GRAMMAR CONSTANTS OF THE BAROQUE CHARACTERISTIC PICTORIAL SPACE

In this paper we will follow the identification of those syntactic analysis parameters that operate the strictly speaking doctoral research (*Elements of grammar nature in the figurative post war painting and in the documentary photography*) on a sample of images.

I have chosen the analysis of a 105 images database in the Baroque painting, as consequence of studying the 1128 images database that is the object of the thesis, the most important image cluster fulfils, at syntactic level, certain characteristics of the Baroque stylistic. So, it is imperative that this set of morphological principles be verified by analysing certain recognized images of the Baroque.

In the specialty terminology of the history of arts the meaning of the term Baroque does not lack of ambiguity. Until the17th century, the etymology of the word did not include its applications for the plastic arts, although it designates a specific method of artistic expression.

The occurrence and dissemination of Baroque, in the early 17th century overlapped the religious wars epoch that marked Europe. Baroque art has its origin in Italy, country dominated by the authority of Catholicism, but it will fast spread in France, Spain,and the Netherlands.

In his book about Baroque, Martin Rupert John makes the distinction of three important periods in the development of this style.

A first stage, the Early Baroque, preponderantly naturalist as vision, is outlined in Italy and it is related to Caravaggio`s painting, artist who influences by his vision artists even outside Italy, an important number of Flemish, French, Spanish artists. The revolutionary aspect of the work of Caravaggio consists in the innovative outlining of a repertoire of plastic formulas: naturalism, preference for the representation in natural size, incident light, and exacerbation of the expressive value of chiaroscuro.

A second stage on the development of the style is the one of the "culmination of Baroque"[1], having as exponents Rubens, Guercino, being the peak period of the "sensualistic epoch of Baroque"[2], due to the exuberance and sensual delight of the works, characteristics considered typical for the entire Baroque period.

The third period of Baroque is the classical/classic-like one,and is determined by important painted works as those of Velasquez in Spain, Vermeer in Holland,and Poussin in France.

The structure of the 105 images database stakes on the selection of the most representative artists of Baroque style, reflecting the staging proposed by Rupert.

1   MARTIN JOHN RUPERT- *Barocul*, Ed.Meridiane, Bucureşti, 1982, p.22
2   Ibidem , p.22

Thus, in the structure of the database works signed by: Caravaggio, Anibale Caracci and Guercino in Italy, Velasquez and Zurbaran in Spain, Georges de la Tour and Poussin in France, Rembrandt, Vermeer, Rubens, Frans Hals in the Netherlands appear.

This structure of the database with images of Baroque was wished to be as relevant as possible for establishing the objective of setting up defining coordinates for the Baroque type pictorial space.

