

Gestalt Theory: History and Modernity

Hellmuth Metz-Göckel, Technische Universität Dortmund

29.9.2012

Introduction

Two principles have determined the development of Gestalt theoretical thinking from the beginning on up to today.

- (1) The first is the holistic perspective, which describes the relationship between parts and the whole and/or the dependency of psychic processing from the context, in which things are embedded.

The classical example is the *melody* which always has a special Gestalt quality, emerging from the elementary interaction of the parts, the 'tones'. The parts often derive their nature and purpose from the whole,

And the parts receive entirely different characters when they are considered in isolation.

- A mere summation of the individual elements cannot account for the whole – a 'melody' has another quality than just the sum or sequence of the 'tones'.

A melody can be *transposed* or played by an orchestra or whistled by a person – and it keeps its special Gestalt quality. On closer inspection these phenomena led to the very important central basic assumption that 'the whole is other than or different from the sum of its parts'.

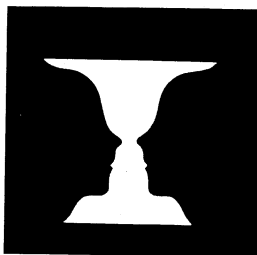
- (2) The second basic principle means that psychic processes tend to good Gestalts, to 'Prägnanz'.

Elements tend to be grouped together if they are part of a pattern which is as simple, regular, balanced or coherent as possible. Pinna (2011) characterizes it more concisely: The simplest and most stable organization.

The starting point has been research of *the laws which determine our perception* for which Gestalt Theory has become famous, but this is not its only merit, as you will hear, because the prägnanz-principle is simultaneously a relevant organizing factor in memory, personality, motivation and the coordination of movement.

Some examples from perception

We classify most of what we see either as object or as background, we may speak of figure-ground-segregation. One well-known example.

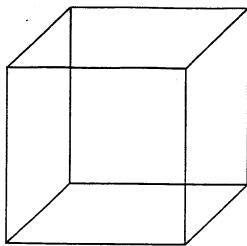


We may see two faces looking at each other or a goblet.

The figure-ground-relations may also be hidden as in the following example.



But I will demonstrate the Prägnanz-Principle using another figure, the Necker-cube.



We see it immediately as a three-dimensional form, as a cube, due to the law of good figure. It is rather difficult so realize the drawing as a sketch in the plane. As a two-dimensional shape it is very irregular. As we see, when we only look for the outline of the figure.

Problemsolving and Thinking

The problemsolving research began with contributions of the gestalt theoreticians (Köhler, Duncker, Wertheimer), their contributions are relevant up to this very day.

We must emphasize that a problem is a state of lacking “prägnanz”.

The gestalt-theoretical bases are outlined first:

Productive thinking and problem solving consist of analyzing a problem situation systematically - and not after trial and error – and to conceive the problem situation structurally, to identify gaps and unclear places, to see it under different perspectives

- *that leads perhaps to re-structuring of the whole situation which may then be seen completely different.*

Then we may understand the relations of conditions and facts in another way.

Simple examples for this could be the lines of a technical equipment, or the structural relations in a family as it may be of interest for a family-therapist.

A central term is insight: When the crucial restructuring has taken place we may feel suddenly insight being accompanied by the knowledge to have comprehended the relevant requirements for the solution of the problem, to have found the correct solution. One calls this sudden recognizing of the relevant structure “Aha” effect.

Famous are the observations of Wolfgang Köhler in his research with chimpanzees. He accomplished these investigations in the years from 1913 to 1918 in the chimpanzee station of the Prussian Academy of Sciences on Tenerife. These studies were not animal-psychologically aligned, but Köhler was concerned with the nature of intelligence in general,

which he believed to be able to study with these subhuman creatures without self-impression biases, and deceptions. The corresponding book - KÖHLER (1921) – has been again and again edited as Reprint, - so you can see how valuable it was assessed by the scientific community.

Köhler (1921) formulated the basic and fundamental ideas to the psychology of problem solving.

