

## SUMMARY OF PROPERTIES

1. The content of the painting consists of a pattern of circles arranged in symmetrically staggered rows, as in a hexagonal lattice. From a general (complete) pattern, a certain amount of circles, based on an average/percentage, are randomly deleted, producing a specific pattern. The circles may be connected by one or at most two connecting bridges, creating chain-like segments and, inevitably, single free-floating circles. Over the homogenous flat background color, the pattern is executed in an illusionistic manner suggesting volume; nevertheless, the term "circle" is used in this documentation rather than the more accurate "orb" or "sphere".
2. Once the specific pattern has been determined, one majority and two minority colors are distributed among the pattern, with each free-floating chain-like segment *and* each single circle being treated as an individual element. In other words, this partial grid-like pattern is analogous to a population of discrete groups of elements in an enclosed field, distinguishable not by form but by color.
3. A sequence of indeterminate length of randomly generated numbers between 1 and 6 ("dice numbers") is required. When configuring any table, only as many numbers are used to configure all options as are required. Example: For a table with 6 options, only 5 *different* numbers are required, since the sixth number is automatically (by default) assigned to the last option.
4. During any analysis of the pattern, the rows of circles are "read" as with text: one horizontal row at a time, from left to right and from top to bottom. Single numbers are assigned to single circles (when determining the density), or individual chain-like segments/single circles (when determining color distribution).
5. Many properties of the painting are selected randomly, by means of multiple-choice tables, each with 2, 3 or 6 numbered options. These include: A) the density table, determining the average density of the specific pattern, and containing 3 different options: 50% density ("3 out of 6 options"), 67% ("4 out of 6...") and 83% ("5 out of 6"); B) the specific pattern, showing precisely which circles are represented (or rather, which are *not* represented); C) which circles are joined by connecting bridges; D) the color of the background; and E) the distribution of color in the pattern (Properties *not* determined by randomness: canvas size and format; the specific type of pattern; black and white added as 5<sup>th</sup> and 6<sup>th</sup> colors to the palette; cadmium yellow light as a shading tone for the 2<sup>nd</sup> minority group, titanium white).
6. The color-distribution tables differentiate the population into one majority, a first minority and a second minority group. The formation of the majority out of the entire population has two options of being represented: by 67% or 83% ("4 out of 6..." or "5 out of 6 options", respectively). From the remaining pattern, the first minority color is represented by either 50%, 67% or 83% (3, 4 or 5 out of 6 options).
7. The names of four colors were selected at random from a pigment lottery containing the names of all different color hues (approx. 40) available in the studio. These were numbered 1 to 4 according to the order in which they were selected, and black and white were added to compose a palette of 6 different colors. From this palette, the following color properties were selected by random: the background, the majority and both minorities; it may well be that one or even 2 selected colors are ultimately not used. Likewise, each of these elements was offered the possibility of being modified by adding a small amount of another color from the palette ("yes-or-no" as to whether a second 'mix-color' was to be added).
8. As always, a rough draft of the painting was completed, in the form of a sketch with colored pencils on paper – a visualization of the specific pattern is indispensable.
9. A perforated sheet of acrylic glass with a staggered hole pattern was used as a template for the final work; the ratio "diameter of circle/distance between neighboring circles" = 12/9 cm.

## HIERARCHY OF ACTIONS *(marked in red after completion)*

Configure all tables, in each case with an adequate number of different digits (red numbers in number sequence = inert)

- > Density table (Table 1)
- > Color-distribution table, majority (Table 2a)
- > Color-distribution table, minorities (Table 2b)

- > Color-selection table, background (Table 3a)
- > Color-mix table, background (Table 3b)
- > Color-selection table for mix-color, background (Table 3c)
  
- > Color-selection table, majority (Table 4a)
- > Color-mix table, majority (Table 4b)
- > Color-selection table for mix-color, majority (Table 4c)
  
- > Color-selection table, 1<sup>st</sup> minority (Table 5a)
- > Color-mix table, 1<sup>st</sup> minority (Table 5b)
- > Color-selection table for mix-color, 1<sup>st</sup> minority (Table 5c)
  
