

THE “HARNEL-MIATZNEL” – the sane logic of the Real World

Ken Pledge

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"And only thirdly — try and fathom the gist of my writings." G. I. Gurdjieff

"Harnel-miatznel" is one of the neologisms introduced by G. I. Gurdjieff in his book Beelzebub's Tales to His Grandson. In this article, K. Pledge discusses the meaning of the term, drawing attention to its fundamental importance for developing a realistic form of thought.

Let us suppose, for the sake of argument, that we really want to understand something of Gurdjieff's 'ideas'. If this is so then we are at once confronted with special problems. Gurdjieff's ideas are not 'ordinary' ideas. They are not ideas that can be separated from the world and from ourselves and what we do in our lives. They are the very *reverse* of 'abstract' ideas, because they are the actual *forms* of the workings of the real world, not excluding ourselves. It is through confrontation of the **substance** of actual experience that we have to meet with them, and there we are meeting them on their own ground.

There is a story by, I think, Saroyan about a little boy at school learning the alphabet. The teacher tells him that C-A-T is 'cat' and he is filled with indignation at the very idea. He inwardly rebels at the absurdity of it, refusing to accept it. "It is not true", he says to himself, "C-A-T is *not* 'cat' — '*cat*' is the eyes, and the fur, walking."

Gurdjieff's ideas by no means correspond with the ways we have become used to *thinking* about most things. In fact he was at pains to show that almost *all* ordinary 'thinking' about ourselves and the world is so *defective* that it effectively prevents us from seeing *anything* in any kind of correct perspective. We think about and perceive the world in ways that entirely leave out essential elements, and in doing so we split up the world and are split apart from it and from ourselves. With ordinary 'thinking' we are not really able to properly *understand* either our own action or the actions that occur in the world.

We do not really know how to *look*, and so it is not surprising that we fail to *see*. There are therefore in Gurdjieff's own presentation of his ideas certain *indications* of *how* to *look*, definite pointers to be followed. In trying to follow them we can perhaps learn to see what is really staring us in the face, from which our customary ways of thought cut us off.

Our ordinary 'thinking' is so much a mere matter of juggling with labels on bottles we never open (and which are mostly empty when we do), that we have almost no way of recognising thinking which deals with *real forms*. In our thinking about *actions* we are really *blind* to the *form* of their working. Gurdjieff penetrates to the very heart of the matter and points out with total clarity how it can be seen and understood. It is, in fact, in his indications about how to look at *actions* that Gurdjieff supplies precisely those elements which are missing from ordinary 'logical' thinking. Without them, thinking is defective and fails to correspond to the real world. With them, it becomes potentially an instrument capable of seeing directly into its workings.

Gurdjieff describes the *form of action* in a single concentrated and apparently quite abstract paragraph in Chapter 'Purgatory' of *Beelzebub's Tales to His Grandson* on page 751 as follows:

"A new arising from the previously arisen through the *Harnel-miatznel*, the process of which is actualized thus: the higher blends with the lower in order to actualize the middle and thus becomes either higher for the preceding lower, or lower for the succeeding higher . . . "

The *form* of action, which Gurdjieff here calls the "Harnel-miatznel", is therefore something to be seen, first of all, as a process of *blending*. There are two things which are *blended together* in the action. Let us get this clear: given any two things they will, in some way or another, have certain features of correspondence which enable them to be brought *together*. If an *action* occurs between them, they *blend* together in such a way that some *third* thing is produced or 'actualized' which is *new*, something which remains 'latent' *until* they are blended together.

This is the form of action. We now have to confront it with a *substantial* action in our experience. This is really easy. Experience overwhelms us with illustrations of action if we trust the form to show us how to *look*. We can see it, for example, in a spectacle-lens used as a 'burning-glass' when it is held in a certain way in relation to light from the Sun. The concentrated beam of light which this *blending* produces is a *third thing*, which is new.

The concentrated beam can, in its turn, be used to, for example set light to a piece of dry paper. The fire produced is *again* a new third thing.

