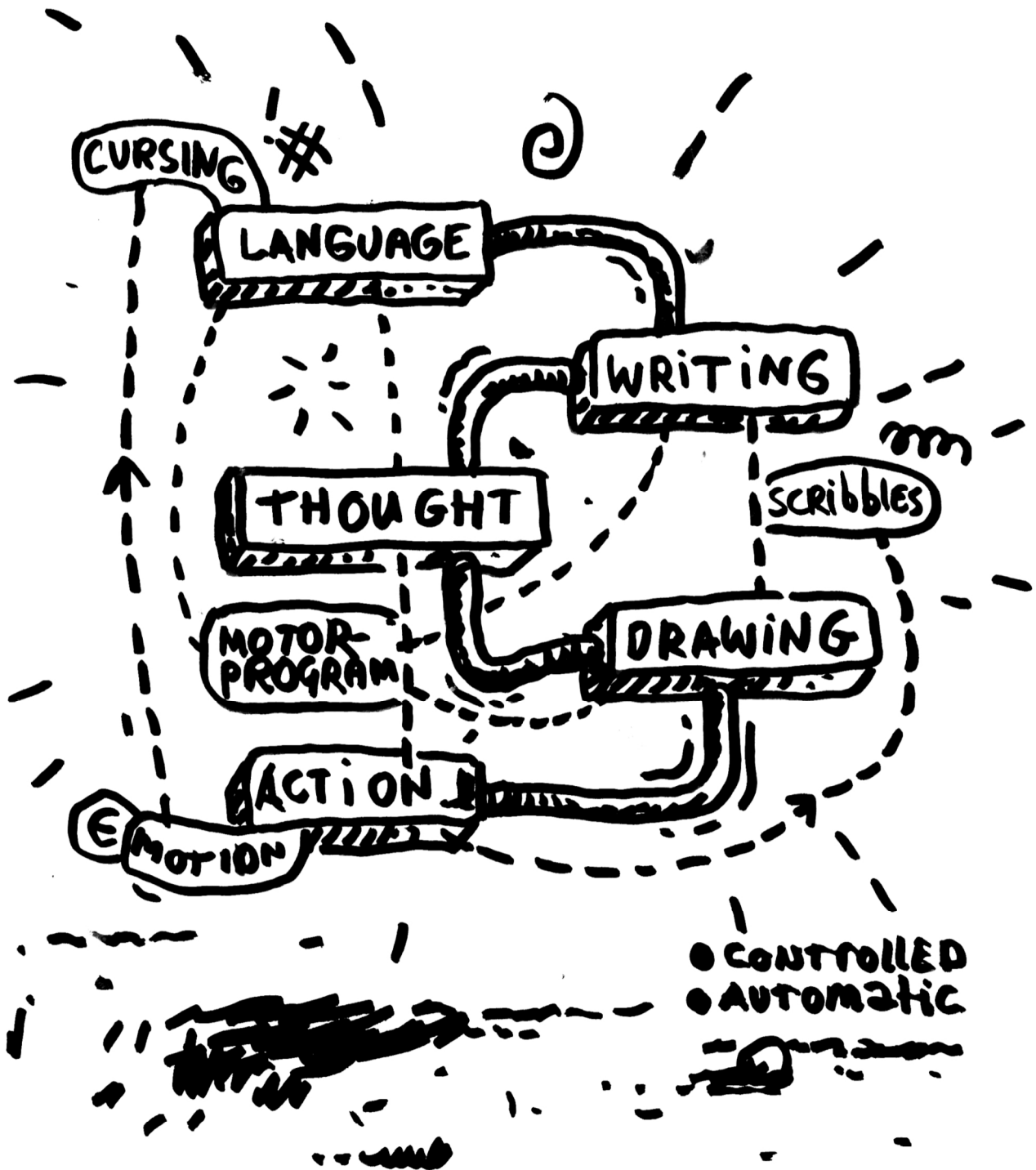


# PROGRAMMING WITH GRANLIXES 4 OBJECTLESSNESS



MARC VAN ELBURG 016



## Introduction

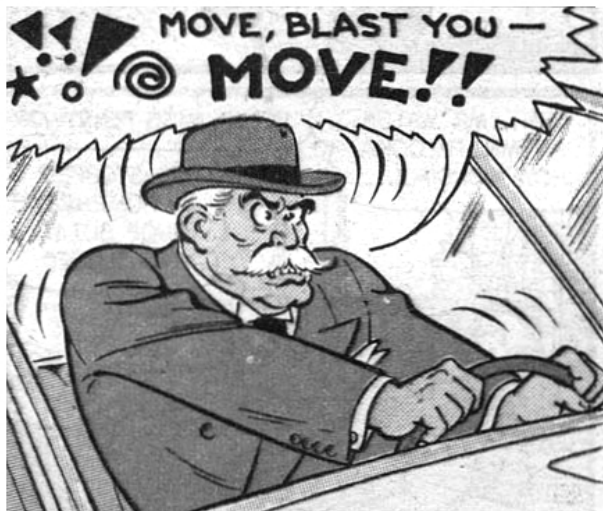
*habit*

*An action performed repeatedly and automatically, usually without awareness.  
(wiktionary)*

If the program governing a routine -like driving a car on a familiar road- runs automatically and without awareness; then it is unlikely that an unexpected blockage will immediately put that program to a halt.

Because before you are able to stop, you need to get back into the consciousness of driving. And as long as your consciousness is in a recuperative state, the program will automatically continue after the ride has stopped.

And because you are temporarily 'out of control', it is going to be effortful if not impossible to inhibit or suppress the tension between the reality of the blocked action and the continuing program.<sup>1</sup>



*Li'l Abner; Al Capp (1947)*



*A spiral, a star and three exclamation marks appear after a rigid character activated a routine motor-program (an automatic motion-along-a-path-towards-a-goal) that was blocked by an unexpected event.<sup>2</sup>*

*The Grawlixes that follow the blocked action are the visible evidence of the continuation of the automatic motor-program.*

*The program was operating autonomously and outside attention as a more or less automatic routine.*

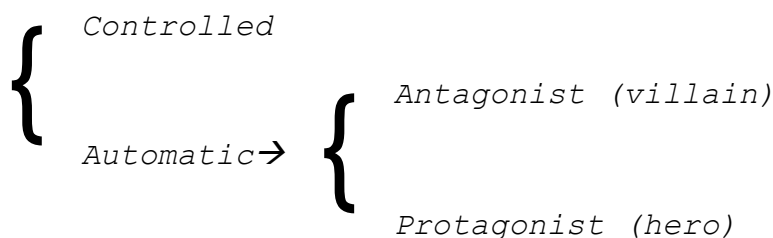
*The goal- that is, the mental object that provided the path with a direction and a destination, is no longer part of the program (dis-illusion). As a consequence, completion of the path is no longer physically possible. And because it was running automatically, the visible trace of the program continued in the frame of the cartoon, autonomously and separated from its function, as an iterating, objectless trajectory line without a goal.*

## 1. Controlled System vs. Automatic System

In the previous Li'l Abner cartoon, Grawlixes *emphasize* the collision of two incompatible worldviews; an old, classic worldview that is mechanistic, rigid and immobile, and a young, contemporary worldview that is natural, elastic and dynamic.

