible to understand the difficulties faced by children in the transition from the inherited scheme to the observed human form when they are wondering where to put the arms and integrate the trunk: *The "legs" of the scheme correspond to the "front legs", i.e., the arms of the human mother, and the trunk was always implicitly seen between the front legs, as was hypothesized as early as 1957 by Meili-Dworetzki. This provides an answer to the three questions posed at the outset.*

In addition, the proportions of around 1:2.5 can also be found in dolls, cuddly toys, halma "men", and comics, in the latter case for representing adults, too.

Further evidence supporting this thesis is found in the well-known studies carried out by Kaila (1931) and Spitz (1964). Both these investigators showed babies an eye-nose configuration on masks which they held in front of their faces. The child lying in bed thus saw the upper body of the investigator in the form of a head-legs figure. Harlow's mother surrogates (1966), which he offered to young rhesus monkeys, also represent the head-legs form (Fig. 2).

Finally, our theories are also supported by developmental psychology and anthropology. Head-legs drawings disappear at about the age of 4 years, at a time when the next child can be born among hunters-gatherers. (Only then does the older child no longer need the mother's milk and is old enough to accompany the wandering clan on its own two feet.) The mood of primal trust and the physical and psychic need to cling on is thus retained by our children for as long as it was useful in hunters-gatherers (which was the only economic form from the time of the first human beings 2.5 millions years ago until 10000 years ago). This is another indication that the head-legs figure represents a mother scheme.

Children who still draw head-legs figures are not yet mature enough to go to nursery school. *In the psychic development of the fetus, this visual mother scheme would presumably be already present in the last three months of pregnancy.*

Mother Scheme – Baby Scheme – Frontal Animal Scheme (FAS) – Gestalt *Archetype*

Although the mother significance of the head-legs scheme seemed to me to be adequately substantiated, I could not help feeling that the early drawings of human beings had a touchingly childlike effect on me as an adult female primate. Could it be that the head-legs scheme also represented the baby scheme? (I later discovered that the question was posed wrongly since children draw whole fami-