There is a story that the telescope was 'invented' by a Dutch spectacle-maker, at the beginning of the seventeenth century, who chanced to hold two suitable lenses up together in the appropriate way and looked through the combination at some distant object. To his astonishment a third thing — the magnified image of the object — appeared through them, new *and*

unexpected.

These are three simple and quite straightforward examples in which the *form* of action which consists of blending and the actualization of a new third thing can be seen quite clearly. At this stage it is important to notice that it is most unlikely that they would occur 'by themselves'. It is *conceivable* that they might 'come about' accidentally, but this, although possible, is improbable. One can imagine a report of a forest-fire being started by the action of the first two, for example, under accidentally favourable conditions.

It is clear also that we are not concerned with 'theories' of light, or optics, or burning, in distinguishing the three things involved, any more than we are concerned with 'theories' when we light a match on a matchbox.

This is not all that the form of the "Harnel-miatznel" involves. The form of blending is not wholly factual; implicit in it are qualitative differences in **nature** between the two things that are blended. These qualitative differences are such that one stands towards the other in a relation of '*higher to lower*'. These are differences of **being** which we usually disregard, though they become perfectly plain when we train ourselves to direct our attention towards them and become sensitive to them.

We can illustrate this, and also draw attention to the way "Harnel-miatznel" **escapes** from the limitations of ordinary thinking, by considering a procedure of drawing lots that children use. Suppose, for example, there is a small problem of who, amongst a group of children, will bat in a makeshift game of cricket in the park. One procedure is as follows:

Two of the children stand up and face one another, right hands behind their backs. Then, simultaneously, each child brings out from behind him his hand, either open, clenched into a fist, or with only the first and second fingers extended.

The *open hand* symbolizes 'paper', the *closed fist* symbolizes 'stone', the *two fingers* symbolize 'scissors'. If the two hands show *any two* of these alternatives then a selection is made by appeal to the corresponding mystic formula of the set below, and the same is chanted loudly by all concerned:

either "stone blunts scissors"

or "paper wraps stone"

or "scissors cut paper"

In each case the first item in the formula is taken to *eliminate* the second, for the purpose of choosing between them. Of course, if both hands come out with the same gesture the procedure is repeated until they are not. The procedure is repeated among the various pairs of children until only one is left, and he bats.

Now these formulas rest on a primitive recognition of 'higher and lower' which, if it is obvious to children, is surely obvious to anybody. In all three cases we see a certain *difference in quality* between a pair of objects, such that the nature of the first is taken to entirely *prevent* the actualization of the nature of the other. The 'smoothness' of the paper covers up the 'roughness' of the stone and so on. Evidently there are *conventions* being adopted which amount to a denial of any blending between these natures, but these conventions clearly arise *artificially* because choosing by lot *has* to be an all-or-nothing procedure. If the first is 'one', the *second* must be 'zero'.

We can readily see the possible blendings between these if we wish to. For example: 'stone sharpens scissors' is a possible blending in which the third thing is the 'sharp edge'. The stone is

harder or more abrasive than the metal, and in this context of bringing them together a scale of hardness or abrasiveness will be the relevant one to which 'higher and lower' refers.

It is obvious from these simple illustrations that what is 'higher' and what is 'lower' *appears only in the context* of the blending process concerned. In the first formula 'scissors' are 'lower'; in the third they are 'higher'. Even though, in the formulas, the blending **as such** has *disappeared*, like the Cheshire Cat in **Alice's Adventures in Wonderland** the 'higher and lower' have remained behind, like its famous *grin*.

It is when we look closely at this childish procedure of choosing by lot from the point of view of the "Harnel-miatznel" that we begin to see what has been left out. What is missing is any *really new thing* that arises from both natures *together*. It is infertile. Instead the two natures are being used, not in co-operation but in opposition, not constructively but destructively, to *annihilate* rather than create. Rather than any real blending of the two things together, they are being kept apart by a kind of *reductio ad absurdum* of blending.