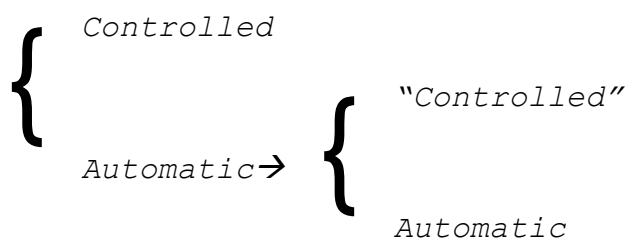
Early cartoons evolved around a wide variety of colliding contrasting, foil characters. But in all the examples in this study *Grawlixes are expressed through the most rigid character in the frame.*<sup>3</sup>

The automatic, uncontrolled lines (Basic Grawlixes), that appear after the most rigid character in the frame lost control over the situation seem to point towards an inherent psychological conflict between *controlled* and *automatic* processing underlying all cartoons with Grawlixes.<sup>4</sup>



The diagram above illustrates how the ironic humour typical of a cartoon with Grawlixes is the product of a conflict between an antagonist and a protagonist whose dynamic relation is submitted to the relentless determinism of an automatic system. As a consequence, the inherent automatic structure of these cartoons *questions the free will* of the cartoon characters as they collide, again and again.<sup>5</sup>

In the cartoon with Grawlixes, the antagonist is often represented by a rigid, controlling character that fails all the time. While on the other hand the protagonist is in a natural and effortless flow. In other words, the automatic process passes through the hero's naturalistic system unhindered. And therefore, the basic fundamental structure of the cartoon with Grawlixes can be represented as follows;



The rigid control exercised by the villain is a kind of pseudo-control and for this reason it will never really succeed.<sup>6</sup>



**PANEL 1:**

IT'S TOO MUCH! IT CAN'T BE DONE! I GIVE UP!! NO ONE MAN CAN THINK OF ALL THOSE CUSS WORDS! I'VE CONSULTED EVERY WAR BOOK PUBLISHED AND I'VE RACKED MY BRAINS DRY BUT I'M STILL A COUPLA HUNDRED WORDS SHY! OH FOR THE NINE MUSES TO GIMME A FLASH OF INSPIRATION!

PENRABE I CAN HELP YOU! LET ME SEE—THERE'S "ON SUGAR!" AND "GOOSH AND GOLDS!" AND "DARN" AND "DEARY ME" AND "LORDY AND JEHO-SOPHAT" AND—

**PANEL 2:**

WHOW! THESE NEW SHOES ARE NEARLY KILLING ME BUT I'VE GOTTA BREAK EM IN BECAUSE I'VE GOTTA LOOK MY BEST WHEN I MEET BELINDA-TOMORROW MORNING FOR HER ANSWER.

SQUEEK

**PANEL 3:**

OW!

**PANEL 4:**

THE BRUTE! AND HE SWORE HE NEVER SWORE!!

BLANKETTY BLANK!  
THAT IS A BLANKETTY BLANK!  
BLANK BLANK! THAT THIN BLANK BLANK BLANK!!!  
  
IF I HAD MY BLANKED HAND ON HIS BLANKED BLANK BLANK-LIKE BREAK  
EVERY BLANK BLANKED BONE IN HIS BLANKETTY BLANK BODY! THE—

**PANEL 5:**

THAT MAN'S GENIUS! HE KNOWS THEM ALL! FORTUNATELY I'M A RAPID SKETCH HAND WORKER!

**PANEL 6:**

MY ANSWER IS NO!

HUH?

NEXT MORNING

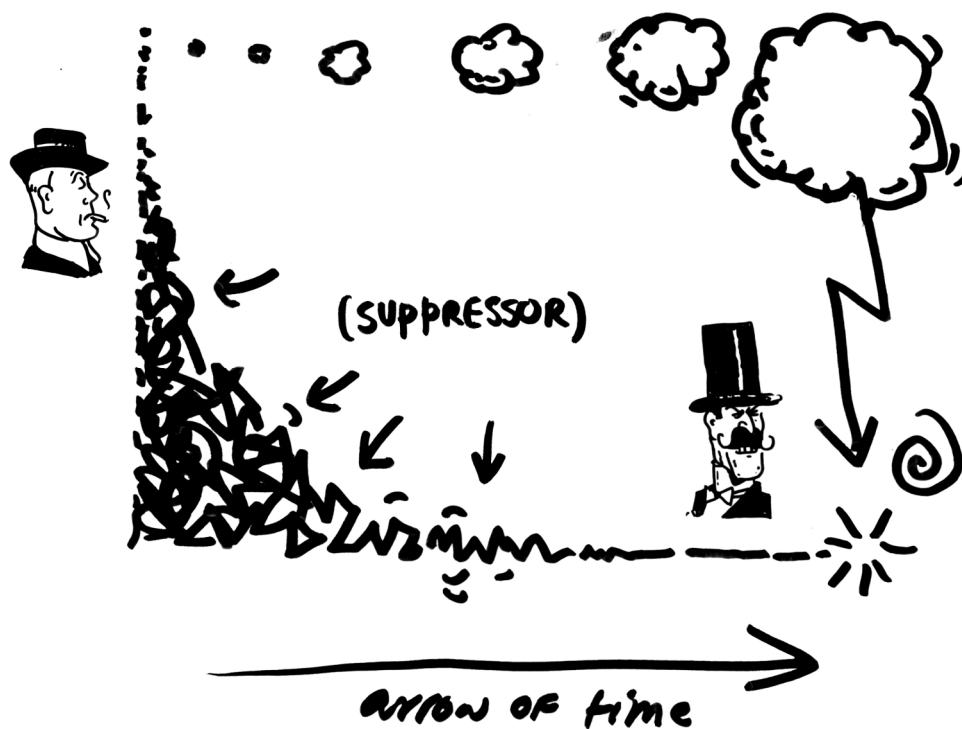
*First; analogue to the way his program was disciplined to fit his rigid world-view, the antagonist forces his feet into shoes that are too tight, and as a consequence the effortful operation distracts his attention. Then; an unexpected, accidental event initiated by the natural hero cuts off his 'path-towards-the girl' when the book falls on his already tormented foot. The conflict between the arrested action and the continuing program cripples the last shred of executive control that kept his attention on his objective. In a dramatic event, the entire psycho-schematic architecture of the villain implodes. His motor-action-program spins out of control. It draws traces of spirals and swirls. Steam clouds appear as a result of the sudden effortful mobilisation of memory resources and the frantic processing of the running program. Consequently, the language-program loses its syntactic structure. It causes controlled speech to disintegrate into automatic curses. In a twisted turn of events, the natural hero- who was trying to come up with a solution to a problem rationally and logically but who apparently lacks his natural 'inspiration'-, is now given the answer by the villain who was no longer able to suppress the irrational element in his character due to the book falling on his foot!*

Evolutionary, automatic background routines are located in the so-called 'reptilian brain' and are therefore older than controlled processing that mainly take place in the neocortex. But in early cartoons, automatic processing is often represented as a contemporary quality of the *young*, whereas effortful control is represented as the loss or the suppression of elasticity, typical for the *old*.<sup>7</sup> Like in the previous example of the Hairbreadth Cartoon, when the book falls on the villain who represents an iconic 19th century archetype.<sup>8</sup> His efforts to 'control the pain' and keep it outside awareness are crippled, and as a consequence the trace of that activity becomes visible in the frame as Grawlixes.

### the Background Program

In view of the cartoon as a dynamic system, the more controlling the villain becomes, and the more he tries to censor the natural cause of events, the closer he gets to the unexpected event.