For the solution of many problems is in most cases the question of great importance: what can I use, what has an appropriate function? This question has been central in his research with the chimpanzees.

For instance, a luring fruit for the animals was placed out of range, i.e. outside of the cage, where they couldn't reach it with their hands.

In these situations it occurred that the animals used

- a hat brim (Hutkrempe),
- a straw bundle,
- a branch of geranium, in order to get to the fruit.

That was not successful because these tools did not have the physical attributes in order to reach the banana. *Köhler designated these attempts nevertheless as “good errors”, contrary to for instance the attempts with a round stone, which he regarded as “bad error”.*

Why? Now: A longitudinal extending thing in the case of the good errors, is structurally appropriate under these circumstances.

- (3) On the other hand the use of a round stone, which did not fit the distance between the lattice bars, was perfectly inadequate, and therefore a structural error. The animals have thereby used something which did not have the appropriate functional value and therefore were unsuccessful.

Perhaps the terms functional value and structuring and restructuring can be illustrated by the following example: Please imagine:

You are the teacher of a class of youth and you are staying with your group on the third floor of a youth hostel. Suddenly a fire is breaking out. There are then perhaps two different problem mastering strategies:

- (A) the “fire has to be put out“, and
- (B) „the people have to be saved“.

Depending on these strategies the perception of the environments are perfectly different with regard to functional value of an action and the structural conditions of the context.

In case of „the fire must be extinguished“ the person will search in the environment after “structurally adequate” means and tools which *can be suitable to attain this goal* such as water, covers etc.

These are completely different things than in the case in which the *saving of human beings is predominant*.

Here other environmental conditions and only these are considered: Stairways, doors, window, etc.

(A) fire has to be put out	(B) the people have to be saved
extinguisher	fire escape, stairways
water	doors
covers	windows
	Sheets (to use them as ropes)

The question about something with a certain functional value is not trivial if an object that could help with the problem solution, is normally used in another function.

- Something has rolled under a cabinet. You don’t have a stick to get it out. What you have is a newspaper, which you had just been reading.
- It is perhaps not easy to think you may be able with the help of the newspaper to reach the hidden object, but it may be possible: by rolling it into a tube and instead get something like a stick.

Motivation- and Personality Psychology

Let us turn to the motivation and personality theory of Kurt Lewin. Central theoretical assumptions can be likewise assigned or related to the Prägnanz principle.

He postulated that certain areas of the person can be active and in tension due to some motivational force. Tension is an unpleasant experience, and the person tends to dissolve it. It thus can activate and initiate motivational processes.

Both an

- intention to do something (which he called “quasi-needs”) as well as
- a need (e.g. hunger, sexuality)

can lead to set up a tension, which motivates the person to begin the action and complete it.

A tension may also develop, if people are prevented to bring a task they were acting on to an end.

Ovsiankina (1928) accomplished the following experiments. (I quote from the text:)
„The technique of the experiments was essentially as follows: an activity was interrupted by asking the subject to do another task. And after a certain interval a situation of relative freedom for the subject was created. The tasks and the materials, to work on it were still available. There resulted a frequent resumption (79 %) of the interrupted activity.“ (242)

“The proof that the resumption (or a repetition of activity) fails to occur as soon as the tension system is discharged by the attainment of the goal is important for the character of the quasi-needs as tension systems.

It is shown that a substitute satisfaction can have the same effect and, further, that the presentation of the half-finished work of another person does not, as a rule, cause a tendency to completion.” (243)

Dissonance-Theory

Many basic ideas of the gestalt theory may be useful to model social-cognitive processes.

It has – for instance – often been postulated that behaviour is dominated by a tendency to consistency, which we may also subsume under the ‘Prägnanz’-principle.

- You don’t want to be seen the next day as different from today.
- And you think you might be seen as inconsistent if you are expected to achieve very well in profession and school on the one hand and on the other to be extraordinarily lazy.

One of these theoretical approaches goes back to Leon Festinger, who was one of the first US-American pupils of Kurt Lewin after his emigration.