And so we come very naturally to see just how *decisively* Gurdjieff's 'sane logic' of the "Harnel-miatznel" manages to completely *escape* from the dead-end to which we are led by the conventional 'logic' of two-fold 'either-or' thinking.

For such a two-fold logic has built into it a self-destructive axiom, the convention of the '*excluded-middle*', which corresponds precisely to the convention adopted by the children in the above procedure of drawing lots. For such a logic something either 'is' or 'is not' a member of a class, for example. Hence at the outset an axiom is being adopted which essentially *denies the possibility* of the arising of anything really *new* in the 'situations' it purports to describe.

Hence such a 'logic' cannot refer to the world of *real actions* of which the sane logic of the "Harnel-miatznel" can and does express the *form*. It is just an artificial construct which can never hope to describe any processes in which any kind of *blending* is involved, and excludes axiomatically the *third thing* which arises from blending. This feature of two-term logic necessarily brings about a quite absurd *divorce* between the way we try to 'think' about actions that occur in the world and the actual *form* of the actions themselves, which we *observe*, even though the 'logic' *denies* it to be possible. Lewis Carroll describes it very well:

"You'll see me there," said the Cat, and vanished.

Alice was not much surprised at this, she was getting so well used to queer things happening. While she was still looking at the place where it had been, it suddenly appeared again. "By-the-bye, what became of the baby?" said the Cat. "I'd nearly forgotten to ask."

"It turned into a pig," Alice answered very quietly, just as if the Cat had come back in a natural way.

"I thought it would," said the Cat, and vanished again.

Gurdjieff's assertion that his books are 'all written according to entirely new principles of logical reasoning' is not just one more of his outlandish exaggerations, it is *literally true*, if we have eyes to see it. Ordinary 'logic' is simply *defective* because it 'excludes the middle' and 'the middle' is just what Gurdjieff *restores* to our thinking in his formulation of the 'sane logic' of action, the "Harnel-miatznel". It is his *name* for what we have called the *third thing* arising from the blending.

But we have still far from exhausted the implications of the *form* conveyed by Gurdjieff's formulation of the "Harnel-miatznel". As he describes it, the 'third thing' or 'the middle' produced by the blending of the 'higher and lower' arised at a certain place in an *ascending series* of actions.

It takes its place in a sequence of 'arising' in which its own "Harnel-miatznel" *was preceded by* some *even lower* 'arising' from a *previous* "Harnel-miatznel", and it *is succeeded by* some *even higher* 'arising' from a *subsequent* "Harnel-miatznel". This 'spells it out' in such detail because Gurdjieff expects of an attentive reader a most determined effort to grasp the very essence of his ideas on the third reading.

Now Gurdjieff's use of the word 'arising' is always deliberate and invariably significant. It is a basic word in his language of form. Here he uses it to draw attention to a general 'upward' movement, implicit in the "Harnel-miatznel", which is *progressive* — in the sense of being made *against* the natural course of things. He elaborates its significance with great care in his exposition of the *Boolmarshano* of Makary Kronbernkzion in the Third Book of **Beelzebub's Tales**, in terms of 'the second *backward-flowing force*' which, in 'striving to blend with the cause of its arising, must always and in everything *evolve.*'

The "Harnel-miatznel" is therefore the form of action implicit for *successful evolution*, action which is of the kind which *makes progress* 'against the stream' of events, like a salmon making its way back upstream in the river into which it was born, returning to the source of its arising. The *life-cycle* of the salmon tells in *substance* in the real world the story, in this same language of form, of Boolmarshano of Makary Kronbernkzion. Henry Williamson's book **Salar the Salmon** will perhaps be one of the set books on courses for serious students of Gurdjieff's ideas, when the world, hopefully not too late, takes notice of them.

Gurdjieff's ideas are presented in an *objective language* of form, because he uses words, such as this 'arising' which have a common heritage of meaning in human experience. He chooses his words with extreme care, expecting of the reader a special kind of effort to blend their *form* with the *substance* of human experience of real life, and hence to actualize, through the "Harnel-miatznel" the arising of the third thing which is an *understanding* of both.