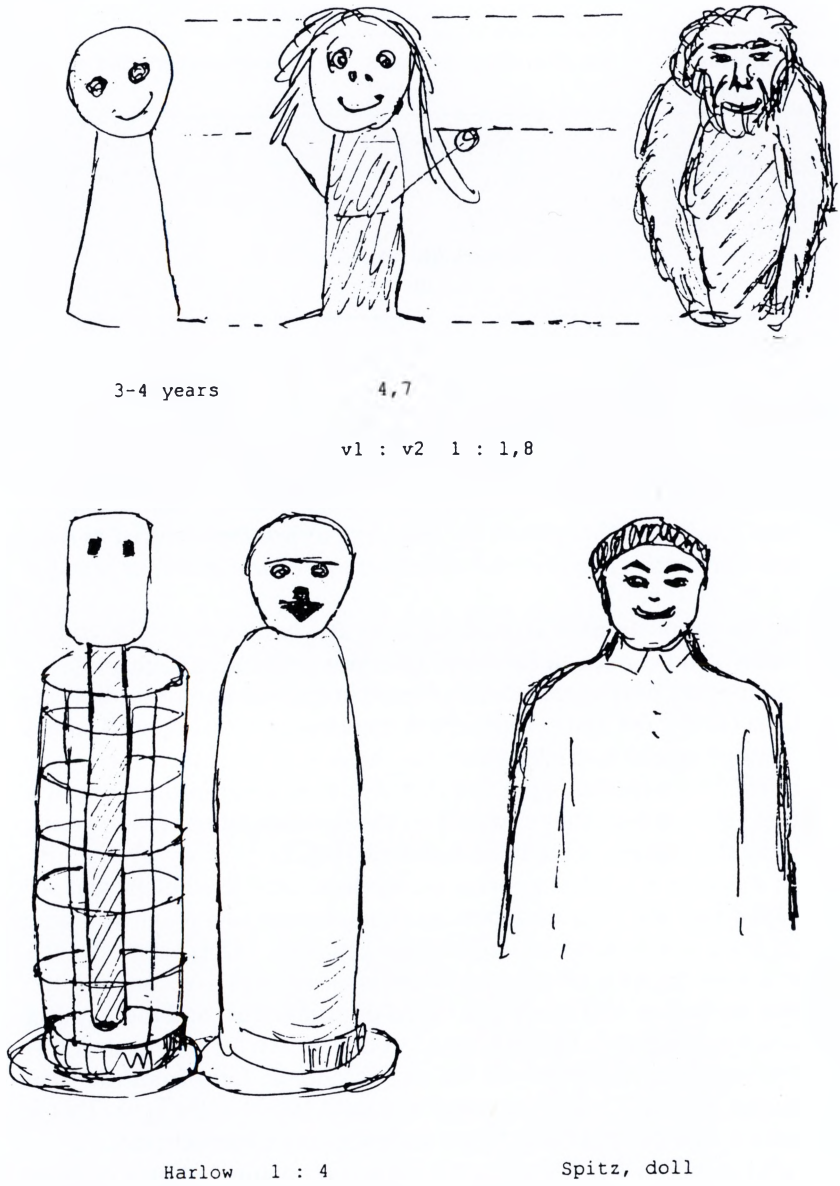

Fig. 2. [from Müssig, 1991]

lies of head-legs figures.) Indeed, Lorenz (1950) had portrayed the baby scheme laterally, but it actually becomes biologically effective for mothers chiefly when seen from the front. I think this is a sex-specific difference, an observation which is supported by the fact that 12-year-old boys draw twice as many figures in profile as girls do (Koppitz, 1969).

It seemed to me finally impossible to dismiss the idea that the head-legs form represents the frontal mother scheme as well as the frontal baby scheme. The elements of the form are identical, as are their tasks of creating primal trust be-