The basic idea: We all tend to be consistent in our thinking and in our behaviour.

This assumption implies that a tendency exists to avoid contradictions in experiencing. Such psychic contradictions lead to imbalance, which develops dissonance.

Consistency (also equilibrium or balance) is a basic term of that group of social-cognitive theories, especially to Dissonance Theory of Festinger (1978). He showed that his theory was very *fruitful to describe and explain changes in attitudes; it is very well applicable for changes in behaviour due to changes in attitudes or vice versa.*

In addition the theory is of great interest, because from its assumptions often non-trivial hypothesis (which in part everyday life understanding contradicts) can be confirmed.

The term cognition is located in the centre of the approach and it comprises any perception, opinion, conviction, conclusion, attitude or the like, which one can have on the environment or on oneself.

After Festinger cognitions can stand in relevant or irrelevant relations to each other:

There are cognitions, which exhibit among themselves *relevant and consistent relations*:

- I am German Automobile Association member,
- German Automobile Association has a very good breakdown service.

These two cognitions are consistent with another. But

- (x) I smoke a lot,
- (y) smoking causes cancer of the lungs”

are inconsistent or imbalanced. To know that smoking is very bad for your health, and that you are a smoker will create 'dissonance', which the person will try to avoid or to counteract by means of cognition. *Very complex processes may take place and they may be unlogical or even false, but the person wants to be consistent.*

In this case:

The person may remind that

- (A) his grandfather was heavily smoking but lived a very old age.
- (B) Or the person may doubt that the hypothesis is true and that the connection of smoking and cancer is scientifically not convincingly proved.
- (C) The best solution would simply be to stop smoking (which is rather seldom)

This example shows that dissonance is experienced as unpleasantness and the individual sets energies free to interrupt or moderate this emotional state, in reorganizing cognitions (that can be also the perception of one's own behaviour).

Recent developments

Contrariness as phenomenal quality

Since the early beginnings of perceptual psychology the experience of identity, similarity, connectivity, causality has been in the focus of discussion.

But contrariness or oppositeness has been neglected. Savardi & Bianchi (2006) and Bianchi & Savardi (2008) did research on this topic. They defined contrariness as the maximum variation within a dimension (maximum difference) while diversity should be the sum of differences (i.e. the sum of contraries in many dimensions).

- We may experience contrariness or diversity perceiving these two figures.
- It is an immediate experience!



They investigated in experiments the contrariness or oppositeness between geometric figures asking experimental subjects to create or to assess figures which were opposite to presented ones.

Results showed that axis transformations often generated obvious oppositeness in figures with a salient axis orientation. The results indicate that subjects agreed with another in their judgment at a

rate up to 60 %. D (two triangles, one 180 degree inverted – that means a change in one direction - got the highest contrariness-ratings, HAZ the highest diversity-ratings.)

Experimental studies revealed that



- the left figure (D) was rated with a high degree of contrariness,
• the right (HDZ) one with high degree of diversity.

We think that contrariness and oppositeness are comprehensible experiences in different perceptual and cognitive domains.

Contradiction or the Opposite– or in perception sometimes ‘contrast’ – is not only a slight form of variation or difference, but it is the best possible difference that can be, and one may see it as a special case of good fitting or Prägnanz.