At the bottom of the page we have an image made with 3A.Jar software, with the graphic representation of the 105 images database of Baroque painting that has in view the White/Black (2 levels) and respectively Black/Total (6 levels). These two ratios target an as synthetic and as persuasive as possible exposition for the Baroque type image.
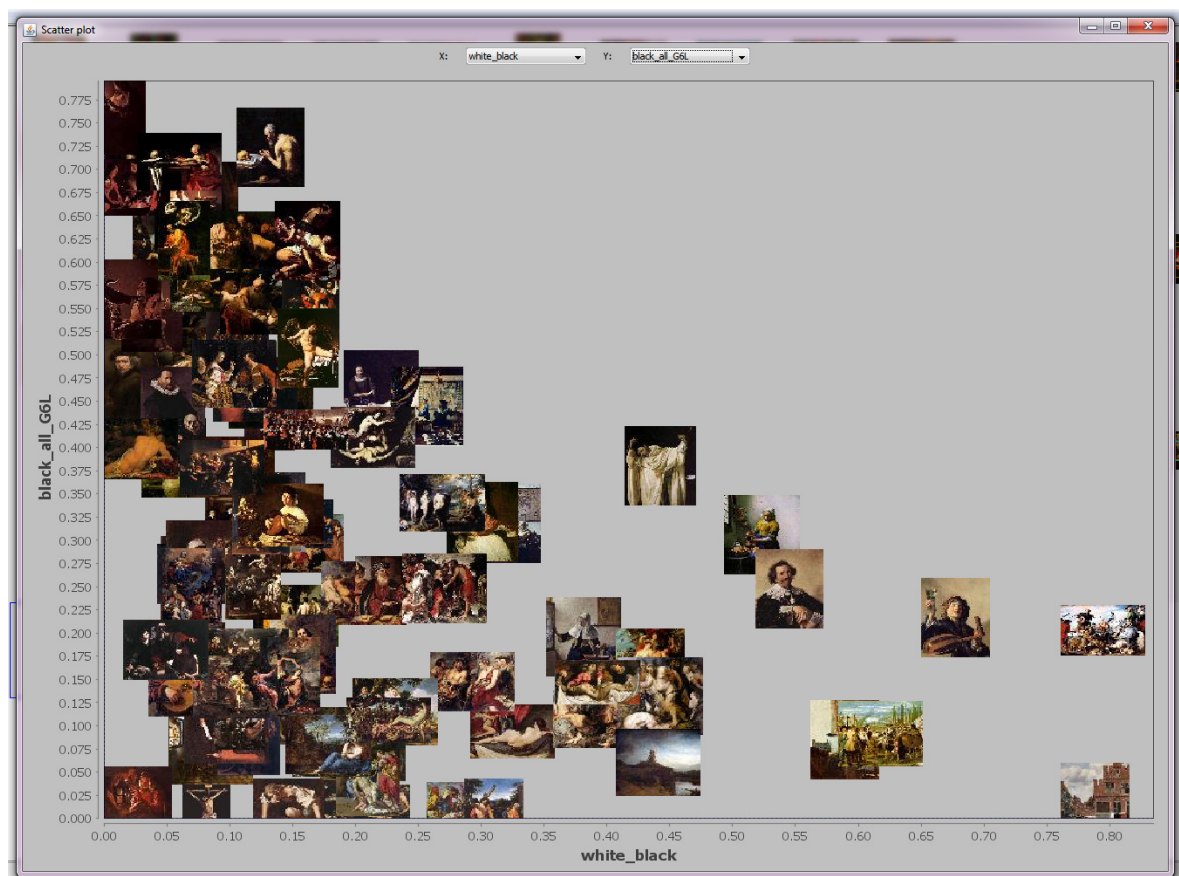

Fig.1 Ratio Scatter plott: 105 imagines database

In the left side of the graphic representation we find the images dominated by dark tones of colour: white/black ratio starting from: 0.05, 0.10, 0.15, ... 0.30.

In the right side of the graphic are the images with a white/black ratios of 0.50, 0.60,...0.80, images characterized by the brightness of the tones of colour.

The preponderant placing of the images on the left side of the graphic is obvious, where we have to deal with white/black ratios with dominant black.

From the view angle of our analysis, the Baroque character is consisting of the following characteristics:

1. A dominant presence of dark tones of colour

2. Subordinating the chromatic ratio by the ratio of the tone of colour

3. Composition asymmetry

4. The significant importance of the oblique line in tracing the composition textures

As consequence of the 105 Baroque images database, I have extracted certain syntactic parameters that may be defining for outlining a possible imaging archetype. It is the question of 4 tone of colour and chromatic relations that are applied to a group of 90 images from those105, and that translated in quantifiable terms the observations exposed in the previous paragraph (the dominant presence of the dark tones of colour, the subordination of the chromatic ratio):

White/Black ratio < 0.5 on 2 tone levels

Black/ All ratio> 0.6 on 2 tone levels

Gray 1 / Gray 2 > 1 on 4 levels, gray1 being the darkest gray

Black/ All ratio > 0.5 on 2 RGB levels

The importance of the tone of colour ratio in the painting of Baroque origin is accentuated by the preference for a chiarobscuro contrast accused in many of the works that are part of the database. The tone of colour ratio subordinates the chromatic ratio in the case of the majority of the images, fact that can be explain by the preference of the Baroque aesthetics for a naturalist treatment and for the technique of the chromatic model as fundamental pictorial procedure.