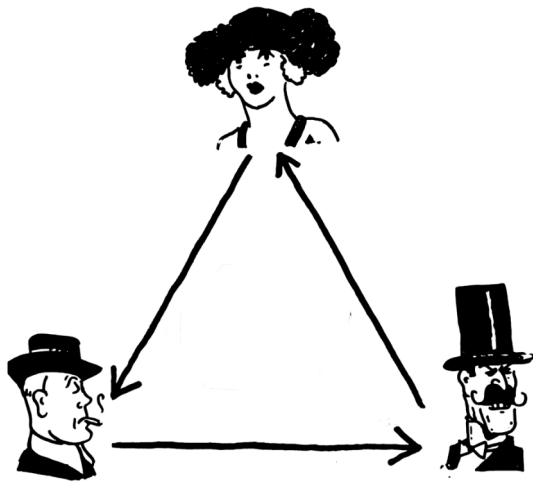
*Protagonist; automatic, natural*



*Antagonist; 'controlled', mechanical*

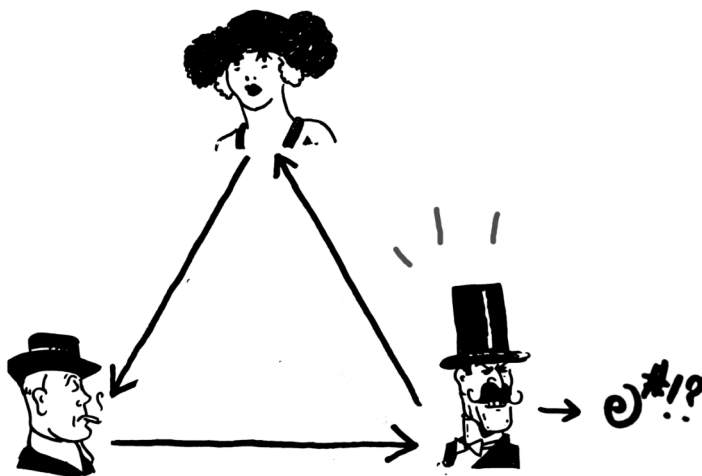
That is; in the cartoon, the villain and the hero represent different positions on a single dynamic field.<sup>9</sup>

All the actors in the cartoon are trapped in a cruel game that is mechanistically structured like a dead machine and that pushes them towards the outer limits of their potential.



The villain cunningly administers his material resources to seize the girl.  
The girl uses her seductive charm to appeal to the hero.  
The hero's natural talent and intuition are used to outsmart the villain.<sup>10</sup>

The closer the villain gets to his objective, the more urgent the appeal of the girl on the hero, and the less predictable the actions of the hero.  
Ultimately, the machine breaks down inside the most rigid link in the chain (usually the villain) while the trace of its program continues outside as Grawlixes.

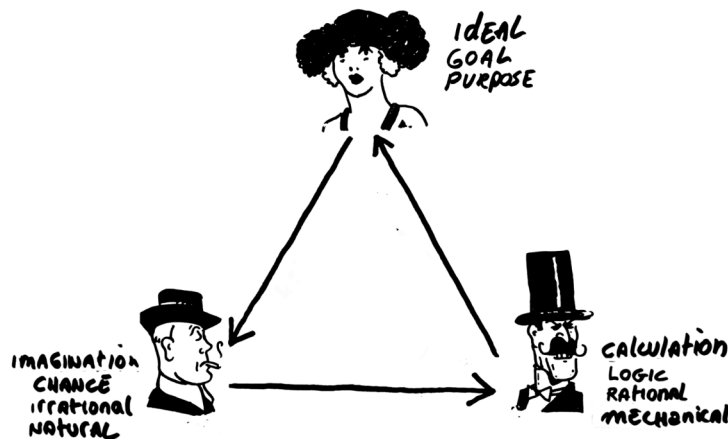


In the cartoons that follow, the situation repeats again and again.  
And with only minor variations on the theme, the narrative structure orbits around an invisible core without ever arriving at a final conclusion.

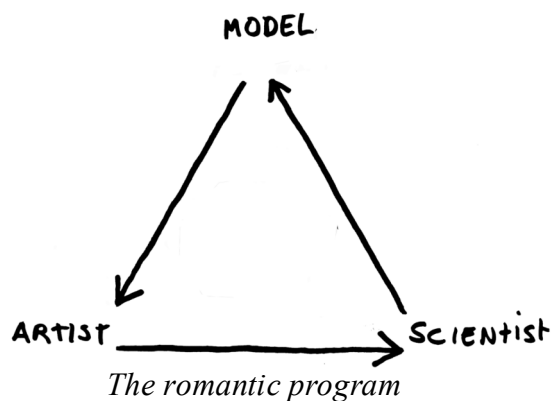
## The Analogy between Grawlixes and Art

This study has suggested that there exists a structural similarity between cartoons with Grawlixes and the art movements of the late 19<sup>th</sup> century.

In this analogy, every character is seen as a personification of different qualities, and in both disciplines these qualities are played against one-another in a similar way.



Before the start of modernism, the scientist became increasingly identified with the failing ideals of the enlightenment. In the works of this Romantic era, scientific method takes the position of the villain. The scientist is contrasted against the artist. The artist takes the position of the hero who represents the forces of intuition and imagination. The girl is the model or muse. The model serves to unify the background program with the objective world.



As the methods of the scientists get more exact, for example with the invention of linear perspective and photography, he gradually comes to resemble his mechanistic ideal. However, the more successful he is, the more he is restricted by his own methods and the greater the distance to the background program. As a consequence, the difference with the imaginative and intuitive forces also increases. And the bigger the gap between science and nature, the less accurate the scientists methods appear.

## Kandinsky & Grawlixes

To take a closer look at this relation between Grawlixes and abstract, non-objective drawing this chapter compares 'Programming with Grawlixes' to Wassily Kandinsky's book "Point and Line to Plane" (1926).

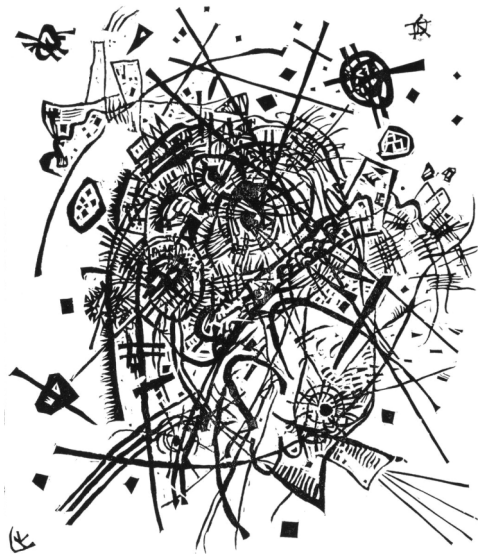
"Point and Line" is a meticulous and systematic theory of art, based on scientific reasoning and with the purpose of creating a *grammar of art* similar to musical notation.<sup>11</sup>

In Kandinsky's metaphors, a non-objective drawing represents a kind of music and music represents a kind of language.

The music he has in mind is a music based on counterpoint.

Kandinsky's line of reasoning is similar to the narrative path that leads to the production of Grawlixes.

And in this theory, every step resonates the same collision of opposite forces visible in the cartoons: *Silence vs. sound, absolute vs. relative, repose vs. mobile, calculation vs. intuition, simultaneous action vs. alternate action, sharply defined vs. complex etc.*



Wassily Kandinsky, *Kleine Welten VIII* (1922)

Kandinsky's art is the result of the loss of the material(ist) objective;

**"Abstract art(..)no longer leans upon the external shell of natural phenomena."** (p.104)

And just like many of the early cartoons, Kandinsky's theory orbits around the polarised conflicts of romanticism.<sup>12</sup>

**"the need of balance in the creative powers which can be grouped under two schematic heads - intuition and calculation"**(p.20)

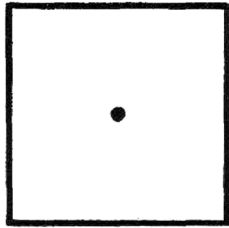
**"Contrasting (..) the laws of the two great realms-art and nature- ,(..) will finally lead to the understanding of the whole body of the laws of world composition and clarify the independent activity of each toward a higher synthetic order: external+inner."**(p.103)

By relentlessly dissecting the creative process behind his art, he puts himself in the position of a classic romantic antagonist; the reductionist scientist.

**“The ideal of all research is (..)the precise investigation of each individual phenomenon- in isolation.”**(p.21)

In this role, and with *microscopic* precision, he singles out, the most essential element in the drawing.

**“We must (..) start here with the proto-element of painting; the Point.”** (p.21)



*The prototype (urbild) of pictorial expression* (p.36)

A geometrical point that is at its core a fundamental unit of communication;

**“The incorporal geometrical point, of zero substance, as the ultimate most singular union of silence and speech.”**(p.25)

First; this point becomes a routine, a **“thing of habit”**(p.25)

Then; it collides with an unexpected force outside its own frame of reference.