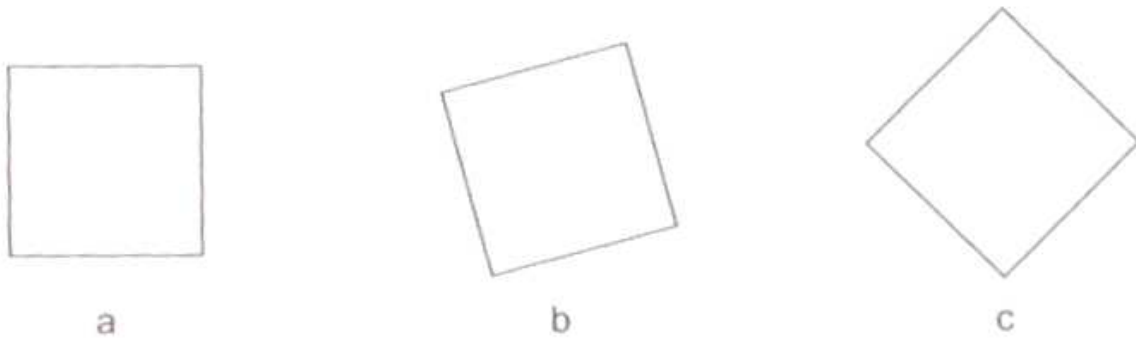
Factors of meaning in perception

Perception is determined by organizational factors – some of which I have demonstrated. Pinna dedicated himself to the question, how we recognize meaning besides the formal shape that is built due to Gestalt factors of the perception.

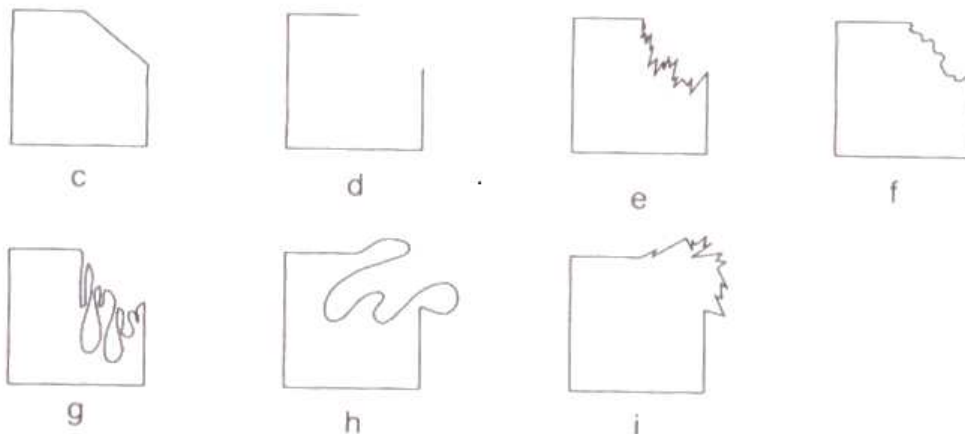
He accomplished a great many studies with different patterns.

I would like to demonstrate some few examples.

Square - Rhombus



Here it shows up that a rotation of the square leads to another meaning, i.e. a rhombus. Pinna is of the opinion that two factors for the perception of these figures are crucial, i.e. the sidedness with the square and the pointedness with the rhombus. These versions can be strengthened or prevented however by accentuations.



An interesting series of studies is *concerned with damaged squares*.

If one asks you, what you see, you will always indicate: A square, with which somewhat has happened. The corner to one is cut off, or is missing, or broken off, or gnawed etc.

The character of the square is even still strengthened by these damages; we see in the place of the impairment an amodal supplement. The square appears as an amodal whole object.

System Theory - Synergetics

Researchers dedicated to *psychological system theory* were interested to deal with questions such as how can we understand and influence patterns of perception, thinking, reasoning, personal development, and patterns of interactions in families and groups (Kriz 2001).

- Recently the treatment and discussion of these questions have been influenced by the concepts and the approach of ‘synergetics’, one of modern system theories.

Though synergetics originated from physics (especially laser theory), its mathematical and conceptual formulations soon turned out to be applicable to a variety of fields because it deals with self-organizing complex systems in a general manner.

- By means of the interaction of their components complex systems can produce new qualitative features on macroscopic scales. The central aim of synergetics is to describe general principles that govern the behaviour of complex systems when these qualitative changes take place, when a system leaves a certain state (a structure or pattern of behavior) and results in a new structure or new behavior.

These processes refer to concepts such as emergence, attractor, stability and instability, phase transition as features of self-organizing structure.

- Soon it has been recognized that the basic assumptions parallel those of gestalt theory.