- > Color-selection table, 2<sup>nd</sup> minority (Table 6a)
- > Color-mix table, 2<sup>nd</sup> minority (Table 6b)
- > Color-selection table for mix-color, 2<sup>nd</sup> minority (Table 6c)

Select an option from the density table (Table 1), then select the corresponding amount of different digits to signify “circle painted in” (> reveals which digits signify “no circle painted in”)

Select an option from the *color-distribution table, majority (2a)*, then select the corresponding amount of different digits to signify “majority” (> remainder = 1<sup>st</sup> and 2<sup>nd</sup> minorities)

Select an option from the *color-distribution table, minorities (2b)*, then select the corresponding amount of different digits to signify “1<sup>st</sup> minority” (> remainder = 2<sup>nd</sup> minority)

Select an option from *color-selection table, background (3a)*

Select an option from *color-mix table, background (3b)*

- > if “yes” was selected, select an option from *color-selection table for mix-color, background (3c)*

Select an option from *color-selection table, majority (4a)*

Select an option from *color-mix table, majority (4b)*

- > if “yes” was selected, select an option from *color-selection table for mix-color, majority (4c)*

Select an option from *color-selection table, 1<sup>st</sup> minority (5a)*

Select an option from *color-mix table, 1<sup>st</sup> minority (5b)*

- > if “yes” was selected, select an option from *color-selection table for mix-color, 1<sup>st</sup> minority (5c)*

Select an option from *color-selection table, 2<sup>nd</sup> minority (6a)*

Select an option from *color-mix table, 2<sup>nd</sup> minority (6b)*

- > if “yes” was selected, select an option from *color-selection table for mix-color, 2<sup>nd</sup> minority (6c)*

Placement of circles (red numbers = “no circle”)

Placement of bridges (red numbers = no bridge possible)

Distribution of colors I: majority/minorities (blue numbers = minorities)

Distribution of colors II: 1<sup>st</sup> / 2<sup>nd</sup> minorities (blue numbers = 2<sup>nd</sup> minority)

## BREAKDOWN OF RANDOM SELECTION PROCESSES

(For all tables: inert numbers = red, selected numbers = blue)

**Table 1:** Configuration of density

Density table:		different digits selected to represent “circle”	different digits implied to represent “no circle”
3 out of 6 options	3 1		
<b>4 out of 6 options</b>	2 <b>5</b> >>	<b>4 1 3 2</b>	<b>5 6</b>
5 out of 6 options	4 6		

**Table 2a:** Configuration of color-distribution table, *majority*. (“How many elements in the specific pattern comprise the majority?”) (*all minorities considered together – see Table 2b*)

		different digits selected to represent “majority”	different digits implied to represent “[all] minorities”
4 out of 6 digits	5 1 2		
5 out of 6 digits	3 4 <b>6</b> >>	<b>4 1 6 5 2</b>	<b>3</b>

**Table 2b:** Configuration of color-distribution table, *minorities*. (“How many elements comprise 1<sup>st</sup> minority color?”)

		different digits selected to represent “1 <sup>st</sup> minority”	different digits implied to represent “2 <sup>nd</sup> minority”
3 out of 6 digits	4 6		
4 out of 6 digits	3 2		
<b>5 out of 6 digits</b>	<b>1 5</b> >>	<b>2 5 3 4 1</b>	<b>6</b>

*\*Since, in this piece, the elements are much larger and therefore far fewer in number than in other paintings, the chances are much higher that the 2<sup>nd</sup> minority color will not be used; if this does occur, the odds are “helped” somewhat: check the immediate next random numbers in the sequence, corresponding to the rough draft, and wherever three same consecutive digits appear, the 2<sup>nd</sup> minority color is assigned to the corresponding individual elements. If this occurs and an element already selected as 1<sup>st</sup> majority is now supposed to take the 2<sup>nd</sup> minority, the next element is instead selected.*

#### Tables governing properties of the background color

**Table 3a:** Color-selection table. (“Which color is the background?”)

1 <sup>st</sup> color	6
<b>2<sup>nd</sup> color</b>	<b>4</b> >> <b>turquoise</b> (Türkis)
3 <sup>rd</sup> color	5
4 <sup>th</sup> color	2
black	3
white	1

