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Interference for Television with Metaphysical Re-Runs

Synopsis

The flexibility of the DVD in terms of physical size, storage capacity, and interactivity affords filmmakers the ability to include with a film a number of alternate takes or endings. One consequence of this ability – most evident in commercial filmmaking – is a diminished responsibility on the part of filmmakers to make definitive choices about what to include in a final cut; in a sense, the DVD itself – by including alternate takes, endings, or other interactive components – becomes as much a work of art as the film it would contain.

Interference for Television with Metaphysical Re-Runs appropriates material from a commercial DVD release of *The Beverly Hillbillies* and presents it in a format such that the sequencing of video shots is determined (according to definite rules) by the DVD player during playback: every time a copy of the DVD is put into a DVD player, a different set of shots will be played in a different sequence. In effect, *Interference for Television with Metaphysical Re-Runs* is a DVD composed entirely alternate takes and alternate endings.

Artistic Process

To produce *Interference for Television with Metaphysical Re-Runs*, I limited myself to working with material appropriated from a single episode of *The Beverly Hillbillies* on DVD. I output the source video from my DVD player, through my VCR, and out onto a black and white television set via RF cable. I then videotaped the television screen,

cropping the images selectively, while playing with the fast forward, rewind, and pause buttons on the DVD remote; furthermore, I manipulated the tuning knob on the television set to distress the image, and discovered that I could exert fairly accurate control over the interference patterns by combining the tuning knob on the television with the seek functions on the DVD player.

I then imported the video from my camcorder onto my computer, where I adjusted the color and contrast of the images, and edited the footage into eight sequences, each 10-20 minutes in length. Each of these sequences was then divided into 16 scenes; this specific ordering of video material is essential to the operation of the playback mechanism's heuristic.

It was important to me to find a way of reordering the material during playback within the engineering specifications of consumer DVD players.

Aesthetics

Visually and thematically, *Interference for Television with Metaphysical Re-Runs* makes obvious reference to the work of Martin Arnold, and presents a similar deconstruction of a stereotypical American family life as *Un Piece Touchee* or *Passage a l'Acte*.

The aesthetic possibilities of noise have long been of interest to me (since reading John Cage's book *Silence*). For some time I've also been playing with a set of visual motifs I'll describe as "ambient television," which is an extended meditation on Pavlovian conditioning and the ubiquity of television screens.

As a programmer, I view the combination of the DVD player and the instructions on the DVD disc as a computational system; as an artist, I am interested in using *Interference for Television with Metaphysical Re-Runs* to induce certain patterns of information in this system. The embedding of mathematic constructs in art has a long pedigree, from

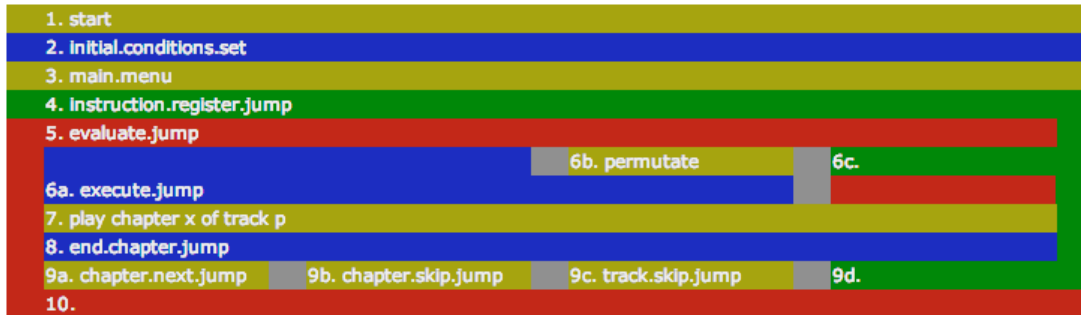
harmonies of simple ratios in cathedrals to geometric substructures in Islamic ornamentation, to the structure of various music scales. I'm particularly interested in certain mathematical patterns that have been identified by information science in the past 50 years or so.

Construction Details

The mechanism responsible for the sequencing of video during playback is not a randomizing function like one finds in CD players or iPods; at the heart of *Interference for Television with Metaphysical Re-Runs* is first a timer function, which keeps track of how much time has elapsed since the DVD was inserted into the player; and second, an algorithm that treats the number stored in the counter as a symbol, and which makes decisions about how to alter playback based on various formal properties of that symbol.

Ordinary numbers have many properties, such as being even or odd, prime, perfect, or the square root of some other number. The properties of numbers to which *Interference for Television with Metaphysical Re-Runs* is sensitive involve patterns in the binary representations of integer quantities (0=0000, 1=0001, 2=0010, 3=0011, 4=0100, 5=0101, etc.). The algorithm I designed uses combinations of bitwise Boolean and arithmetic operators to derive specific meanings from discrete sequences of binary values.

The playback mechanism is a program divided into several distinct procedures:



names like "Initial.conditions.set" indicate individual procedures, which can correspond to deductive processes or definite actions.

the alpha-numeric sequencing of the names indicates how individual procedures are performed iteratively.

the adjacency of color is used to indicate the possible causal relations between distinct procedures.

in some instances (5. and 8.), a single procedure can cause more than one type of outcome.

note that 6c. is equivalent to 4., meaning, whenever the procedure "Instruction.register.jump" is performed, "evaluate.jump" will be performed next.