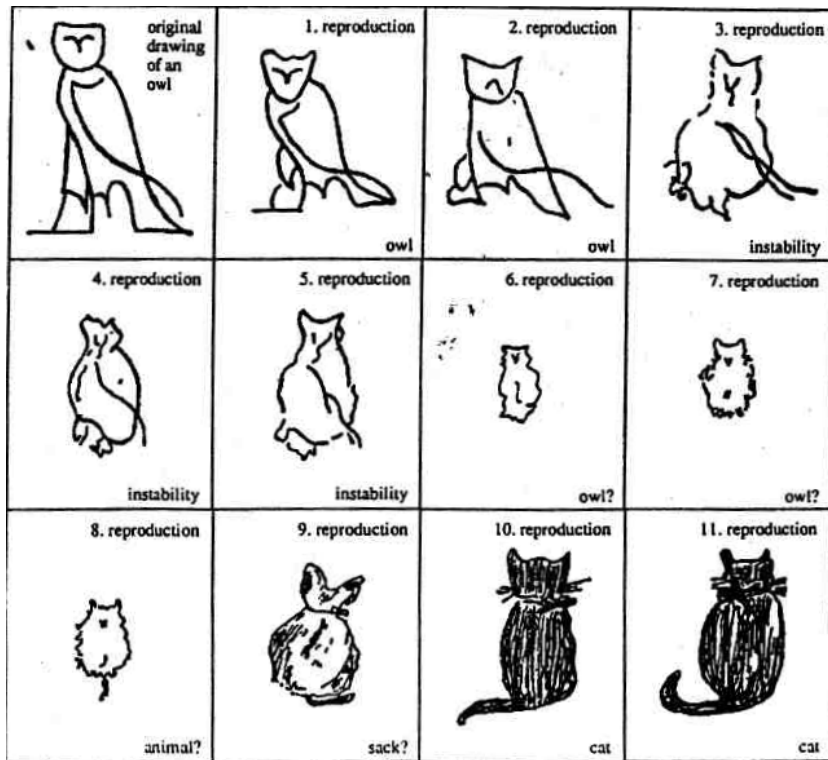
What I have told until now are self-organizing processes and tendencies, in perception, reasoning, and personality. Processes that do not require an ‘organizer’. For example, the concept of Gestalt quality is defined as emerging from elementary interaction of the parts but is not completely reducible to them as I have told you about the melody.

Hence the basic assumptions of synergetics can and have been applied to the further understanding of psychic processes. Kriz (2001) has used them to describe the interactions in families, couples and groups.

I will show two very simple examples from memory research and person perception, which may show slight systemic tendencies in self-organizing perceptive and cognitive processes.

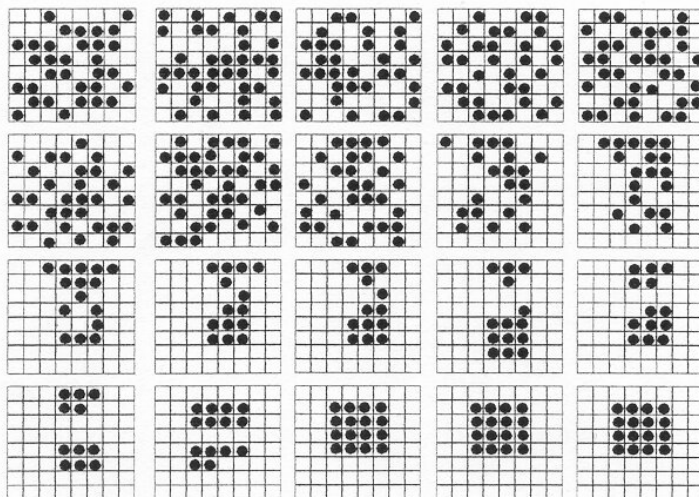
The experimental procedure of the first example helps to illustrate self organized cognitive processes, because these processes are usually too fast and too subtle for introspection.