**Table 3b:** Color-mix table. (“Is the background color cut with another color?”)

**yes** = 1 6 **5**                      **no** = 2 3 4

**Table 3c:** Color-selection table for mix-color. (“If ‘yes’ was selected to 3b, with which color?”)  
(*cannot be the same color as the background color*)

1 <sup>st</sup> color	4
2 <sup>nd</sup> color	5
3 <sup>rd</sup> color	2
4 <sup>th</sup> color	6
black	3
<b>white</b>	<b>1</b> >> <b>white</b> (Titanweiss)

#### Tables governing properties of the majority color

**Table 4a:** Color-selection table. (“Which color is the majority?”)

(*cannot be the same as the background color*)

1 <sup>st</sup> color	1
2 <sup>nd</sup> color	4
<b>3<sup>rd</sup> color</b>	<b>2</b> >> <b>permanent green</b> (Permanentgrün)
4 <sup>th</sup> color	5
black	3
white	6

**Table 4b:** Color-mix table. (“Is the majority color cut with another color?”)

**yes** = 4 5 **3**                      **no** = 1 2 6

**Table 4c:** Color-selection table for mix-color. ("If 'yes' was selected to 4b, with which color?  
(cannot be the same as the majority color)

1 <sup>st</sup> color	3
2 <sup>nd</sup> color	2
3 <sup>rd</sup> color	6
4 <sup>th</sup> color	1
<b>black</b>	<b>5</b> >> (Elfenbeinschwarz)
white	4

**Tables governing properties of the 1<sup>st</sup> minority color**

**Table 5a:** Color-selection table. ("Which color is the 1<sup>st</sup> minority?")  
(cannot be the same as majority, nor as the background color)

<b>1<sup>st</sup> color</b>	<b>3</b> >> <b>raw umber</b> (Umbra natur)
2 <sup>nd</sup> color	2
3 <sup>rd</sup> color	5
4 <sup>th</sup> color	4
black	1
white	6

**Table 5b:** Color-mix table. ("Is the 1<sup>st</sup> minority color cut with another color?")

**yes** = 3 6 **1**                      **no** = 2 4 5

**Table 5c:** Color-selection table for mix-color. ("If 'yes' was selected to 5b, with which color?")  
(cannot be the same as the 1<sup>st</sup> minority color)

1 <sup>st</sup> color	6
2 <sup>nd</sup> color	2
3 <sup>rd</sup> color	4
4 <sup>th</sup> color	3
black	5
<b>white</b>	<b>1</b> >> (Titanweiss)

**Tables governing properties of the 2<sup>nd</sup> minority color**

**Table 6a:** Color-selection table. ("Which color is the 2<sup>nd</sup> minority?")  
(cannot be the same as majority, nor as the background, nor as the 1<sup>st</sup> minority color)

1 <sup>st</sup> color	1
2 <sup>nd</sup> color	3
3 <sup>rd</sup> color	6
4 <sup>th</sup> color	2
black	4
<b>white</b>	<b>5</b> >> (Titanweiss)

**Table 6b:** Color-mix table. ("Is the 2<sup>nd</sup> minority color cut with another color?")

**yes** = 5 4 3                      **no** = 1 **2** 6

**Table 6c:** Color-selection table for mix-color. ("If 'yes' was selected to 6b, with which color?")  
(cannot be the same as the 2<sup>nd</sup> minority color) (**this table was not used**)

1 <sup>st</sup> color	4
2 <sup>nd</sup> color	1
3 <sup>rd</sup> color	3
4 <sup>th</sup> color	2
black	5
white	6

## SUMMARY OF COLOR PROPERTIES

### Colors selected in order:

1<sup>st</sup> color: **raw umber** (Umbra natur)

2<sup>nd</sup> color: **turquoise** (Türkis)

3<sup>rd</sup> color: **permanent green** (Permanentgrün)

4<sup>th</sup> color: **cadmium yellow light** (Kadmiumgelb hell)

(5<sup>th</sup> and 6<sup>th</sup> colors, **ivory black** [Elfenbeinschwarz] + **titanium white** [Titanweiss], added by choice)