The study of the image in the light of the relations **frame-shape-geometry**, following to localize the main harmonic lines, but also of the convergence points with the rectangular frame casing will complete the assertions about the composition asymmetry that marks an important part of those 105 analysed works.

The special importance of using oblique lines (marked with red) is very relevant in analysing the pictorial space of Baroque expression.

18 imagines cluster from 105 imagines Baroque database

The quantity ratio, quantifiable by the software application, is fundamental in outlining the **frame-shape-colour** (or its tone equivalent) relations.

In case of Baroque painting, the most notifiable analysis of the chromatic and tone of colour ratios where included in the table below, representing a brief statistics of the values of the 4 quantity ratios listed as being defining for Baroque.

The assertion according to which the image- archetype of Baroque is an image dominated by dark tones of colour and the chromatic ratio is subordinated to the tone of colour ratio and find the most just clarification in the figures that represent values of the **black/all ratio (2 levels)** and of **black/all** (2 RGB levels): the presence of the black in dominant quantity (on the fourth column of the table we find values of black/total ratio (2 RGB levels) that decrease only in very rare casesunder the value of 0.7, this report designating values over 70% black pixels from the total pixels of an image, despite the fact image consists of all channels of colour included in a digital image: RGB and CMYK).

One of the most conclusive examples of pictorial images that fit these syntactic parameters is the work of Caravaggio, pathfinder and shocking by the novelty it proposes. The painting of Caravaggio isstanding out of the idealistic refinements of mannerism, by the naturalistic brutality and tenebrism.

	white/black 2 levels	black/all 2 levels	gray1/gray2 4 levels	black/all 2 levels RGB
caravaggio 1	0.16	0.86	1.35	0.79
caravaggio 10	0.06	0.94	2.98	0.84
caravaggio 11	0.15	0.87	2.51	0.80
caravaggio 12	0.16	0.86	1.48	0.79
caravaggio 2	0.11	0.90	0.76	0.83
caravaggio 3	0.06	0.94	2.22	0.89
caravaggio 4	0.09	0.91	1.70	0.84
caravaggio 5	0.16	0.86	1.31	0.76
caravaggio 6	0.13	0.89	1.11	0.81
caravaggio 7	0.14	0.88	2.61	0.76
caravaggio 8	0.09	0.92	1.72	0.86
caravaggio 9	0.05	0.95	2.26	0.94

The novelty of Caravaggio`s vision is represented by the violent system of lighting specific to his tenebrism and to the orientation for a very naturalistic representation. This approach gained rapidly many adepts, transforming in an epigonic current: the Caravaggism.

Caravaggio has not manifested influences on his epigones only, but also on important artistic personalities of Baroque: Rubens, for example, goes to Rome to study painting, making even a reproduction of a work of Caravaggio: The Entombment of Christ (**caravaggio 6** in the database).

caravaggio 6

Caravaggio - The Entombment of Christ

Rubens -The Entombment of Christ

The preferences of Baroque for an image structured on dark tones of colour may have, so, certain origins in the painting of Caravaggio and in the fast absorption of his stylistic in the painting of the 17th century.

In the following tables we will find constants of the values of the 4 defining tones of coulour and chromatic ratios, with rare exceptions from the values of the archetype image of Baroque.

	white/black 2 levels	black/all 2 levels	gray1/gray2 4 levels	black/all 2 levels RGB
carracci 1	0.23	0.82	1.49	0.73
carracci 2	0.29	0.72	1.46	0.57
carracci 3	0.18	0.85	1.93	0.80
carracci 4	0.31	0.76	2.17	0.64
carracci 5	0.03	0.98	2.55	0.74
carracci 6	0.18	0.84	1.94	0.72
carracci 7	0.21	0.83	2.88	0.71
carracci 8	0.27	0.79	1.59	0.65
carracci 9	0.10	0.91	3.32	0.82
guercino 1	0.10	0.91	2.63	0.80
guercino 2	0.23	0.81	1.80	0.66
guercino 3	0.15	0.87	2.42	0.77
guercino 4	0.07	0.93	4.41	0.83
guercino 5	0.21	0.83	2.47	0.70