Take this word 'arising'. What is the *substance* of which it is the *form*? Left to themselves, heavy objects released near the surface of the Earth *fall downwards*. There is no more common human experience than this. This is one case, which symbolizes by its substance all other cases, of *the natural course things follow when left to themselves*. It is one of the most ancient images of the *way* things happen that simply 'happen by themselves'.

Now it is characteristic feature of human beings that, at a certain stage of their development, in the evolution of the species of the Biosphere, they *arose* and *stood upright* upon the Earth. In fact it is so characteristic that in one tradition the first letter of the alphabet, the Arabic letter ALIF, that is written by a single *upright stroke*, is also *used* to signify MAN.

Even to this day, the 'accolade' of bestowal of knighthood upon one who has proved himself worthy of the title 'Sir' is given to the kneeling candidate and accompanied by the word 'Arise'. It has a special significance in the language of *form*. It expresses a certain *gesture* of attainment.

And so, one of the great moments of joy in the process of parenthood is the recapitulation of that moment in Man's evolutionary history: that moment when a human baby staggers uncertainly to its feet and, *for the first time*, balances precariously upright as a human child, affirming the gesture ALIF.

It is an *objectively* significant moment because it expresses for all to see the real *entry* of the baby into the human world. 'The child is father to the man', and 'Man' is a special kind of being who has the power to *intentionally create* his own world. Man can do this because it is the potential of a human *will* to bring about actions in the world which would not 'happen by themselves'. This is, as it were, his 'trade mark'. By standing up *intentionally* a child proclaims

the form of this to all and sundry.

But **does it happen** quite like this? There are accounts of young children who have grown up with, say, wolves and when found are still running about on all fours in the jungle. Kipling's Mowgli is something of a parable. We may have forgotten, but it **really** comes about by a special case of the "Harnel-miatznel". Children are **initiated** into the human world by their parents; they **learn** to stand upright because they are shown how and **helped** to do so.

In this action of the "Harnel-miatznel" by which a baby learns to stand as a human child on the Earth there is a very instructive case in deed. We can see its features very clearly. The 'higher' is, we can say, the insistent help and encouragement given **from above** by the parents: the 'helping hand' from the 'already arisen'. The 'lower' is the faltering contribution of the child in responding to their demand **from below**. The child grasps the helping hand, which is the **blending** of 'higher and lower', and uses whatever control it has acquired over a pair of still wobbly legs to 'actualize the middle': a human child *who can* stand on his own two feet.

It would be difficult to find a more substantially concrete example than this.

We can see also from this same illustration just *why* Gurdjieff links the "Harnel-Miatznel" with what he calls the second primordial fundamental cosmic law, namely, the Sacred-**Triamazikamno**, which he describes as:

"A law which always flows into a consequence and becomes the cause of subsequent consequences, and always functions by three independent and quite opposite characteristic manifestations, latent within it, in properties neither seen nor sensed."

". . . and as I already told you, this Sacred-Triamazikamno consists of three independent forces . . . which three holy forces common-cosmic objective science calls as follows:

The first:	the 'Affirming-force' or the 'Pushing-force' or simply the 'Force-plus';
The second:	the 'Denying-force' or the 'Resisting-force' or simply the 'Force-minus'; and
The third:	the 'Reconciling-force' or the 'Equilibrating-force' or the 'Neutralizing-force'.

Gurdjieff spent very much time in painstakingly **composing** his formulations of these 'laws' — 'sparing himself neither day nor night, constantly writing and rewriting' — and they are really meant to be written, or read, or **said aloud in full** just as one would a poem, and for the same reasons. He tries to convey the very **taste** of their 'flavour' by his ritualistic titles. We should endeavour to pay his writings at *least* the respect this is accorded to, say, Blake's Prophetic Books.

Gurdjieff was not inventing some new kind of mathematical 'shorthand' to describe abstractions. He was endeavoring to convey **concrete form** by every means he could devise. Evidently his formulations present the reader with a 'helping hand' from the 'already arisen' — which has to be firmly grasped.