**“Sometimes an unusual shock jolts us out of such a lifeless state into vigorous feeling”** (p.26)

The unexpected event is followed by a force or a disturbance from within that

**“tears the point out of its restricted sphere of customary influence”** and turns the dead sign into a living symbol to **“penetrate”** the world. (p.26)

The collision with the external force terminates the absolute, fixed position of the rigid point in the frame. And as a consequence it produces an automatic, infinite iterating trace line.

**“When a force coming from without moves the point in any direction, the first type of line results; the initial direction remains unchained and the line has the tendency to run in a course to infinity”** (p.57)



This line is a **“track”**, that follows **“the destruction of the intense self-contained repose of the point”** (p.57)

His program is driven outward by an inner necessity. The impossibility of the absolute point to maintain its ideal position fuels **“the desire of the infinite objective to express itself (like) a spring that drives onward”** (p.56)

Kandinsky's line resembles the Grawlix line because it is the trace of a rigid routine, that was disturbed by an external force.

But in Kandinsky's theory, the scientist is not the villain.

The scientist has lost his rigidity and his path is no longer cut-off. Because in the Modernist tradition; *science=good*.

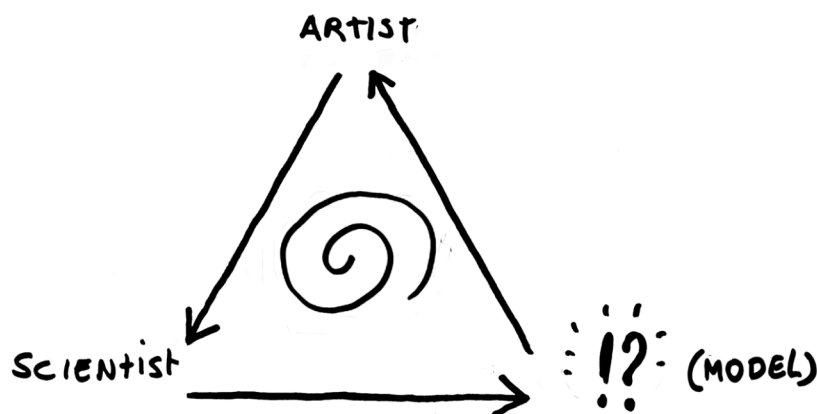
Instead, the material substance of the model transmutes into a spiritual 'substance'. Because it was the materiality of the model that incorporated the disputed ideals of the enlightenment.

Without a material objective, the reductionist path of the scientist continues inward, on a quest to capture the essence of the background program that governs his universe. Because, just like in the cartoon, characters and background program are all part of the mechanistic make-up of the *conceptual whole* of the drawing; and every time the scientist moves towards the virtual core, the relative distance between them does not decrease.

The less concrete the model, the greater the influence of the artist on the scientific method. Art and science enter a continuous process, adapting to a fluid, ever-changing paradigm.

This new, non-objective routine converges, ad infinitum, towards a continuously shifting horizon without ever arriving at a coherent conclusion.

And every step is presented as meaningful signifier in a creative language that is in a permanent state of flux.

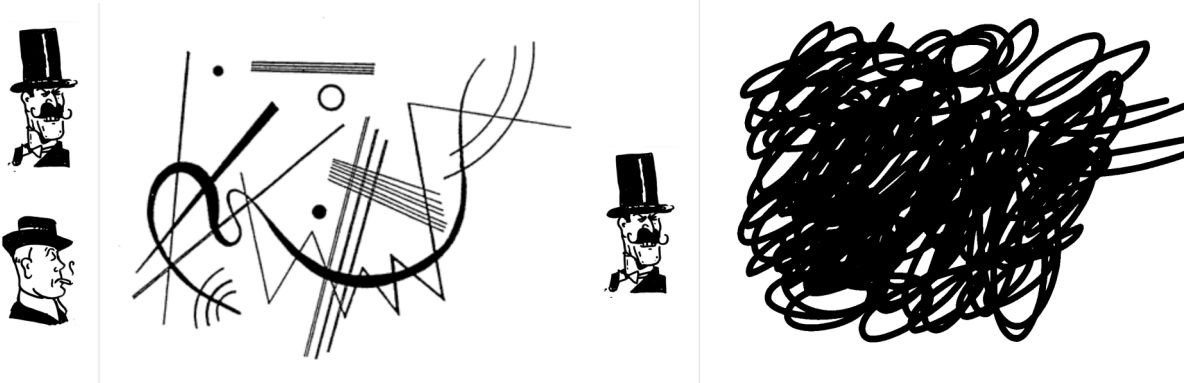


*The creative act is “freed from a purpose” that was holding it prison in a web of rules.<sup>13</sup> By dissolving the material objective, the artist and scientist appear to have freed themselves from some of the restrictions that determined their universe.*

## Differences

Kandinsky's line is the trace that follows the moving point. The Grawlix line however is the trace of the program *governing* that movement. Of the program that was *cut-off* from the action by an unexpected event.

That is, *Grawlixes always follow from the temporal loss of executive control*. And even though Kandinsky's line is an intuitive line, *this intuition is a tool that never operates outside of executive control!*



*In Kandinsky's program on the left, scientist and the artist are moved by the shifting model. In the Grawlixes program on the right there is no longer a concept, no model, there is only 'necessity' contrasted against an undefined space. The residue of failed reductionism.*

When an unexpected event cripples executive control, it also cuts-off the connection between the action and its initial purpose.

The appearance of Grawlixes draws attention towards the program that controls the movement of the point.

And this is why drawing Grawlixes is first of all a *psychomotoric* activity, and the lines that follow are a consequence of that activity.

Drawing Grawlixes is not a modernist discipline.

Drawing Grawlixes is about dealing with failure.

About dealing with the failure of the scientific method to dissect the process into discrete objects.

It represents a kind of objectlessness that is still charged with all the energy that was invested to bring the preceding sequence to a logical conclusion.

It is possible to see Grawlixes as a scrambled version of the background program that constituted the cartoon.

However, without the context of the narrative of the cartoon something is lost in the process.

Drawing Grawlixes is an irreversible process because the path leading up to Grawlixes cannot be recovered from its current shape.

What remains is the trace of a routine motor action program running 'out of control'.



Unlike Kandinsky's lines, for the Grawlixes in the cartoons there is no actual 'point' that is doing the moving. Still, it is possible to think of Grawlixes as a representation of the background program behind the moment Kandinsky's point is "jolted out of its lifeless position".

And consequently, the emergence of symbols- like the skulls and thunderclouds in the cartoons- can be interpreted as the first sign of the recuperation of executive control.

In other words; the more the drawing gets the status of a symbolic language, the more the agent is in control, the less likely the appearance of Grawlixes.

However in the theory advocated in this zine, there is no point, and the moment Grawlixes appear is stretched ad infinitum and becomes an artform of its own.



*In the art of Grawlixes, every drawing is the result of an erratic movement that followed a reductionist line of reasoning that inevitably ended at an inherent dualistic conflict. Because every line is at the same time a confirmation and a denial of existence.*

*In practice, every Grawlix line is a combination of speed and paradox; Speed cuts-off executive control, paradox cuts-off reason.*

## Jump

*“Impulsion from need starts an experience that does not know where it is going”* (John Dewey; *Art as Experience*. (1934))

The uniform and repetitive aspect of a routine is often metaphorically associated with the workings of a machine.

This zine has argued that this machine metaphor also underlies comics with Grawlixes.

In this routine=machine metaphor, the routine becomes a mechanical ‘thing’ that is dead or unaware.

Hence, when the program governing the routine is cut-off by some unexpected event and its trace comes to the foreground into attention, the experience that follows is the equivalent of a machine running ‘out of control’.