	white/black 2 levels	black/all 2 levels	gray1/gray2 4 levels	black/all 2 levels RGB
guercino 6	0.11	0.90	2.48	0.87
guercino 7	0.11	0.90	4.18	0.85
guercino 8	0.13	0.89	2.03	0.86
guercino 9	0.12	0.89	2.19	0.86
hals 1	0.55	0.65	0.60	0.45
hals 10	0.68	0.60	0.51	0.46
hals 2	0.17	0.86	1.29	0.80
hals 3	0.16	0.86	2.56	0.70
hals 4	0.11	0.90	1.15	0.84
hals 5	0.06	0.94	7.32	0.62
hals 6	0.23	0.81	1.84	0.75
hals 7	0.08	0.93	2.13	0.89
hals 8	0.06	0.95	1.15	0.92

In case of the work **guercino 9** in the 105 images database, at a reduction of the image to 2 RGB channel (the right side image) there results a **Black / All ratio =0.86.** (86% of the image consists of black pixels
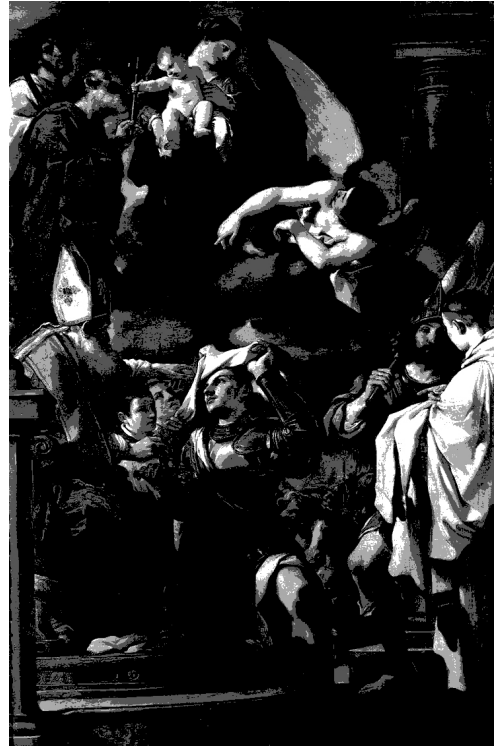

GUERCINO

Buna Vestire (guercino 9)
1620
345 x 231 cm

guercino 9 - **2 nivele RGB**

2 levels - black and white

4 levels - black and white

The black dominant is a constant both in case of reduction to 4, but also to 6 tone of colour levels in the case of **guercino 9** image.

	white/black 2 levels	black/all 2 levels	gray1/gray2 4 levels	black/all 2 levels RGB
latour 1	0.10	0.91	2.36	0.77
latour 2	0.02	0.98	7.85	0.84
latour 3	0.12	0.89	1.84	0.75
latour 4	0.07	0.94	3.31	0.85
latour 5	0.02	0.98	5.37	0.93
latour 6	0.01	0.99	9.42	0.95
latour 7	0.02	0.98	9.16	0.87
latour 8	0.04	0.96	2.06	0.91
latour 9	0.12	0.90	3.14	0.84

The most radical examples of absolute authority of black colour are found in the work of Georges de La Tour, important representative of Baroque in France and continuator of the visions of Caravaggio.

At a division of the image in 2 levels of 9 works of Georges de La Tour existing in the database, we obtain values of over 90% black in 8 of the 9 images (2nd column).

At the level of grays (4 levels) we have a gray1/gray2 ratio > 1 in all the 9 images.