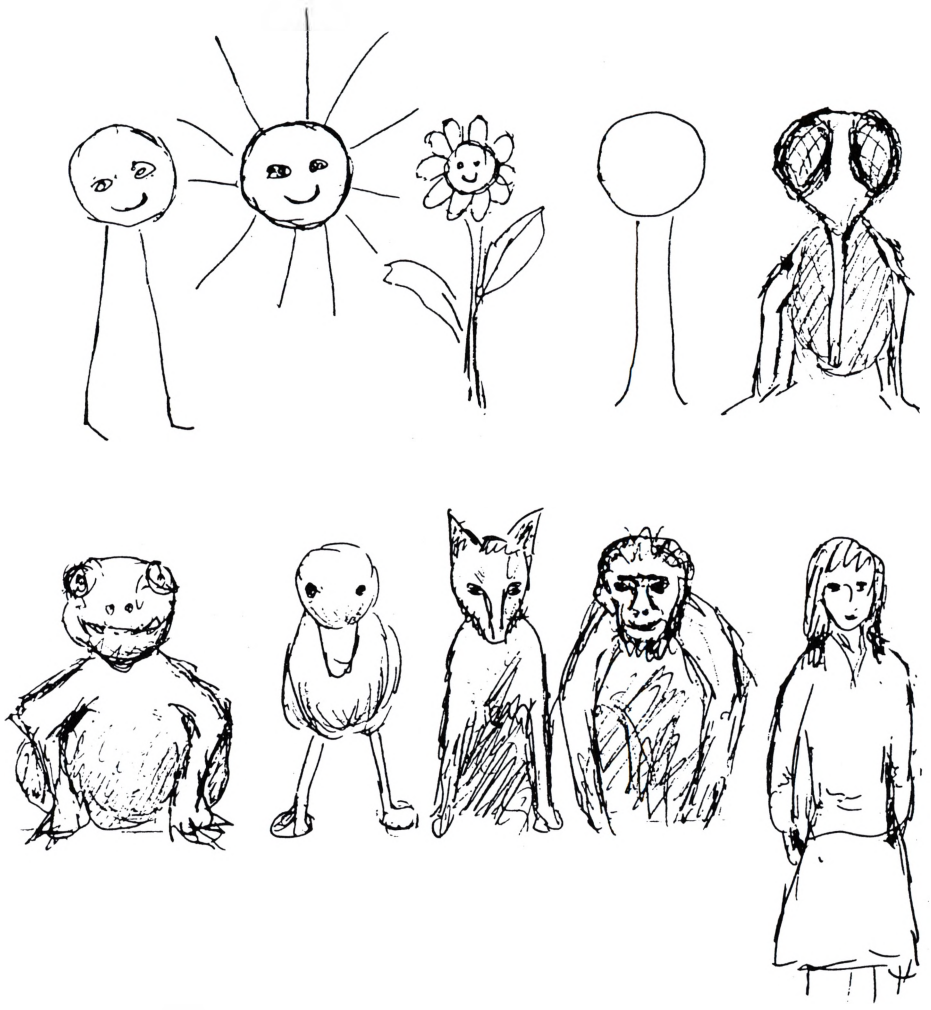

Fig. 3. [from Müssig, 1991]

tween the mother and child and releasing *mutual* imitation. Finally, I went one step further back and discovered that the phylogenetically older frontal warning scheme also has the same form.

To sum up:

1. The head-legs scheme represents a universal visual scheme that I term the frontal animal scheme (FAS). It is valid for all bilaterally symmetrical living creatures with a head, trunk and extremities, even for the contour of plants (Fig. 3). It can be modified according to context and by additional features and thus take on a whole variety of meanings: as a simultaneous mother and baby scheme, it stimulates primal trust between these two. It functions equally as a rival scheme, as we are all familiar with in the form of threatening stares. Finally, it warns of the frontal approach of all other creatures, which could be predators or prey, and this is the reason for the fact that we can see "faces" ev-

erywhere. The frontal animal scheme thus fulfils the requirements of simplicity, universality and economy to the highest extent.
2. For humans it is true that the number of preshaped inner objects which we can assume exist during prenatal development is thus increased. For babies, the warning scheme which stimulates primal mistrust and the mother scheme which stimulates primal trust are of particular importance.
3. The scheme demonstrates all the characteristics demanded by Gestalt psychology (cf. Rock and Palmer, 1991), namely, symmetry, the arrangement of an axis of symmetry in the gravitational plane, closed form, completeness, and distinguishability of figure and background. *The FAS thus also represents the archetype of the good Gestalt.*

The Fate of the Frontal Animal Scheme in Phylogeny: From Primal Mistrust to Primal Trust

Let us now return to our central question: if the biogenetic rule is valid, the development of stages of behavior and predispositions of moods such as primal mistrust and primal trust and IRMs proceed during prenatal ontogeny in a way that corresponds to that in phylogeny. And since we are concerned with visual releasers, it seems appropriate to look in phylogeny for the same sequence found in prenatal ontogeny: seeing – blind – seeing.

Up to the end of the reptilian age, maternal nurture only existed in exceptional cases, and there were no social contacts based on personal knowledge. The young therefore had to make their own way *ab ovo* and thus from the very beginning they needed a visual living creatures scheme which signalled to them: "Another living creature is approaching me. Beware! It could be a predator or prey, a rival or a sexual partner." Safety was known only in their own territory, in territorial bonding. *Thus they lived in the condition of seeing mistrust.*

With the evolution of warm-blooded creatures, visual releasers became necessary, which created trust between mother and child (mother scheme and baby scheme), and the young interdependently had to develop a baby appearance. This is not only true for primates, but also for many other mammalian groups such as predators and ungulates. But it is only in primates with their clinging young that the two providers of a mood of safety – territorial bonds and personal bonds – blend with each other.

But how did evolution manage to organize the highly complicated transition from primal mistrust towards all other living creatures to primal trust between mother and child? How could warm-bloodedness and nurture develop before there was a baby and mother scheme and a baby appearance, or, vice versa? How could the phylogenetically speaking older mistrust significance of the FAS be overlaid with a trust significance? Was it not necessary for IRMs and the baby appearance to develop interdependently and simultaneously in order to prevent the mothers from devouring their young and the young from fleeing from their mothers?