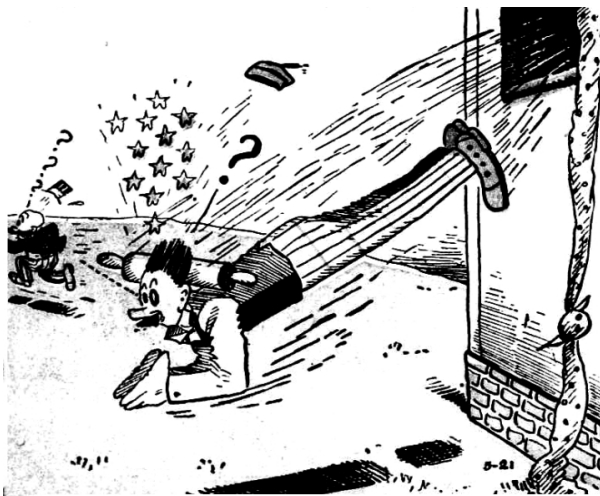
The unexpected loss of executive control catapults the routine out of its infinite loop, and what follows is an involuntary- outward movement *of the whole organism*.<sup>14</sup>

If the routine was a metaphorical state of death, then the state that is evoked with the sudden appearance of Grawlixes into attention is a state of being alive and of being ‘in the moment’.

And *if* the program behind the shape of Grawlixes is the same program that provides the structure of objectless drawing, then the essence of objectless drawing is to evoke and extend this experience of being alive.

**To conclude; Grawlixes are essentially an uncalculated and uncontrolled jump into the unknown.**

*And cartoons with Grawlixes can be read as a set of conditions for that jump.*



Fisher, Bud. *Mutt and Jeff. Quite so, Quite so..*(1920)

*(In cartoons this jump into the unknown is often not just uncontrolled but also involuntary.)*

## Summary

The goal of this series was to show how so-called Basic Grawlixes may represent an alternative view on non-objective or objectless drawing.

The study of Grawlixes is not just an abstract intellectual discipline because Grawlixes are observable and measurable psychomotoric motion lines that appear in cartoons. Basic Grawlixes are grounded in physical experience and the general shapes of Grawlixes are more or less consistent over time, and independent of cultural differences.

At the same time, Grawlixes are not the product of a single formula or executable instruction that always gives exactly the same result in a particular situation. Grawlixes prompt instructions. Identical situations often produce different *combinations* of Basic Grawlixes, depending on the preferences and style of the individual artist.

This shows that drawing Grawlixes can not be restricted by a set of rigid, static and invariable rules. At the same time drawing Grawlixes is not a completely arbitrary or random activity. Nor is the shape of Grawlixes a purely aesthetic choice because their form is related to their function as automatic pattern generators.

Therefore Grawlixes are not a post-modern phenomenon. But if modernism is bounded by natural laws and postmodernism is not, then Grawlixes can be seen as representing the revolutionary turmoil that sometimes exists between them.

Grawlixes are ‘traces’ that can not be reduced to discrete objects or particles. At the same time, Grawlixes are not some mysterious ‘creation out of nothing’, they are the product of an embodied physical process.

You could call Grawlixes a spiritual phenomenon in the sense that they have no mass. But you cannot call them spiritual as in ‘incorporeal’ because they are connected to specific physical movement.

Therefore Grawlixes do not imply the presence of some vague spiritual or religious entity. They are the remnant of a real and normal, everyday psychophysical activity.

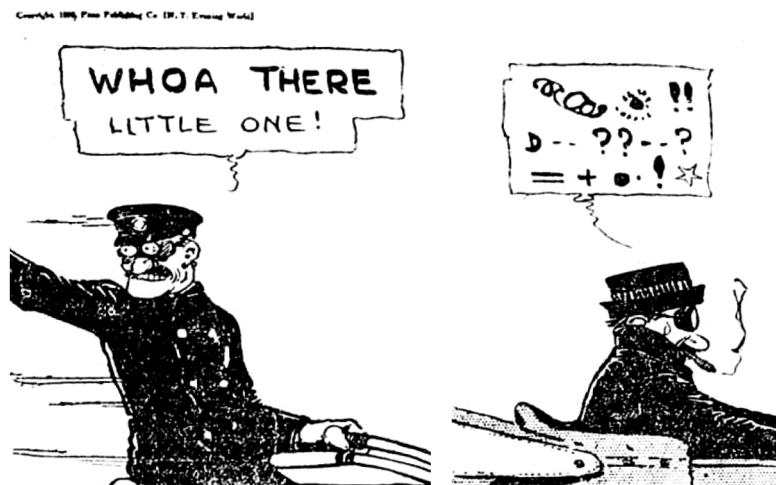
The ‘magic’ of Grawlixes is that they are internally motivated. The difference between drawing with Grawlixes and drawing without Grawlixes is like the difference between modulating an electronic feedback oscillator and playing a piano. It is the difference between moving and being moved. All sounds coming from a the piano are effortful, whereas from the oscillator they are not, they are automatically generated. On the other hand, for the piano, stopping is effortless, for the oscillator it is not, it requires a deliberate action (turning a switch).

Something that Grawlixes lack.

The narrative of cartoons with Grawlixes represents a critique on the rigid use of control as well as on routine and habitual patterns of behaviour. As a consequence, drawing Grawlixes as an artform is also critical on these issues.

Grawlixes also address the problem of free will. The characters in the cartoons are submitted to a highly deterministic pattern running on the background of the drawing. The unexpected event brings this relation to the foreground.

In the theory of Grawlixes, control proved to be an illusion. However, the *experience* of the temporal loss of executive control was not. And even though this inevitably means that it is not possible to fully control drawing Grawlixes, the *evocation* of the loss of control is now under the control of an executive agency.



Joe's Car; two guesses. Forsythe, V. (1920)



## Appendix

### The collapse of the concept of space and time

*“the transformation of the material basic plane into indefinable space offers the opportunity of increasing the span of time”*

Wassily Kandinsky (*Point and Line to Plane*)

The basic structure of the cartoon is the way meaningful events are organized in space and time by a sequence of frames.

But sometimes, conflicting concepts of time and space collide:

When motion-lines appear in a comic, this is an indication that there is a sudden difference between the rate of the motion of an object in space and the rate of the motion of the frame sequence in time.

The acceleration of the object creates a conflict between the concept of a frame as a ‘single slice of time in a linear sequence of events’, and a frame as a ‘warped space-time continuum’, where objects are not fixed to a single location but move around the frame in their own unique time paths’<sup>15</sup>

*Two examples;*



*The Flash#144, Gardner Fox a.o. (1964)*



*the Flash#150, Gardner Fox a.o. (1965)*

*The ability to perform multiple moves within a single frame is a superpower with surprising benefits; you can influence the natural cause of events. (note that when you draw, you cannot actually draw faster than light speed, but, you can draw faster than the speed of analytical thought.)*

These panels are in stark contrast with the concept of a cartoon as a ‘sequential art’, because a path-without-end holds the view of the reader in place.

The reader’s position has joined with the characters in the cartoon, who are infinitely looped within a cruel game.

In order to continue reading, the reader is forced to cut himself out of the loop that connects him to the narrative path that guides his attention (=laughter).