We can clearly see this law manifesting in this case of the "Harnel-Miatznel" whereby *a* baby learns to walk as a human child, if we put our attention on the three **aspects of will** acting in the situation:

1. There is 'in' every living being an **affirmation** of life which is recognizable as the 'Driving-force' that propels it into independent activity. By contrast material objects are 'inert'. Living organisms eat, breathe and respond actively to the environment. They **must** do so

— or die. At a certain stage in its development a human baby becomes aware of the *need* to stand up and enter the human world. This need acts as a 'Pushing-force'. It responds by *trying* to stand, and in doing so wills '**I must**'.

2. The child's imperfect control over his legs, their tendency to 'let him down' and thus follow the natural course of things that simply 'happen by themselves' present the child with an opposing *denial*, or 'Resisting-force'.

This 'Resisting-force' is brought into being by the first force, the *effort* to stand, and the child experiences it as another *will*, opposing his '**I must**' with '**I cannot**'.

3. It is at this point that the parents assist the child by an intentional intervention of the *third* force from outside. They visibly demonstrate that what the child is trying to do is *possible*. They are the 'already arisen'. By themselves being *able* to stand they represent an 'Encouraging-force'. Very probably they will be saying: 'You can do it' to the child

Within the child there ensues a struggle between the two forces of '**I must**' and '**I cannot**' which results, as it perseveres, in the gradual appearance also of a *third* force, Manifesting through a 'sense of balance'. This takes intangible form as the vehicle of an 'Equilibrating-force' that is able to *reconcile* the opposing demands of the other two. It is this third force which enables the child to will 'I can'.

When these *three* wills become established through their three forces, there is then 'in' the child a simultaneous threefold 'subjective action' of

'I must — I cannot — I can'

by which the child wills the 'I-hold-three-together' of **Triamazikamno**.

We have a living demonstration of the saying of Jalaludin Rumi:

"Organs come into being as a response to **necessity**.

Therefore **increase** your necessity."

The 'subjective action' of willing into being a 'sense of balance' through the Triamazikamno of this "Harnel-Miatznel" has thereby enabled the "I" who holds together the three forces of the Triamazikamno to create a substantial power to *do* in the world. The 'sense of balance', which at first only enables the child to stand upright, enables the further 'higher arisings' of walking and running upon the Earth to become actualized through succeeding processes of the "Harnel-miatznel".

The form of willing experienced through the 'subjective action' of '**I must — I cannot — I can**' takes **substance** through this first "Harnel-miatznel" and becomes the 'I can' in the arising of *I-can-do-this*'. The will has acquired a vehicle which, through the action of succeeding "Harnel-miatznel", reaches out into the human world as '*I-can-do-this*' and **this** and **this . . .**' and has thus begun to fulfil what Gurdjieff describes as:

" . . . the need, proper to three-brained beings, to *actualize their own initiative* in everything, . . ."

Gurdjieff's **Beelzebub's Tales** is in some ways comparable with Newton's **Principia**.

Certainly the intellectual stature of the two men gives them both something in common. Of course Gurdjieff was unusually lucky both in his family and in his early teachers — we know that much from **Meetings with Remarkable Men**. We know also that he had immense natural gifts of independence and single-mindedness — so did Newton. Like Newton, he was fascinated by anything mechanical as a child, and impressed his contemporaries with a highly developed force of intellectual concentration that made it impossible for him to take up a problem without seeing it through right to the end.

Thus Keynes remarks of Newton:

"I believe that the clue to his mind is to be found in his unusual powers of continuous concentrated introspection. A case can be made out, as it also can with Descartes, for regarding him as an accomplished experimentalist. Nothing can be more charming than the tales of his mechanical contrivances when he was a boy. There are his telescopes and his optical experiments. These were essential accomplishments, part of his unequalled all-round technique, but not, I am sure, his *peculiar* gift, especially among his contemporaries.