When you have the right solution, it seems quite simple: it was the unprepossessing insectivores (recent representatives include hedgehogs and shrews), which managed the transition. For approximately 200 million years, they were the only

mammals. (It was not until the beginning of the tertiary period after the dinosaurs became extinct that all other mammalian species evolved from the insectivores in an explosive development.) Recent species are primarily nocturnally active, live in burrows, and give birth to blind and deaf altricial young, which do not look cute in any way at all. This provided and provides enough time to instil *blind primal trust* through skin contact, hair, warmth and smell. Mother and children first see each other in the twilight outside the burrow after the contact has been firmly established without any visual schemes and the young already has fur. This allowed warm-bloodedness to exist first without mother scheme, baby scheme, and baby appearance. In the safety zone provided by the darkness and blindness, these qualities were not needed for over 150 million years. It was not until the arrival of the prosimians, who are also nocturnally active, that the gradual transition was made from altricial young, blind and with not quite frontal eyes, born in the state of blind trust, to diurnally active forms with young born mature with open and frontal eyes. From birth on, these young display the behaviour that is typical for seeing trust and cling to their mothers. This group includes higher prosimians, monkeys, apes, and our oldest progenitors.

The Fate of the Frontal Animal Scheme as a Warning Scheme and a Mother Scheme in Ontogeny and the Three Phases of Prenatal Developmental Psychology

We can now begin to draw parallels between phylogeny and ontogeny (Table 2).

a) Up to the Middle of the Third Month: "Seeing Primal Mistrust" – Premammalian Phase (Reptilian Phase)

In this period, the fertilized egg develops through the "fish phase" to the "reptilian phase", in which the eyes are still located laterally. Fish are in possession of fully functioning eyes and a frontal animal scheme with a warning character (Csany, 1986). As early as this stage, from about week 5 onwards, a neuronal basis (IBIS) must have been formed for the IRM of primal mistrust.

b) From the Middle of the Third Month to the End of the Fifth Month (Weeks 11–26): "Blind Trust" – Altricial Phase (Insectivores and Lower Prosimians)

From the start of this phase, the eyes have moved to the frontal position typical for primates, and the eyelids fuse together. The IBIS for the mood of blind primal trust have formed and constitute the basic mood of the blind fetus in its dark cave in the womb. Presumably the connection between the visual FAS and the mood of primal mistrust will be (temporarily) detached at the very beginning of this phase. Thus we are prenatally recapitulating a phase of evolution that began 250 million years ago and ended about 50 million years ago.

But when is the link between the FAS and the mood of primal trust established? This must in any case already happened shortly before the eyes reopen (it would not have been necessary at an earlier stage in phylogeny. Premature babies do not shrink from the sight of human beings. "Even a first smile can be seen on faces of

Table 2.

Phylogeny	Human ontogeny
With the capacity to move away from the mother, the IRM for primal mistrust is released from inhibition	
Chimpanzee infants at 4 months after birth	Human babies at 8 months after birth
Higher primates Born with seeing primal trust	Born with seeing primal trust
	6–9 months Eyes open, IBIS and mood of seeing primal trust
Towards the end of this phase, the connection will be established between the visual mother scheme and primal trust	
Insectivora and lower Prosimiae (altricial animals) fused eyelids, born with blind primal trust	2.5–5 months fused eyelids, IBIS and mood of blind primal trust
At the beginning of this phase, inhibition of primal mistrust, beginning of the mood of blind primal trust	
From protozoa to reptiles eyes open, lateral seeing primal trust	0–2.5 months eyes open, lateral IBIS for primal mistrust