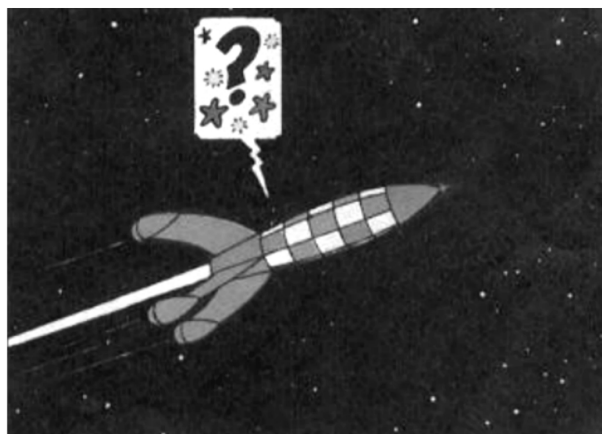


*Clarence the Cop*, C.W.Kahles (1903)

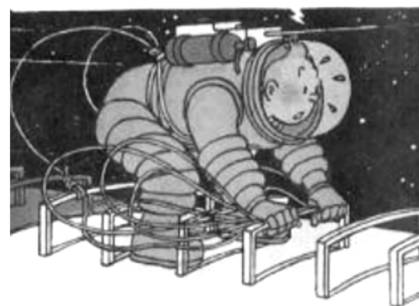
*In theory, the reader can halt at the panel of Clarence caught in the door and read the looped action forever and ever. It has no beginning or end, and therefore it is potentially a real infinite loop in the mind of the reader. In other words; its representation is like an executable code for continuous action. (and laughter is the automatic response that frees or externalizes the continuous internal motion created by the infinite loophole)*

## Frames of Reference

Unlike the motion lines in the examples above that follow a moving object in space, Basic Grawlixes are lines that are a product of some internal movement. They appear in the frame when the habitual program *behind* the action is cut-off or blocked.



Tintin calling... I got a terrific jolt but I managed to hold on...  
You are right on course...



*Tintin; Explorers on the Moon*, Hergé. (1954)

In this 'reversed' example, the habitual program of the character (Tintin) is not physically blocked by something, instead his program is 'outrun' by the accelerating rocket.

Grawlixes become visible because the frame functions as a *non-inertial frame of reference* that follows the velocity of the rocket.<sup>16</sup>

The appearance of Grawlixes *emphasises* the difference with the inertial frame of reference that follows the character.<sup>17</sup>

The sudden difference between the habitual program and the frame of reference gives the movement of the program a *SUBSTANCE* that is similar to so-called motion lines.<sup>18</sup>

The cut-off routine followed by the loss of executive control bring the program governing the routine, that was running automatically on the background, back into attention. This makes the motion *VISIBLE* in the panel frame of the cartoon. For a single moment, the experience of the character appeared to be truly disconnected from the temporal-spatial structure of the cartoon universe; *as-if the drawing actually was an autonomous entity!*

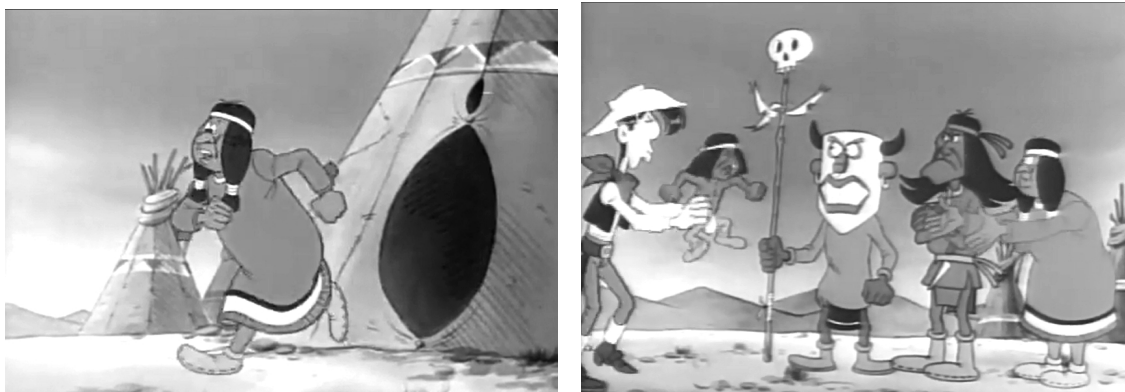
## Grawlixes and the movies

In this lucky Luke story the movement of the little Indian is restricted by lucky Luke and Grawlixes appear indicating that the motor-program governing the action continues *despite* the blocked action.



*Lucky Luke; Canyon Apache, Morris & Goscinny. (1971)*

However, as the following stills from the TV series show, Grawlixes do not appear when the very same sequence is animated. Why is this?



*Lucky Luke; Canyon Apache, TV series(1991)*



Grawlixes are the product of a program that runs *ad infinitum*.

True Infinity is a philosophical or mathematical concept, it is not something you can record on film.

However, unlike the film reel, comics do not have a fixed time limit. You can read them back and forth for as long as you like.

In the movies, the viewer is a passive observer, reading comics however, requires for the reader to be actively involved.<sup>19</sup>

As a consequence, reader and comic become part of a single system.

In order to grasp a panel that represents a recurring loop, the reader is forced to actively participate in this loop. Whereas in the animation, the frame itself is moved by the projector that takes the viewer automatically to the next frame.

This leads to the remarkable conclusion that -if Grawlixes are part of the inherent structure of the cartoon, and Grawlixes are not part of the structure of the movies, then the Lucky Luke in the movies is a fundamentally different character than the Lucky Luke in the cartoons!



*Bobby Bumps' Fourth (Earl Hurd, 1917)*

*Polly wants a cracker, but the expected cracker turns out to be a firecracker.*



*Some early films do show Grawlixes, however, due to the relentless mechanical progression of the film reel on the projector, these were only visible for a split second.*

*As a consequence, most of their visual content is lost in the medium.*

*In comics however, even if, for the character, the release of Grawlixes happens in an instant, they do not for the reader! In the drawing, Grawlixes remain visible and can be experienced again and again.*

*Therefore, the ephemeral quality of Grawlixes makes more sense in comics than in the movies.*<sup>20</sup>

## Grawlixes and the Brain

*“The shift from attention-demanding and awareness-hogging action to automatic and unconscious action is accomplished by a shift of neuronal resources from the prefrontal cortex to the basal ganglia”*  
Christof Koch, *Consciousness: Confessions of a Romantic Reductionist* (2012)

If, as this study suggests, Basic Grawlixes are a crucial element in the structural whole of the cartoon, and that this structure also includes the psychology of the reader and the artist: Where are Grawlixes located in the brain?

Associating specific brain functions with Grawlixes is pure speculation.

However, scientific research on related subjects do provide some possible suggestions as to how this relation might work.

Knowledge of brain functions is generally obtained from specific case studies:

### 1. Laterality

In the 1960s, there was no other cure for people who suffered from a special kind of epilepsy than by cutting off the connection, *corpus callosum*, between the two hemispheres. Studies with these so-called “split brain” patients demonstrated that the left side of the brain has a preference for analytical tasks, sequential processing, object based reason and logic, and for language functions like grammar and vocabulary. Whereas the right hemisphere is dominant for spatial tasks, intuition, and for parallel processing. It can only produce rudimentary words and phrases, but contributes emotional context to language.<sup>21</sup>

### 2. Executive Control

Current ideas about the relation between executive functions and specific locations in the brain originate from the famous case of Phineas Gage. Gage, an American railroad construction foreman, survived an unlikely accident in 1848 when an iron bar pierced his skull and seriously damaged his left frontal lobe. The medical reports on the changes in his behaviour led to identify several regions in the left pre-frontal cortex with decision making, planning, judgement, emotion regulation and the inhibition of inappropriate responses and impulse control.

And eventhough there was a certain level of exaggeration of the symptoms in the reports following Gages death, there appears to be some consensus in the medical world on this relation between executive functions and circuits in the prefrontal cortex.<sup>22</sup>

### 3. Routines and Swearing

The basal ganglia is associated with movement control problems in Parkinson and Tourette Syndrome.<sup>23</sup>

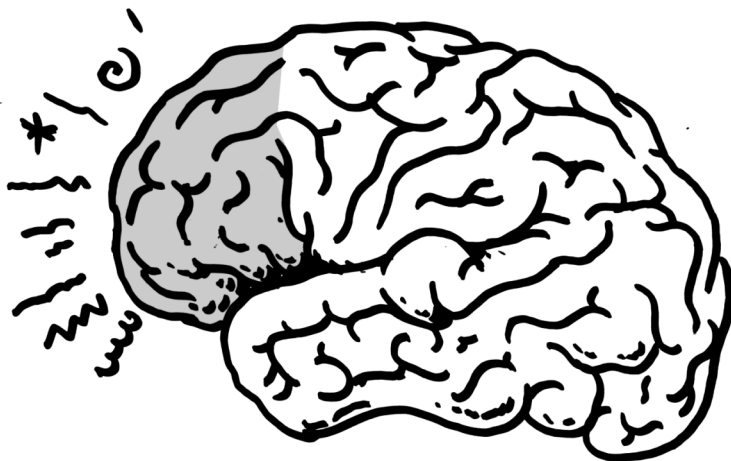
Case studies indicate that the basal ganglia plays an important role in automatic motor behaviour and routines.