"His peculiar gift was the power of holding continuously in his mind a purely mental problem until he had seen straight through it. I fancy his pre-eminence is due to his muscles of intuition being the strongest and most enduring with which a man has ever been gifted.

"Anyone who has ever attempted pure scientific or philosophical thought knows how one can hold a problem momentarily in one's mind and apply all one's powers of concentration to piercing through it, and how it will dissolve and escape and you find that what you are surveying is a blank.

"I believe that Newton could hold a problem in his mind for hours and days and weeks until it had surrendered to him its secret. Then being a superb mathematical technician he could dress it up, but it was his intuition which was pre-eminently extraordinary — 'so happy in his conjectures', said de Morgan, 'as to seem to know more than he could possibly have any means of proving'."

The relevance of this comparison between Gurdjieff and Newton is that Newton *changed the world with a single book* — which some of the most brilliant of his contemporaries found virtually unreadable. The book was the *Principia* and it is a book which also announces 'laws' to those who will read it: Newton's 'laws' of motion. It is instructive to consider them in relation to the "Hamel-miatznel", and also as examples of a power of formulation comparable to Gurdjieff's. Newton wrote them, of course, in Latin, but here is an English translation of them:

Law I Every body continues in its state of rest, or of uniform motion in a right line, unless it is compelled to change that state by forces impressed upon it.

Law II The change of motion is proportional to the motive force impressed; and is made in the direction of the right line in which that force is impressed.

Law III To every action there is always opposed an equal reaction: or, the mutual actions of two bodies upon each other are always equal, and directed to contrary parts.

If we look at these 'laws' in terms of the "Hamel-miatznel" we can gradually make out its form. The 'higher and lower' appear in the third law as the 'action and reaction', and the 'blending' is their 'mutual action upon each other'.

The 'third thing' that Gurdjieff calls 'the middle' appears in the second law as the 'change of motion'. This is the 'new arising from the already arisen'.

The 'already arisen' is, naturally enough, the initial 'state of rest, or of uniform motion in a right line' of 'every body', that appears in the first law.

We can therefore make a 'word-for-word translation' of the "Hamel-miatznel" into Newton's language of the three 'laws of motion' in any particular case.

Perhaps the clearest and simplest case of the *action* of Newton's laws in an actual situation occurs in the head-on collision of a moving billiard-ball with a second billiard-ball initially at rest. The "Hamel-miatznel" of this in Newton's language is as follows:

In the case of 'perfectly elastic' balls, the moving ball, during the 'moment' of contact, 'changes the motion' of the ball initially at rest by its 'action' upon it — it 'speeds it up'.

Simultaneously there is an equal and opposite 'reaction' of the ball initially at rest back upon the moving ball — it 'slows it down'. Thus their 'change of motion' results from the initial 'state of rest' of the one ball and the 'uniform motion in a right line' of the other, by reason of their 'mutual action upon each other'.

In this idealized case the result of this is that the initially moving ball **comes to rest** and the ball initially at rest acquires *the same* 'uniform motion in a right line' that the moving ball possessed initially. During the moment of their 'action and reaction' a quite definitely *new thing* appears, because the 'change of motion' involves an *acceleration*, which is a different *kind* of thing from a uniform motion, something in its own right. Newton invented a special mathematical technique — his 'fluxions' — to deal with its arising.

It is one of the hardest things, when teaching students Newton's 'laws of motion', to convey the fact that they are not 'abstract' mathematics but are exemplified concretely by the way interactions of this kind *actually happen* in the real world. They are laws of *form* in just the same way as Gurdjieff's 'laws' are, and they are formulated and apprehended by what Gurdjieff calls 'Reason-of-understanding'.

An interesting thing about the particular case of Newton's 'laws' considered above is that it is only approximately exemplified in practice. In any actual collision between two balls the situation is *slightly altered* after the collision as regards the *relative velocity* of the two balls. Newton, like Gurdjieff, made painstakingly careful experiments to discover the laws of the actual course of events. The law he found to apply in cases such as the one above he described in the **Principia** as follows:

"In bodies imperfectly elastic . . . the elastic force . . . makes the bodies return one from the other with a relative velocity, which is in a given ratio to that relative velocity with which they met."