premies while they are dreaming" (Emde et al., 1971). This is highly interesting as the so-called social smile of babies (the three-month smile) that is released by the frontal view of the mother's face is an important signal to establish mutual happiness between the two of them. Do the smiling premies see the mother scheme in their dreams before their inner eye? More evidence is provided by the observation that at 23 weeks fetuses demonstrate their first rapid eye movement (REM) sleep (Birnholz, 1981). Dreams coupled with eye movements lead us to suppose that internal visual impressions are involved, presumably the mother scheme, particularly the eyes, which are the first, and for weeks the most important visual signal that fascinates babies after birth. *All this information allows us to suppose that the connection between the visual mother scheme (FAS) and the mood of basic trust will be established in about the 23rd week, 3 weeks before the eyes reopen.* Another interesting fact is this: During the REM sleep, there are episodes of behaviour "suggesting 'bad' dreams ... and 'good' dreams as well" (Chamberlain, 1995). Here again it seems obvious to make the connection between the good dreams and the feeling of seeing trust in a mother scheme. As far as bad dreams are concerned, it is impossible to say whether a scheme of primal mistrust, a preshaped bad object, exists at this time. In any case, young animals corresponding to this stage of ontogeny do not demonstrate this kind of behaviour. Nor do unpleasant dreams necessarily presuppose a bad preshaped inner object.

c) From the End of the Fifth Month to Birth: "Seeing Primal Trust" – Clinging Phase (Higher Primates)

The eyelids reopen. In its psychic development, the unborn child has now reached the stage of mood of seeing primal trust. The young of higher primates find protection, food and intimacy on the mother's body, which they cling to underneath her eyes (mother scheme). Young rhesus monkeys even cling to mothers who mistreat them (Harlow and Harlow, 1966). The concept of a bad mother from whom one should flee would be a lethal factor.

d) Postnatal Development up to the Eight-Month Fear

From birth on, babies study the faces of other persons. The fact that the first social smile occurs only at the beginning of the third month leads me to the assumption that only now the baby is able to recognise fully that its inherited intrinsic mother scheme corresponds to the extrinsic perception of the mother. In the following months, the mother scheme is filled with the image of the mother who is known personally. During breastfeeding, mother and child "drink" each other with their eyes, while the breast itself excites no visual interest. At the age of about 8 months when the child is capable of crawling away from the mother, the warning schemes of the stranger and of the threatening rival develop (Wolffensberger-Hässig, 1966, 1971), and perhaps also, I assume, the IRM of the devouring predator with its bared teeth. Here the frontal animal scheme is qualified by additional characteristics such as enlarged outline, loud, deep voice, bared teeth, and the context as dangerous or "bad", respectively. From this point onwards, the FAS can signify both good and bad object.

Prenatal Phase, Stage of Predisposition of Moods, Traumatic Experiences on the Part of the Mother, and Symptoms

We can now finally address the question posed at the outset, namely, whether there are plausible links between stages of prenatal development, traumatic experiences on the part of the mother, and specific symptoms in the children and later in the adults. Up to now, we have been interpreting facts, but in this section more questions will be asked than answered. Here, we must take the following premises into consideration:

- In the uterus there is no extrinsic visual perception of releasers. But we have seen that it is possible for the FAS to be hallucinated in dreams from the fifth month onwards. We can say nothing about the stage of seeing mistrust. Presumably at this stage no neural substrate for imagination yet exists.
- Visual stimuli represent only *one* input channel. Since we are dealing with moods, we must consider other (acoustic and hormonal) stimuli, too.
- *Processes of imprinting (or similar processes of learning) occur chiefly in threshold situations or critical phases and should be found in embryos and fetuses as well.*
- Any animal can flee, fight, or send out signals of submission in dangerous situations. A fetus which receives stimuli of aggression, fear, or panic from the mother cannot do this.

Let us now turn to possible connections between stages and symptoms! As long as no warning signals reach the *embryo in the phase of seeing primal mistrust* (the reptilian phase), it can remain in a mood of "safety in its own territory". If it feels strong adverse stimuli long-term, this must surely decrease the trust in its territory and reduce the warning scheme to a purely threatening significance only. In later life, individuals of this kind may feel a deep sense of mistrust towards all other people and tend to even feel threatened in their own home. I recently got to know a family where the parents lock not only the front door and the door to the flat, but also their bedroom door so that there won't suddenly be a burglar standing by their bed. Their own children, when they were still at home, slept in the grandmother's flat (for this reason?).