**Background** = 2<sup>nd</sup> color, cut with white

**Majority** = 3<sup>rd</sup> color, cut with black

**1<sup>st</sup> minority color** = 1<sup>st</sup> color, cut with white

**2<sup>nd</sup> minority color** = white

**turquoise**, cut with **white**

**permanent green**, cut with **black**

**raw umber**, cut with **white**

**white** (*chosen as shading color = cadmium yellow light*)

## SUMMARY OF PROCESSING OF RANDOM NUMBER SEQUENCE

(including diagrams showing the development of the pattern, formatted to fit the size of the canvas)

Configuration of all tables (red numbers = inert)

31**12115**:51**5512**:46**43632**:64**4523**:16**6615**:45**2546665263**:1425**43**:453:3  
26**3613125**:3**32541**:361:62**24662325**:1362**164**:5**55543**:4132**45**:

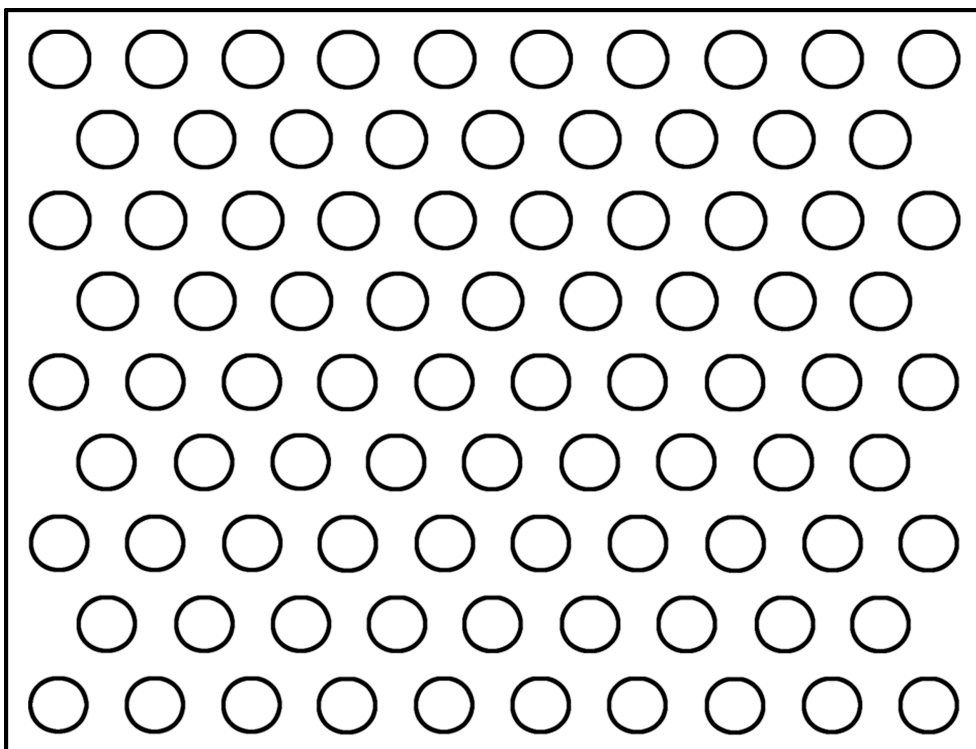
Application of all tables (red numbers = inert)

5,4132:6,**44144614542**:5,**22535341**:4:5:1:2:3:5:**2666263**:1:1:5:2:

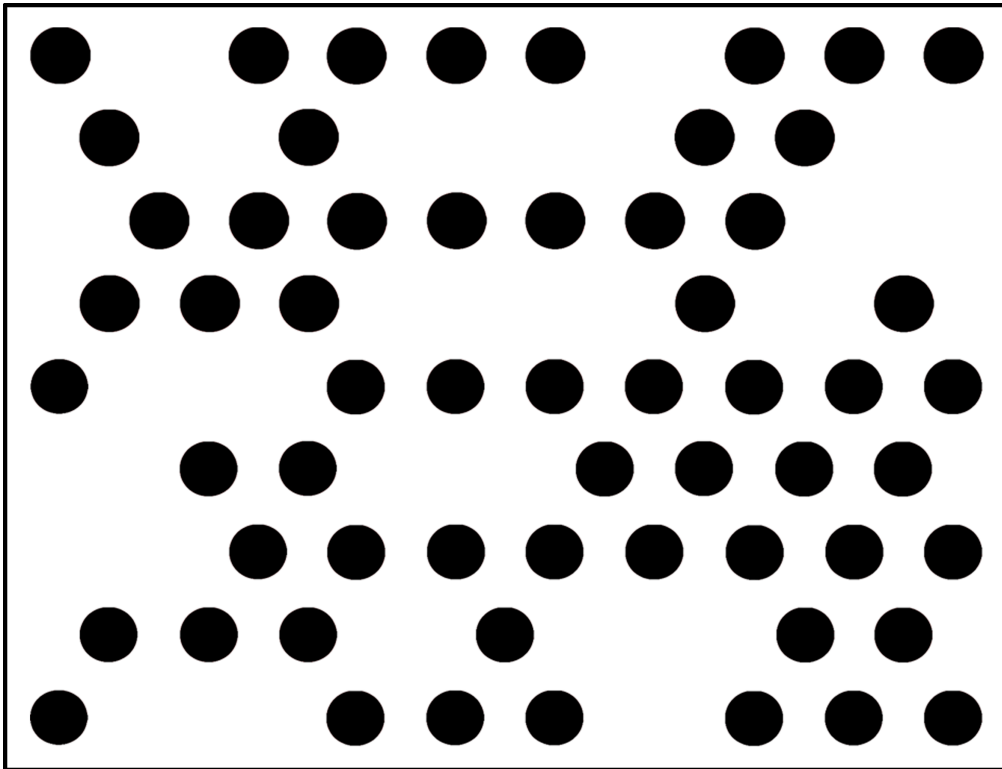
Placement of circles (red numbers = "no circle")

**1613115413564655216621413445514456535135531222316146622146**  
**5311412341215255241653125134**:

General (complete) pattern, before placement of circles in specific pattern:

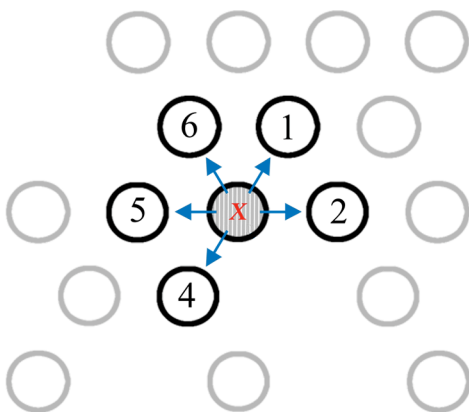


Specific pattern:



Placement of bridges (red numbers = no bridge possible)

1563366461214555623423355652321451423313663452525141:

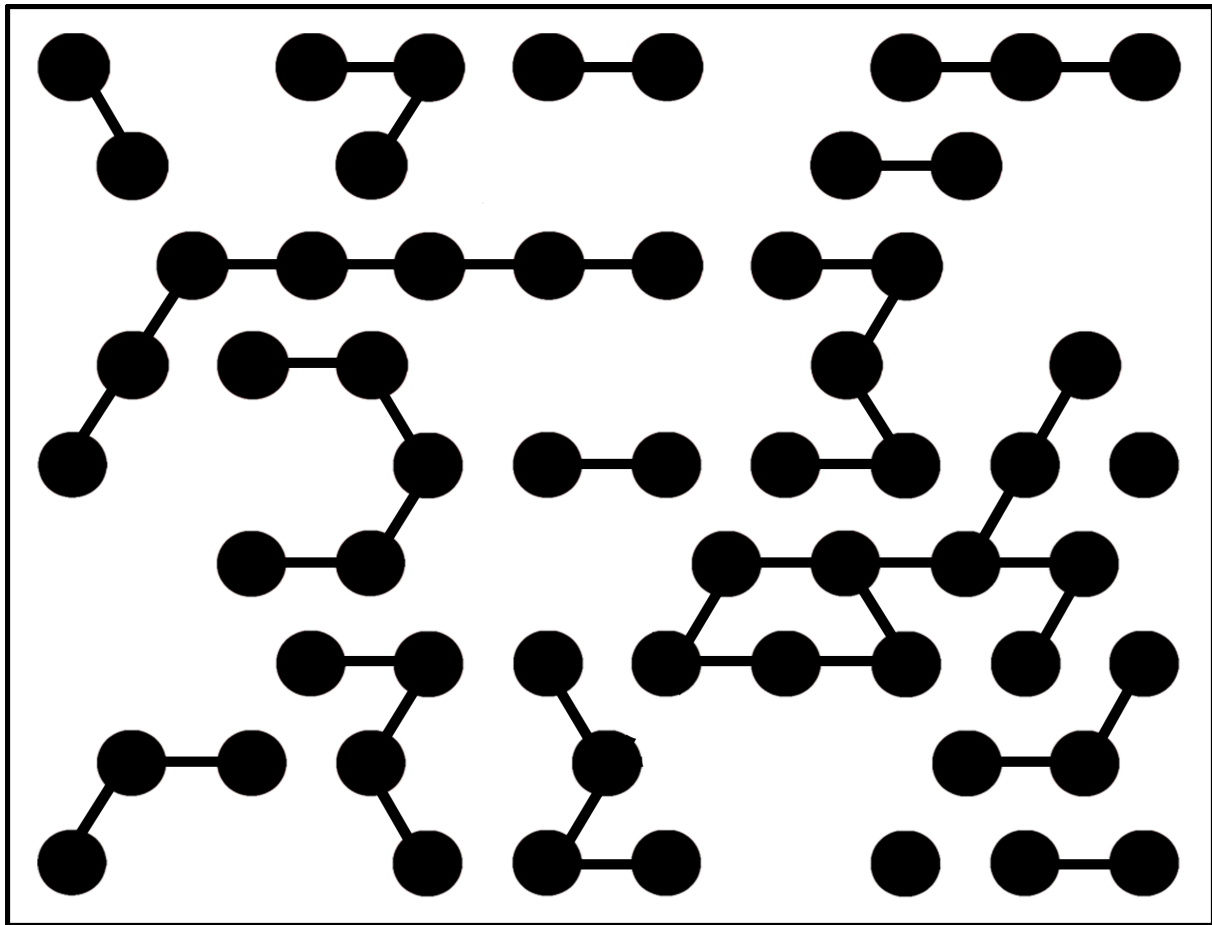


Each circle is assigned one number and thus given one chance to “grow” a connecting bridge to a neighboring circle, using this simplified clock-face diagram.

If the assigned number corresponds to a gap in the pattern, the next higher number is given a try; if that circle is also missing, the next lower number has a chance.

Example: if 3 is assigned to x, and the circle in the direction of 3 is missing, try 4; if 4 were also missing, try 2. If no bridge can be grown, 3 is considered an inert number, and the next number in the sequence is assigned to the next circle in the pattern.

Specific pattern, with bridges:



Distribution of colors I: majority/minorities (blue numbers = minorities)  
 224243454513445215:

Distribution of colors II: 1<sup>st</sup> / 2<sup>nd</sup> minorities (blue numbers = 2<sup>nd</sup> minority)  
 53361533312141145146:

Complete number sequence, including color (= inert numbers) and punctuation:

3112115:515512:4643632:644523:166615:452546665263:142543:453:3  
 263613125:332541:361:6224662325:1362164:555543:413245:5,4132:6,  
 44144614542:5,22535341:4:5:1:2:3:5:2666263:1:1:5:2:16131154135646  
 5521662141344551445653513553122231614662214653114123412152  
 55241653125134:1563366461214555623423355652321451423313663  
 452525141:224243454513445215:53361533312141145146.

Complete raw number sequence

3112115515512464363264452316661545254666526314254345332636  
 1312533254136162246623251362164555543413245541326441446145  
 4252253534145123526662631152161311541356465521662141344551  
 4456535135531222316146622146531141234121525524165312513415  
 6336646121455562342335565232145142331366345252514122424345  
 4513445215:53361533312141145146