The basal ganglia is like a habit “learning machine”.<sup>24</sup>

Together with the frontal lobes, the ganglia is part of the planner mechanism that drives pattern generators to generate organised motor activity.

The basal ganglia is also associated with automatic or non-propositional speech. Studies of individuals with Tourette syndrome implicate the basal ganglia system as a key player in Tourette syndrome and coprolalia (*in-voluntary swearing or the involuntary utterance of obscene words*).<sup>25</sup>

If, as this study has also suggested, speech is just another type of movement, and that this movement can either be suppressed or released by the basal ganglia, it makes sense that the basal ganglia is involved in both swearing *and* the production of Grawlixes.<sup>26</sup>



The production of Basic Grawlixes in the brain might look something like this;

*An unexpected event temporary shuts down the frontal cortex.*

*Routine motor programs, running on automatic pattern generators organized in the basal ganglia, are no longer inhibited. Their traces appear as Basic Grawlixes in the frame. As a consequence, attention is drawn to them and this changes their nature from automatic background patterns into effortful operations. They are no longer aimed towards a specific goal.*<sup>27</sup>

## 4. DIY Illumination

Have a look at some of the effects of a seizure for patients with Frontal lobe epilepsy.

A quick comparison with some common Grawlixes shows a lot of similarities.

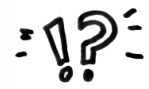
*"The symptoms typically come in short bursts that last less than a minute. During the onset of a seizure, the patient may exhibit abnormal body posturing. In rare cases, uncontrollable laughing or crying may occur. In most cases, a patient will experience a physical or emotional Aura(..)"<sup>28</sup>*

*An aura sensation can include some or a combination of the following:*

Bright lights and blobs



Feelings of confusion



Zigzag lines



Feeling as if you are getting warmer or overheating



Vibrating visual field



Sudden Perspiration



Kaleidoscope effects on visual field



Weakness, unsteadiness



-auditory hallucinations

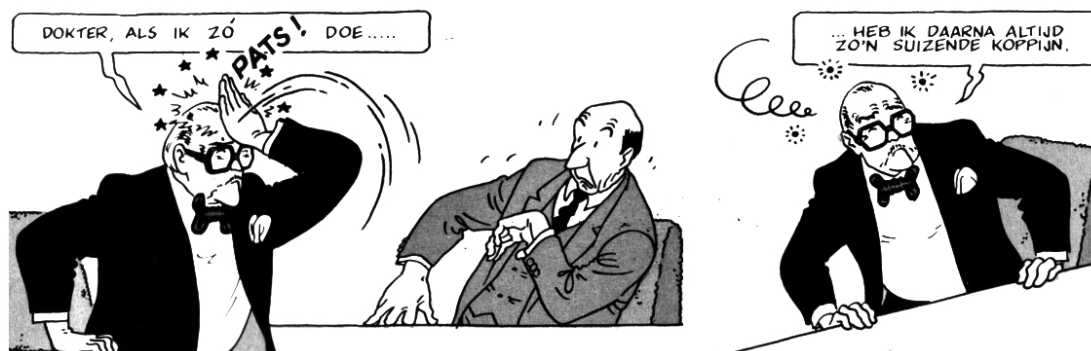


Being unable to speak properly, such as slurred speech or gibberish.



Temporary losing control can sometimes open a door to new insights.

The illuminating effects of mild frontal lobe seizure were already familiar with several agents in the field.<sup>29</sup>



*Sjef van Oekel discovering diy illumination. ("Doctor, everytime I do this (\*) I get this buzzing headache."). Theo van den Boogaard & Wim T. Schippers (1985)*

The following drawing shows a hypothetical model of the relation between automatic and pseudo-controlled modes of operation under a single automatic system in the cartoon.

**SINGLE PANEL FRAME**

**LANGUAGE**

**IMAGE**

**ASSOCIATIVE WORDS (CURSES)**

**ASSOCIATIVE IMAGES (SKULLS, CLOUDS)**

**ACTION OF TIME**

**CHANCE**

**E-motion**

**MUSCULAR MOVEMENT**

**ATTENTION SELECTOR**

**EXECUTIVE CONTROL**

**CENSOR**

**CONTROLLED WRITING**

**AUTOMATIC WRITING**

**MOTOR PROGRAM**

**AUTO-MATIC**

**CONTROLLED DRAWING**

**AUTOMATIC DRAWING**

**OBJECT**

**GOAL**

**IDEAL**

**MECHANISM**

**RATIO**

**FEEDBACK**

**INHIBIT**

**SCRIBBLE**

**CUT**

**UNEXPECTED EVENT**

**SCHEMA**

**"GRIFF"??**

**SKULLS, CLOUDS**

Because the unexpected event and the collapse of the loop-of-control happen within a single frame, there is no clear causality. The model runs on a timeline but the feedback loop between the event and the collapse connects both in an instant. That is, there is from a frame as a slice-of-time- point of view no way of determining whether the lost object causes the unexpected event or vice versa.

*The model represents the collapse of the narrative sequence and the loss of control of the rigid character as part of a single experience or event.*

The cartoons below are an example of how the position the young and the old may switch in relation to the rigid and the elastic:



Morris & van Hartog Banda, Lucky Luke. *Chasse aux fantômes* (1992)

*First the young exposed as the rigid character: Walking, with your eyes fixed on the person walking in front allows you to move along more or less automatically and direct your attention elsewhere. As your mind wanders-off you suddenly trip over an object blocking your path.*

*As you fall down, your attention shifts almost immediately from the automatic routine to controlled awareness. But by the time you are able to consciously asses the situation you find yourself on the floor.*



*And then the old: A spiral, an explosion, a thundercloud, an exclamation mark and a star appear inside the balloon because the anticipated path of the old lady is interrupted unexpectedly.*

*The mental program responsible for the original movement continues automatically, and more or less outside executive control inside the text balloon.*



## NOTES

<sup>1</sup> This resembles the so-called ‘psychological refractory period’: “*Psychological refractoriness is the delay in the response to the second of two closely spaced stimuli.*” (Motor Control and Learning 4<sup>th</sup> edition, Schmidt A.R., Lee D.T. Human Kinetics (2005),

<sup>2</sup> “*The exclamation mark is a punctuation mark that is usually used after an interjection or exclamation to indicate strong feelings or high volume*” (wiki). One of the conclusions that can be drawn from this study is that the relation between Grawlixes and exclamation marks is based on the concept of ‘inner-necessity’ i.e. the exclamation mark in Grawlixes is an automatic, involuntary consequence of an already initiated automatic movement towards a ‘goal that was unexpectedly removed from the process’.