The transition from the reptilian phase to the phase of blind primal trust, i.e., to the mammalian phase, means a highly complex switching process from an anatomical, physiological, and psychic point of view. In every respect, it represents a critical threshold that should be very susceptible to imprinting. From the time when the eyelids fuse together, most sensory perceptions in altricial young and in fetuses in the blind stage should release a feeling of trust. Unfortunately, it is in the very nature of the subject that precise statements are difficult to make, and we are for the most part reduced to relying on assumptions which are supported by a varying degree of evidence. We can safely assume that the mood of blind primal trust must dominate from the moment when the eyelids fuse together. We know that the mood of primal trust as such dominates alone until the eighth month after birth, and that the stage of predisposition of moods for primal mistrust is suppressed for this length of time. We cannot, however, state exactly what happens with the visual scheme during the phase of intrauterine blindness, nor whether it can experience any imprinting even when inactive, something that seems neurologically possible.

Let us turn to possible connections between traumatic experiences and later symptoms. For the intrauterine altricial phase it could be the case that – especially at the beginning – a flood of panic signals might prevent the link between FAS and primal mistrust being fully dissolved and the new link between FAS and primal trust being formed in its place. Here, a whole range of combinations are possible and may lead to the birth of individuals whose trust and mistrust of other people are inextricably mixed up or even oscillate. It seems to me that moods of panic in mothers during the sixth month could be just as dangerous, if not more dangerous. The sixth month is equally susceptible to imprinting processes since it is at this point that the switch should be made from blind trust to seeing trust.

If mother and child are flooded with feelings of panic at the beginning of *the phase of seeing trust*, the child might be born with primal mistrust, cry for nights on end, behave hyperkinetically, and possibly have a particularly deep sense of fear towards the eyes of the mother and other people. We find this in early childhood autism, and perhaps also in paranoiac syndromes, even if these usually do not develop until adulthood. But typical symptoms of the borderline syndrome such as panic attacks or incomprehensible outbursts of rage could also be rooted here. It is also plausible that derealization – the sudden loss of trust in the view of the world – are more likely to occur in individuals in whom no stable link was formed prenatally and/or postnatally between the FAS and the mood of primal trust.

Research on these topics is still in its infancy.

Frontal Animal Scheme and Inner Objects in Psychoanalysis and Analytical Psychology

The question of inherited preshaped inner objects has been posed many times, most recently by Trentmann (1995). Now for the first time we can make concrete statements, however. After Darwin, it was self-evident for depth psychology that human beings are influenced by inherited factors. Freud and Jung, however, choose different aspects as important. Freud mainly reduced inner objects to mere aims for sexual drives, while Jung was mainly interested in archetypes and neglected sexual drives.

I assume that both broke the link between object and drive because they had both been victims of early sexual abuse. In Freud's case this occurred with his nanny when he was about 3 years old (cf. Krüll, 1979). At the age of 12, Jung became the "victim of a trusted man" (his father?) (cf. Höfer, 1993).

The Archetypes

Jung was fascinated by archetypes, magical-mythical images of fathers, mothers, children, partners, gods and demons which he found all over the world in religion and myth and ascribed to a collective subconscious, while the corresponding images in individual dreams and literature were placed in the personal subconscious. But he was unable to define clear-cut criteria for distinguishing between these two categories, as can be deduced by comparing the corresponding definitions put together by Hark (1988). Archetypes as defined by Jung in myths and individual dreams resemble each other strongly. Both result from the inherited (collective) rules and conditions of human fantasy, both are more (the collective ones) or less (the personal ones) influenced by sociocultural conditions, and both crystallise around a core of archaic inherited images and patterns of behaviour which developed in evolution: mother and child, male and female, peer and rival, pasha and underdog, enemy, predator and prey, all of them bearing the visual figurations of the frontal or lateral animal scheme.