- The experimental design goes back to research from Bartlett (1932) and is called recursive iteration. The basic idea is to ask a person to reproduce a given visual or cognitive pattern and then to use this reproduction as a stimulus for the next reproduction by another person and so on. If the pattern is very complex it may change from iteration to iteration.
- However, one often finds that this process tends to highly ordered structures which are steady states, or in the terminology of synergetics ‘attractors’. Due to the ordering forces of the cognitive system the pattern changes less and less until it is no more subject to alterations in further reproductions.



Stadler, Kruse & Strüber (2008)

Stadler & Kruse (1990) reported a perceptual study in which they showed that serial reproduction of random dot patterns, which were at the beginning rather irregular, tended to patterns of high Prägnanz.



Stadler & Kruse (1990)

Synergetics is for gestalt theoretical research very interesting because it supposes new questions, but it is also able to explain earlier results somewhat better in its frame. I will give you an example.

Salomon Asch, a coworker of Wolfgang Köhler, studied processes in the area of person perception. In some studies he presented a number of attributes which – as he instructed – would characterize a unique person, and asked his subjects to build an impression of that person and write a brief description of the impression they had of the fictitious person in their own words. The results showed that the subjects were very well able to build a holistic impression und describe it in a meaningful und colorful way. In one experimental study he created two lists of attributes, each one for two different experimental groups.

Group 1: intelligent industrious impulsive critical stubborn envious

Group 2: envious stubborn critical impulsive industrious intelligent

In both groups he used the same characteristics but in Group 2 in reversed order, and the subjects built very different impressions depending on the order of presentation. Group 1 described the fictitious person in a positive, group 2 in a mainly negative manner. This effect has been called the primacy effect. The first information on a person determines the impression in the first place.

This effect can be explained very well in terms of the *synergetic enslaving principle*.

Pattern formation and pattern recognition is ruled by two principles.

- (1) The first is **completion with pattern formation**. If one has only some or few information of an object the system will search for a pattern, in which these few informations may fit. In every day life we have many experiences where we complete a picture out of very few data, for instance we may only see for a very short time parts of a face and we will complete it. Or: While solving crossword puzzles we may have only some letters but will complete them very fast to a whole word. There may be many or some possible patterns but one will win the competition.
- (2) With **pattern recognition** some not well fitting information may be influenced in their meaning by the already activated pattern, which is called the *enslaving principle*. In gestalt theoretical terms: The whole will determine the parts.

The later presented person attributes will get their meaning in dependence of the already created pattern.

Jokes

There are many theories, which intend to describe or explain content and structure of jokes and how they might produce funniness and amusement.

Freuds theory (Freud, 1905, 1958) is based on motivational processes, but it concedes that besides tendentious (i.e. mainly hostile and obscene) nontentious factors as stimulus conditions are effective.

Other theories (La Fave, 1972) postulate that the experience of superiority, derision or disparagement is important.

Cognitively oriented theories (Suls, 1972, Wilson, 1979) maintain that cognitive conflict and its resolution to be central.

Principles derived from Gestalt Theory are also able and usable to identify the structural aspects of the joke stimulus that might stimulate laughter and funniness (Metz-Goeckel, 1989).

The central assumption in gestalttheoretical perspective is that the joke effect is preceded by complex perception und comprehension processes. The joke-perceiver or hearer gets an information which he or she elaborates. In most cases

- he or she has to structure this material,
- has to understand it, and sometimes
- has to re-enact in his or her mind what persons in the joke do, wish or think.

First, I will give some examples for which gestalt theoretical assumptions or knowledge is able to explain the joke effect, mostly in terms of structuring or re-structuring.

Diverse forms of reversals play often an important role, e.g. something alike figure-ground-reversals:

“What’s the matter, little boy?” said the kindhearted man., “are you lost?” “No,” was the manful answer, “I ain’t lost. I’m here. But I’d like to know where father and mother have wandered to.”

Alternatively we find reversals of the relation between the whole and its parts, normally the whole is superordinate, the parts are subordinate:

My mechanic gave me a great report. He told me that my battery needs a new car.