The gist of this for our example is that the blending is imperfect. Something is *lost* during the collision with the result that the ball initially at rest acquires, after it, a slightly *smaller* 'uniform motion in a right line' than the moving ball possessed initially. A motion, in fact, *intermediate* in the range from rest to that of the initially moving ball: somewhere 'in the middle' of that range.

The 'given ratio' he speaks of is the 'coefficient of restitution', which is always less than one whatever the common material of the balls. It is a measure therefore of this 'middle-ness' that characterizes the outcome of such collisions in practice. Because of this the first ball does not come completely to rest after the collision. Hence *both* balls finish up with motions somewhere 'in the middle' of the range prescribed by the two initial motions.

I have dealt with this example at some length because students of Gurdjieff's ideas who have suffered the mixed blessing of a 'scientific education' are sometimes led to believe, erroneously, that the 'ideas' of science are somehow 'wrong' and incompatible with Gurdjieff's. Consequently they tend to see themselves as faced with a quite illusory choice between the two — if one is 'right' then the other must be 'wrong' and should be discarded as worthless. This is a typical example of twofold 'logic'. If a scientific idea really *works*, really **does describe the actual course of events in the real world**, then it has arisen from 'Reason-of-understanding' of some situation and expresses some real *form* that manifests in the world. The thing is, always and in everything, to *seek and understand* what is being **done**, and *the form* of the effort required to do this is given by Gurdjieff in his careful description of the 'Reason-of-understanding' in the chapter 'Form and Sequence' in **Beelzebub's Tales**. It is not a matter of twofold 'logical' acceptance or rejection, but of a three-fold action of the sacred **Triamazikamno** — a 'sane logic' of reasoning.

If some situation is really *understood*, then it is being perceived, somehow or other, as a manifestation of Gurdjieff's sacred-Triamazikamno. It is being seen as an outcome which

reconciles an affirming-force and a denying-force set in opposition. The situation itself is **one whole**, but *within* it there are these three forces brought together. Scientific terminology is full of it.

Newton himself very clearly *saw* the situations to which his 'laws' of motion apply, in this way. It is unmistakable in his formulation of the way he *understood* the specific property of bodies possessing mass, which is their *inertia*. He *saw* it as a 'Resisting-force', and he says so in his **Definitions** in the **Principia**. Thus:

III "The *vis insita, or innate force* of matter, is a *power of resisting*, by which every body, as much as in it lies, continues in its present state, whether it be of rest, or of moving uniformly forwards in a right line."

What is being 'Resisted'? Clearly another force from outside, acting on the body. If there **is** resistance, then there must be something to resist *against*, which is being seen as a 'Pushing-force'. This Newton calls an 'impressed' force:

IV "An **impressed force** is an action *exerted upon* a body, in order to *change* its state, either of rest, or of uniform motion in a right line."

What then is the *third* 'force', which Gurdjieff calls the 'Equilibrating-force'? As we saw in the case of the child struggling to walk, it is what **enables** the situation to become resolved in some real outcome. The struggle of 'I-must' against '**I-cannot**' is saved from perpetuating a two-fold 'logical' either-or situation by the entry of something which enables the child to will '**I-can**'. Something is enabled to happen because a 'sense of balance' appears. Initially this is something **new**; which is 'given', but subsequently it becomes familiar and is 'taken for granted'.

Here too, in this situation of Newton's two forces, the 'impressed' force and the 'innate' force, we take the third force for granted. It is what **enables** a 'state of rest, or of moving uniformly forwards in a right line' to be **changed**. Newton himself takes it for granted by his phrase 'the change of motion' in his 'second law'.