Preshaped Inner Objects in Psychoanalysis

We have seen that at least in the final months of pregancy a preshaped good mother object exists. It consists of a visual scheme (the head-legs scheme), which is bound up with the predisposition of mood of primal trust, finding protection and food near the body. The preshaped object is presumably imbued already in the final prenatal months and definitely after birth with the characteristics of the personally known and unmistakable mother. Not just the facial features belong to this, but also the interaction patterns of the dyad. The similarly preshaped "bad" inner objects (threatening fellow creatures and predators) are not activated until the capacity to move away alone matures. I think that later both of these become the matrix of the threatening "evil" mother, who can be refusing or even be "devouring" like a predator. This would provide an easy explanation of the fear of a devouring mother and the use of animal symbols with devouring aspects such as crocodiles and wolves to symbolise this type of fear. However, until the clinging behaviour disappears, i.e. at the age of 3 or 4 years, the good object must be "stronger" than the bad one.

In the light of this let us now consider *the concepts of good and bad objects* by Melanie Klein (1934, 1952). Deducing from the fantasies of deeply disturbed children, she concluded that both are in existence from the time of birth onwards, and that babies already divide all partial objects (breast, penis) and total objects (mother) into a good and bad object and produce sadistic fantasies as well as clinging ones. However, we have seen that if the mother is sufficiently good until the warning scheme is reactivated in the eighth month after birth, only a good object exists. This means that under sufficiently good prenatal conditions, a child would have no preshaped bad object which could be endowed with negative experiences until it starts to show fear of strangers. This could explain the origin of free-floating, objectless fear. Until the head-legs scheme fades away in 4 year olds, the good mother must predominate and the negative experiences must be split off or projected. After that the integration of good and bad aspects of the parents and the self progress stepwise.

On the basis of these considerations, I had completely rejected until very recently Melanie Klein's hypotheses that a bad object also exists from the time of birth. I would now like to qualify this criticism: In extremely disturbed mothers and very vulnerable children it could indeed arise that the primal trust in the good object – the mother – either cannot develop at all at the prenatal stage or is at least overshadowed by the primal mistrust in bad objects such as predators and/or rivals, so that from birth on, a bad object exists as a mother matrix, either as the only object or in addition to the good mother. Children of this kind may be born with a mood of primal mistrust, demonstrate symptoms of deep discomfort or in the worst case become autistic (autism can of course also derive from quite different causes such as brain damage or genetic defects).

With regard to *partial objects*, their existence cannot be confirmed for the first few months of life from a human-ethological point of view. At this level only the perception of an entire *Gestalt* of the mother scheme exists, which the baby explores stepwise with its eyes. A penis would be moreover completely irrelevant as a releaser for the baby. But what about the breast? Here too, there is nothing to suggest that *the mother's breast* is a visual releaser. The only innate factor is the knowledge of approximately where it can be found on the mother's body, e.g., in ungulates in a dark area between trunk and legs. The young animal has to find out by trial and error whether it is near the front legs or the back legs (Hediger, 1961). This is also true for primates. The young animal or baby looks for the breast below the eyes, at the place where its mouth is when it clings on. It must of course be possible to locate the source of milk in the dark as well. And the breasts of ape mothers who are breastfeeding are inconspicuous and covered with hair. This must have been true also for a large period of human evolution so that it was scarcely possible for a releaser of this kind to develop. In addition, breasts do not exert the same attraction for women as they do for men. This means that it is probably rather a gender-specific releaser in the sexual area (Morris, 1978), whereby inherited, experienced (mother's breast), and desired aspects may mingle in male emotions.

The Constitutional Ambivalence of Humans

It is furthermore reasonable to assume that the formal concordance of the FAS as a mother scheme and a rival scheme must lead to difficulties. In all other mammals (except primates), namely, the FAS is always and unambiguously a warning scheme, while it is the *lateral animal scheme* (LAS) which serves as a trust scheme. Only higher primates and human beings are troubled by the possibility of the FAS signalling both "you can trust me", and "I am your deadly enemy".

This means that ambivalence in our social relationships is our evolutionary fate. There is even a positive side to this: more than all other living creatures, primates had to make an effort to find out what the other creature really meant. It may be that this task even contributed to the development of intelligence in hominisation. And finally, to overcome ambivalence, higher primates had to develop particularly intimate mother-child relationships, which means we have this to thank for our human capacity to love our partners, at least in most cases!

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