The constant of the dominant in black in the database images is interrupted by a few exceptions, and the most significant are found in the works of Rubens (rubens 6) and Velasquez (velasquez 4) where we have values of the white/black ratio– 2 levels higher than the predominant values, which are in majority lower than 0.50.

	white/black 2 levels	black/all 2 levels	gray1/gray2 4 levels	black/all 2 levels RGB
rembrandt 1	0.13	0.88	2.53	0.83
rembrandt 10	0.01	0.99	2.23	0.97
rembrandt 11	0.08	0.93	2.36	0.90
rembrandt 2	0.15	0.87	1.04	0.81
rembrandt 3	0.03	0.97	4.50	0.95
rembrandt 4	0.07	0.94	3.11	0.88
rembrandt 5	0.44	0.69	1.59	0.67
rembrandt 6	0.10	0.91	1.46	0.85
rembrandt 7	0.11	0.90	2.41	0.73
rembrandt 8	0.08	0.93	2.35	0.81
rembrandt 9	0.14	0.88	4.04	0.83
ribera 1	0.21	0.83	1.38	0.78
ribera 2	0.21	0.82	1.67	0.77
ribera 3	0.05	0.95	2.67	0.93
ribera 4	0.09	0.91	1.83	0.86
ribera 5	0.13	0.88	0.73	0.86
ribera 6	0.16	0.86	1.68	0.82
ribera 7	0.05	0.95	1.33	0.91
ribera 8	0.05	0.95	3.66	0.88
ribera 9	0.08	0.93	1.05	0.89
rubens 1	0.44	0.69	1.19	0.58
rubens 10	0.03	0.97	2.95	0.87
rubens 11	0.43	0.70	1.17	0.49
rubens 12	0.27	0.79	1.93	0.73
rubens 2	0.39	0.72	1.32	0.59
rubens 3	0.21	0.83	1.41	0.70
rubens 5	0.29	0.77	1.64	0.66
rubens 6	0.80	0.56	1.32	0.45
rubens 7	0.29	0.77	1.93	0.59
rubens 8	0.15	0.87	1.84	0.79
rubens 9	0.12	0.89	2.69	0.78
velasquez 1	0.30	0.77	0.67	0.68
velasquez 10	0.13	0.89	3.11	0.76
velasquez 11	0.06	0.94	4.78	0.83
velasquez 2	0.15	0.87	3.71	0.77
velasquez 3	0.16	0.86	2.36	0.68
velasquez 4	0.62	0.62	1.01	0.43
velasquez 5	0.33	0.75	1.05	0.65
velasquez 6	0.10	0.91	1.83	0.79
velasquez 7	0.06	0.95	4.24	0.87
velasquez 8	0.10	0.91	2.26	0.87
velasquez 9	0.07	0.93	2.17	0.91

The image **rubens 11** is one of the rare examples that at a reduction on 2 RGB level keeps values of the black/total ratio – 2RGB levels lower than 0.5, values that may be a consequence of an existing white/black ratio - 2 balanced levels (=0,43).

rubens 11
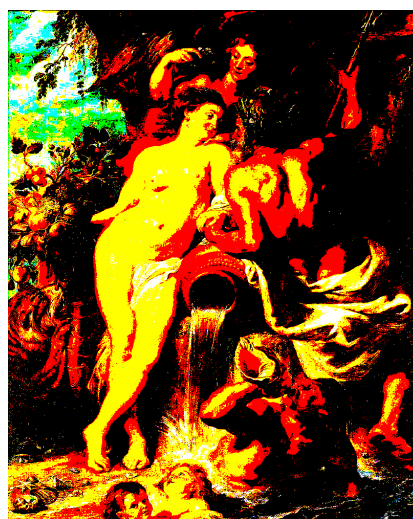
rubens 11 - 2 nivele RGB

rubens 6

rubens 6 - 2 nivele RGB

It worth observing that the image **rubens 6** is one of the few of the 105 Baroque images data base referring to the value of white/black ratio< 0,5 (2 levels), having a dominant in white in the structure of this ratio.

An increase of the quantity of colour is observed, in case of the images that include more white when dividing on 2 levels, thing that can be explained also by the fact that in the construction of the images dominated by black (specific to Baroque tenebrism), the principles of chiarobscuro contrast (that undermine the importance of colour) prevail.