Exactly *how* a motion is *able* to be changed was simply not understood until Newton's time. Newton understood it completely and for the first time by his method of 'fluxions'. It may be that he never expected his contemporaries to understand it by the same process of intuitive reasoning as he himself had followed, and in consequence 'dressed it up' in geometric 'clothes' as 'the method of first and last ratios of quantities' in the **Principia**. Nowadays it used by every schoolboy in a 'science' sixth form, but merely as one more mathematic technique. Few people have much *understanding* of what it enables to be done.

This single **idea**, the idea of **accelerated** motion as we now call it, it is but one of a whole set of 'third forces' which appear in situations which are understood as 'three-force' situations. The paradigm of them all is Newton's 'second law' of motion, which takes particularly simple form when the mass *m* of the body subjected to an impressed force *F*. is constant. The way the motion of the body changes is then simply expressed as the acceleration ***a*** where:

$$a = F/m$$

The manner in which this equation **expresses the nature** of the three forces involved in the change in motion of a massive body an impressed force can be shown clearly by example. Suppose someone asks you to pick up a matchbox from a table and hand it to him. You have had, in your life, considerable experience of matchboxes, and so, reaching pick it up, your body applies an appropriate 'Lifting-force' *F* through your fingers. You **expect, by** that force, to change the 'motion' of the matchbox from rest. You are pretty sure, from previous experience, just what speed is *able* to result from that force — in the fraction of a second or so it will take you to **lift** it off the table. This is what is expressed by *a* in the equation.

But to your surprise, what you expect to happen does not happen. The matchbox rises **only**

very slowly from the table. You *realize* that some kind of 'Resisting-force' is in operation, acting **against** the 'Lifting-force' you are exerting. This is your *experience*, and it appears because the matchbox, unknown to you, has secretly been filled with lead, or mercury, to make its mass much *bigger* than you 'bargained for'.

It is clear from this simple illustration that the F/m part of the equation represents, by arithmetical **division**, the workings of the 'Lifting-force' being opposed by the 'Resisting-force'. Since one number divided by another generally gives a third, it represents also their outcome by way of a new thing, a third force.

Gurdjieff's dictum that we are 'third-force blind' is true only if we take everything that happens 'for granted', without looking to *see how* the things we take for granted are *able* to happen. The experiment with the matchbox is by way of being what Gurdjieff called an 'intentional inexactitude', which draws our attention towards the 'how' of what is *able* to happen. What happens is not what we have come to expect. Third forces act everywhere in our experience, but we do not notice them.

In this example of lifting the matchbox it is clear how the a in the equation is, in Gurdjieff's language, an 'Equilibrating-force'. We have 'balanced' one thing against another — the 'Lifting-force' F against the 'Resisting-force' of m — and our previous experience of what is *able* to happen causes us to apply an F of a certain magnitude so as to produce a certain outcome a. But we find that this a is *not able* to happen, and this catches us 'off-balance', giving us a problem to solve for m.

A final example, to which the whole of the treatment of the equation above can be transferred almost 'lock-stock-and-barrel' occurs in electricity in the equation:

$$i = E/r$$

Here again the terminology proclaims a 'three-force' situation for all to hear, for E is called the 'Electro-motive-force' and is evidently another 'Pushing-force', r is badly called the 'resistance' of a conductor, and i is simply the electric current, resulting from the opposition of the other two, which is *able to flow*.

It is this kind of thing, no doubt, that Gurdjieff was referring to when he wrote:

"The scientific books usually contain collections of all sorts of old hypotheses already obvious to everyone but combined in different ways and applied to various new subjects."¹ Specific examples of scientific laws such as the head-on collision of billiard balls and an electric current flowing through a wire are, of course, situations which are most unlikely to occur 'by themselves'. The 'laws' of science, such as Newton's 'laws' of motion, are formulated for especially simple 'evolved' situations. They are situations which are conceived through an act of intellectual synthesis and when set up as 'experiments' they involve a considerable amount of intentional manipulation with apparatus. Experiments do not come about 'by themselves'.

(1) The word 'hypothesis' comes from the two Greek words *hypo* — meaning 'under', and *tithenai* — meaning 'to place'. It is evidently closely related in form to the English word 'under-stand'.