One other joke-principle is based on reference to wholes, in the sense, that a verbal phrase or a concept derives its meaning from a special context. A word or a concept may have two meanings, depending on the whole to which it belongs.

In jokes there is first perceived one meaning, which does fit in one context but not in another one, which is afterwards or simultaneously presented. This may surprise at first and may create the experience of incongruence, but afterwards the joke-perceiver realises that the other meaning is although possible and fits in another context too, which results in resolution and relief.

This principle is recognized and broadly discussed in the literature (e.g. Suls, 1972). The key factor is an ambiguity which may be semantic or sometimes also syntactic.

“We would like very much to have you for dinner”, as the cannibal said to the captured missionary.

In the next example we have a syntactical ambiguity:

*The stranger asks: “Can you tell me how long cows should be milked?”
And the farmer answers: “They should be milked the same as short ones, of course.”*

I propose that there is one joke-structure which is very well explained in gestalt theoretical terms, but is not mentioned in the literature¹, and I propose it is independent of joke content or joke tendency. First I give some examples:

Dracula at the dentist. – “Please, do only some sharpening!”

He (awkward dancer): “It was nice of you to give me that dance.” *She (sweetly):* “Not at all – this is a charity ball.”

“I saw the doctor today about my loss of memory.” “What did he do?” - “Made me pay him in advance.”

A man believes that he’s a cannibal, so his wife convinces him to go to a psychiatrist. He returns home later, and his wife asks: “How was the psychiatrist?” The man answers: “Delicious.”

“What is your son, the ventriloquist, doing now?” – “He is selling parrots in a pet-shop.”

What have these joke examples got in common? I postulate that some idea is introduced and later – mostly in the punchline – occurs information, which has or creates connection to it; and – I think in all examples - it fits rather well, we may experience conciseness (or Prägnanz). I claim that we may experience one form of closure.

We may look at one example:

“What is your son, the ventriloquist, doing now?” –

If the answer would be

“He is working at the mayors office.”

then it would not be a joke.

It fits rather better to re-enact in one’s mind that the son uses his ability to help selling parrots, naturally by deceiving people who want to buy a parrot. – I think we enjoy experiencing closure to the attributes of a ventriloquist – it fits rather well.

Lit.:

¹ But it is treated in Metz-Goeckel (1989) using German joke examples.

- Bianchi, I. & Savardi, U. (2006). The oppositeness in visually perceived forms. *Gestalt Theory*, 28, 354-374
- Haken, H., Stadler, M., Ditzinger, T. & Haynes, J.-D. (2005). Synergetics of perception and consciousness. *Gestalt Theory*, 27, 8-28
- Kriz, J. (2001). Self-organizing of cognitive and interactional processes. In: Matthies, M., Malcow, H. & Kriz, J. (Eds.) *Integrative system approaches to natural and social dynamics*. P. 517-537. Heidelberg: Springer
- Kriz, J. (2008). Gestalttheorie und Systemtheorie. In: H. Metz-Göckel (Hrsg.) *Gestalttheorie aktuell. Handbuch zur Gestalttheorie. Band 1*. 39-70. Wien: Krammer-Verlag
- Metz-Göckel, H. (2008). Closure as a joke-principle. *Gestalt Theory*, 30, 331-336
- Ovsiankina, M. (1928). Die Wiederaufnahme unterbrochener Handlungen (The resumption of interrupted activities). *Psychologische Forschung* 11, 302-379
- Pinna, B. (2011). What is the meaning of shape? *Gestalt Theory*, 33, 383-421
- Stadler, M. & Kruse, P. (1990). The self-organization perspective in cognition research: Historical remarks and new experimental approaches. In: Haken, H. & Stadler, M. (Eds.). *Synergetics of cognition*. 32-52. Berlin: Springer
- Stadler, M., Kruse, P. & Strüber, D. (2008). Struktur und Bedeutung in kognitiven Systemen. In: H. Metz-Göckel (Hrsg.) *Gestalttheorie aktuell. Handbuch zur Gestalttheorie, Band 1*. 71-96. Wien: Verlag Krammer.