I consider that the occurrence of these exceptions, especially in the case of Peter Paul Rubens, painter recognized by his exuberant and audacious chromatic approach, is not accidental.

Rubens succeeds, thus, to detach of the admiration for Caravaggio and the chiarobscuro, proposing a personal stylistic where colour plays a more important role.

This relation of the tone of colour ratio with the chromatic ratio will be one of the parameters of research of the constants of quantity ratio on the 1128 images database.

The exhibition of these exceptions from the Baroque type grammar constants is wished to be a starting point for the analysis of the image clusters of the 1128 images from the 20th century (figurative painting + documentary photography).

Testing the observations obtainedfrom the correlation of this white/black ratio (2 levels) – dominant white with the presence of chromatic quantity higher than in the reduction to 2 RGB levels of the image will be possible to be confirmed on a more important sample of images (approx.206 of 1128), sufficient as number so that these observations to be confirmed as being significant.

	white/black 2 levels	black/all 2 levels	gray1/gray2 4 levels	black/all 2 levels RGB
vermeer 1	0.26	0.80	0.94	0.73
vermeer 10	0.22	0.82	1.21	0.79
vermeer 2	0.08	0.92	3.13	0.88
vermeer 3	0.59	0.63	1.52	0.48
vermeer 4	0.08	0.92	7.82	0.84
vermeer 6	0.49	0.63	0.60	0.60
vermeer 7	0.38	0.72	0.88	0.65
vermeer 8	0.32	0.76	1.17	0.71
vermeer 9	0.79	0.56	1.33	0.41
zurbaran 1	0.44	0.69	0.82	0.61
zurbaran 2	0.19	0.84	1.67	0.62
zurbaran 3	0.08	0.92	0.98	0.89
zurbaran 4	0.03	0.97	1.27	0.95
zurbaran 5	0.13	0.88	1.29	0.77
zurbaran 6	0.11	0.90	0.48	0.88

In order to accentuate these observations, we will show the structure of a cluster that matches with the white/black ratio < 0.5 (98/105 images), as being the most effective method of illustrating the values included in the first column of the table with Baroque images.

98/105 images Cluster - white / black ratio < 0.5

98/105 images Cluster - white / black ratio < 0.5

Investigating the values of the ratios of a division of the image into 4 levels of tone of colour in the Baroque type images, the most important observations are related to the two grays of this reduction of tone of colour, without omitting the redundant domination of black found also in the structure of the aforementioned clusters.

1. Gray 1 / Gray 2 ratio > 1 (Gray1 is the darker gray), defining ratio for the Baroque origin image, generates the composition of a cluster of 94/105 images, is a ratio that designates the presence of a pictorial space dominated by dark tones of colour.

94/105 images Cluster - Gray 1 / Gray 2 ratio > 1 part 1/2

94/105 images Cluster - Gray 1 / Gray 2 ratio > 1 part 2/2

2. Gray 1 / All ratio > 0,2 (Gray 1 number of pixels it is at least 20% of image surface) generates the composition of a **cluster of 48/105 images.**

48/105 images Cluster - Gray 1 / All ratio > 0.2

3. **Gray 2 / All ratio > 0,2** (Gray 2 number of pixels it is at least 20% of image surface) generates the composition of a **cluster of 37/105 images.**

37/105 images Cluster - Gray 2 / All ratio > 0.2

Summarizing what the precedent tables and images try to demonstrate in connection with the quantity ratio of the tone of colour, we will remind the main observations of the research of the 105 Baroque images database:

The images are dominated by dark tones of colour:

- This thing is obvious both in the graphic with values of white/black ratio (2 levels), where we find in the majority of cases small values: - white/black< 0.5 (98/105 images).

- Black/All ratio (2 levels) > 0.6 results (102/105 images).

- Gray 1 / Gray 2 > 1 results (94/105 images).

- Adding all these 3 rules results (90/105 images).

Particular observations:

- a constancy of the 4 defining ratios in the works of Caravaggio and Georges de la Tour and a larger variety in the case of the works of Rubens, Velasquez, Vermeer.