<sup>3</sup> See: Programming with Grawlixes #2

<sup>4</sup> The Automatic vs. Controlled dichotomy is a theory with a strong parallel to on psychology of early 20th century called Dual Process Theory: “*In psychology, a dual process theory provides an account of how a phenomenon can occur in two different ways, or as a result of two different processes. Often, the two processes consist of an implicit (automatic), unconscious process and an explicit (controlled), conscious process.(.) The foundations of dual process theory likely comes from William James*” (wikipedia.org/wiki/Dual\_process\_theory)

<sup>5</sup> as in a ‘running gag’ (see also; Programming with Grawlixes#2)

<sup>6</sup> Psychologist Daniel Kahneman calls the automatic process ‘**system 1**’, and the controlled process ‘**system 2**’:

- **System 1:** Fast, automatic, frequent, emotional, stereotypic, subconscious
- **System 2:** Slow, effortful, infrequent, logical, calculating, conscious

You could say that the cartoon sequence with Grawlixes runs on system 1, and that the system 2 practiced by the villain proves to be an illusion as it fails again and again. The Automatic concept in the theory of Grawlixes is similar to Kahneman’s description of physical causality;

“*The commonly accepted wisdom was that we infer physical causality from repeated observations of correlations among events. We have had myriad experiences in which we saw one object in motion touching another object, which immediately starts to move, often (but not always) in the same direction. This is what happens when a billiard ball hits another, and it is also what happens when you knock over a vase by brushing against it. Michotte had a different idea: he argued that we see causality, just as directly as we see colour. To make his point, he created episodes in to which a black square drawn on paper is seen in motion; it comes into contact with another square, which immediately begins to move. The observers know that there is no real physical contact, but they nevertheless have a powerful “illusion of causality.” If the second object starts moving instantly, they describe it as having been “launched” by the first.*”

Kahneman, Daniel. Thinking Fast and Slow, Farrar, Straus and Giroux (2011)

In the cartoon, the natural and mechanistic routine are both part of system 1. System 2 operates outside the cartoon, it is the domain of the artist.



<sup>7</sup> From the (now obsolete) ‘Triune’ model of the evolution of the brain: First there was the Reptilian Brain (Basal Ganglia) then the Paleomammal Brain (Limbic System) and finally the Neomammal Brain (neocortex)- (Paul D MacLean 1960)

<sup>8</sup> The Character is a copy of Charles Dickens’ classic antagonists Ebenezer Scrooge (1843) and Gradgrind (1854), he also appears as “Jack Snork” in Thimble Theatre, in Hanna Barbera’s Wacky Races as “Dick Dastardly”, as “Professor Fate” in the Great Race, and in Disney’s Scrooge McDuck.

<sup>9</sup> much like a waterbed or communicating vessels.

<sup>10</sup> See also the game of rock-paper-scissors and the side-blotched lizards in evolutionary game-theory.

<sup>11</sup> Kandinsky W. Point and Line to Plane, (1926) Dover Publications (1979)

Kandinsky W. Concerning the Spiritual in Art (1912)

<sup>12</sup> Kandinsky on romanticism: *In a letter to Will Grohmann Kandinsky wrote that he hoped that his audience would grasp 'what lies behind my painting, and are no longer content with the observation that I use triangles or circles [...] It must be finally understood that form for me is only a means to an end, and that I am so thoroughly and completely concerned with form - in my theories, too - because I want to penetrate its inner nature. You once mentioned the word 'Romantic', and I was delighted [...] Today there is a 'New Objectivity' - there ought to be a New Romanticism [...] The meaning, the content of art is Romantic'* (quoted in Frank Whitford, *Kandinsky: Watercolours and other Works on Paper* (exhibition catalogue), The Royal Academy of Arts, London, 1999, p. 69).

<sup>13</sup> Kandinsky W. (1926)

<sup>14</sup> In a way, Grawlixes echo an accidental version of Kierkegaard’s famous ‘leap to faith’: An uncontrolled movement outward, propelled by the paradox of romanticism; where reason collides with the “knowledge of the unknown”.

Kierkegaard’s theory was published right before the first comics appeared.

*“as long as I am holding on to the demonstration (that is, continue to be one who is demonstrating), the existence does not emerge, if for no other reason than that I am in the process of demonstrating it, but when I let go of the demonstration, the existence is there. Yet this letting go, even that is surely something; it is, after all, mine. That [my contribution]. Does it not have to be taken into account, this diminutive moment, however brief it is – it does not have to be long, because it is a leap.”*

(Concluding Unscientific Postscript to Philosophical Fragments 1846)

quoted from *The Cambridge Companion to Kierkegaard*. (Hannay A., Marino G.D.)

<sup>15</sup> For a more in depth discussion on the perception of time in comics see also; Cohn, N. ‘*The limits of time and transitions: challenges to theories of sequential image comprehension*’, *Studies in Comics* (2010).

<sup>16</sup> In classical physics and special relativity, an inertial frame of reference (..) is a frame of reference that describes time and space homogeneously, isotropically, and in a time-independent manner. The physics of a system in an inertial frame have no causes external to the system.(..)All inertial frames are in a state of constant, rectilinear motion with respect to one another; an accelerometer moving with any of them would detect zero acceleration.

<sup>17</sup> For example in; LChuang Yang;

“Humans interpret spaces differently depending on the functions they serve. Attention can be flexibly and strategically assigned to a reference frame depending on the contingencies of the task” in; *Prefrontal attention and multiple reference frames during working memory in primates*, Chinese science bulletin (2013)

<sup>18</sup> Acceleration can also be part of a routine and in that case there is no necessity for it to be visible in the frame.

<sup>19</sup> “As soon as a screen can produce something that can move, it becomes a passive medium, whereas I feel that comics are a very active medium” Chris Ware, ‘There is a magic when you read an image that moves in your mind’, the Guardian (11,10,2013)

“This is the prime difference between comics and film: Film is a spectator medium, while comics is a participatory medium” Will Eisner, <http://www.avclub.com> (Jan 5, 2005)

<sup>20</sup> Most text balloons disappeared from films with the introduction of sound.

However, the balloon is not just a space for spoken word but also for thought and internal turmoil, and because in sound film there are no balloons, part of that content is lost in the translation.

But why do Grawlixes nevertheless show up in the animated Ma-Dalton scène below?



*Lucky Luke; Ma Dalton. TV Series (1984)*



What is cut-off in the example above is not the path of the rigid character but *the visual field of the observer*. And therefore, Grawlixes appear in the movie as the *necessary* evidence that there is action that *needs* attention, despite the fact that it is happening out of sight.

<sup>21</sup> Especially Roger Sperry, see; *the Split Brain Experiments*, [www.nobelprize.org](http://www.nobelprize.org) (2003)

However, the concept is often oversimplified. For a critique on "hemisphere mythology" see for example; Hines, Terence. *Left Brain/Right Brain Mythology and Implications for Management and Training*, The Academy of Management Review Vol. 12, No. 4 (Oct., 1987)

<sup>22</sup> Damasio, Antonio. *Descartes' Error: Emotion, Reason, and the Human Brain*, (Putnam Publishing, 1994)

<sup>23</sup> Jay, Timothy. *Why We Curse, A neuro-psycho-social theory of speech*. (John Benjamins b.v. 2000) p.66

<sup>24</sup> Ann Graybiel in; *Probing the Deep Brain*, Brain Scan. Issue no.26 (2003) Mc Govern institute for brain research at MIT.

<sup>25</sup> Jay, Timothy. (2000) p.41

<sup>26</sup> Drews, Michelle. *The Science of Swearing: A look into the human MIND and other less socially acceptable four-letter words*, [harvardsciencereview.com](http://harvardsciencereview.com) (January 23, 2014 )

<sup>27</sup> See also; About breaking a routine in relation to the basal ganglia and frontal lobe:

Okhide Hikosaka Masaki Isoda, *Switching from automatic to controlled behavior: cortico-basal ganglia mechanisms*. Trends Cogn Sci 14: 154-161. (2010)

About the basal ganglia and visual hallucinations:

F A Middleton and P L Strick. *The temporal lobe is a target of output from the basal ganglia*. Proc Natl Acad Sci USA. Vol 93 (1996)

About the Ganglia and cognitive pattern generators:

Ann Graybiel. *The basal ganglia and cognitive pattern generators*. Schizophr Bull 23 (1997)

<sup>28</sup> (Wikipedia) Frontal Lobe Epilepsy

<sup>29</sup> Some more examples:



*(1)Max Taber, One flew over the cuckoo's nest (1975)*

*(2)The three stooges (inspired by Laurel and Hardy and James Finlayson) were well-known forehead-slappers.*

*(3)Homer Simpson slapping himself out of his dead routine- d'oh!*

!!?  
..