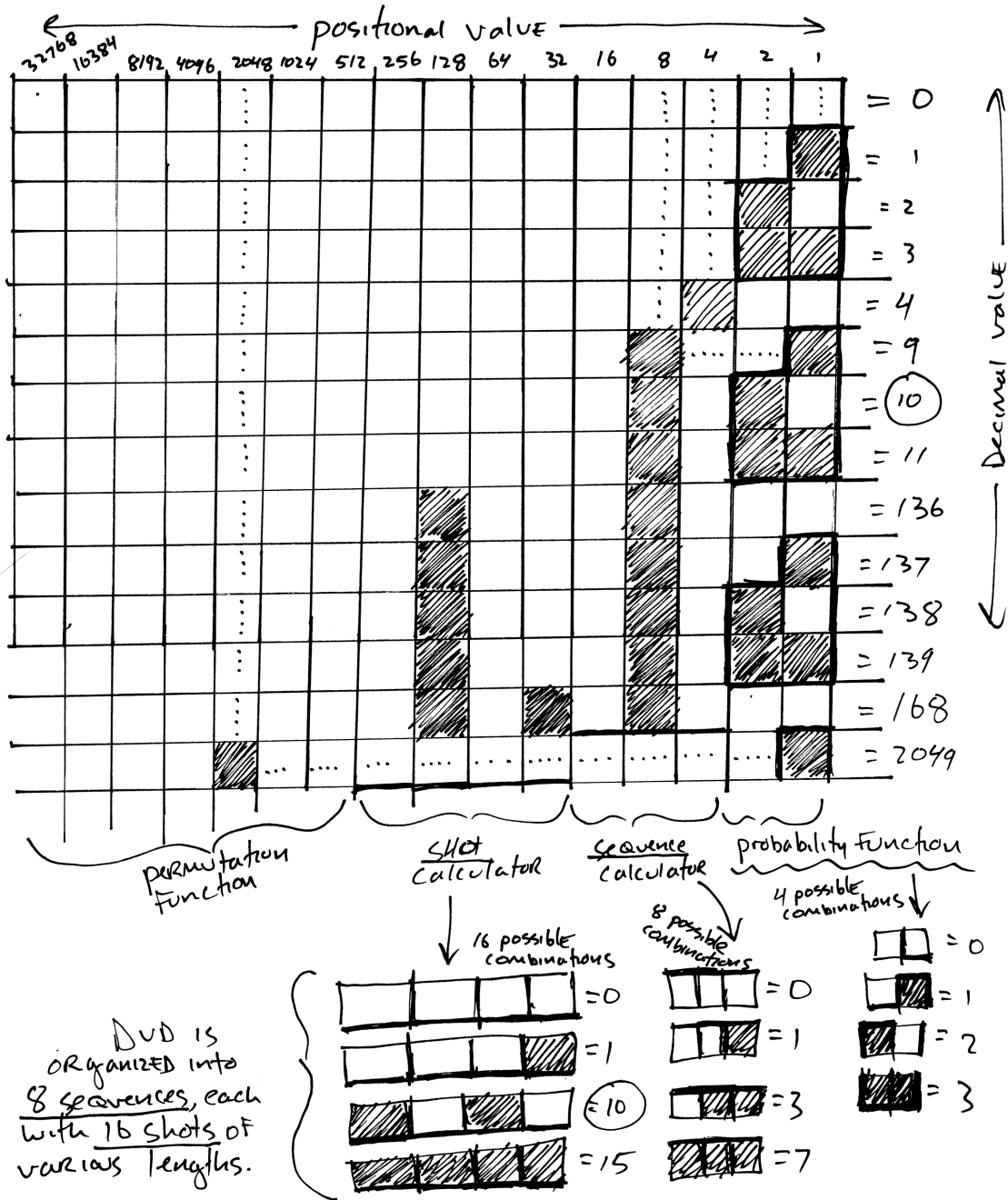
Since the DVD can be thought of as being organized into eight sequences of 16 scenes each, at any moment during playback the DVD can be viewed as doing one of five things: playing a particular scene in a particular sequence, skipping to the next scene in the same sequence, skipping to an arbitrary scene in the same sequence, skipping to a scene with the same position in an arbitrary sequence, or skipping to an arbitrary scene in an arbitrary sequence.

Binary Operations

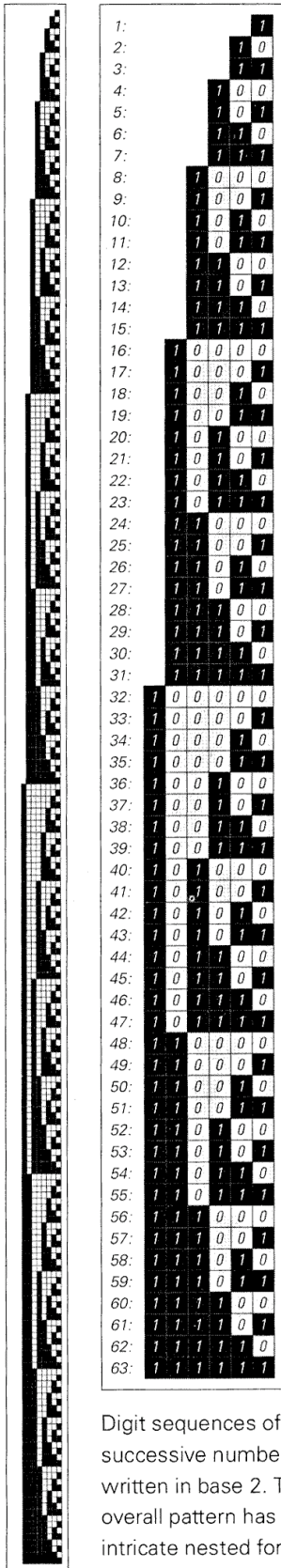
This paragraph is the most difficult part and I'll keep it brief; it's not really that counter-intuitive once you wrap your brain around the terminology. A binary number (10001011) represents an integer quantity (139) as a sequence of binary values. Binary values can be expressed as 1's and 0's, TRUE and FALSE states, or YES and NO assertions; what is important is that they are binary (i.e., of two possible values). Each binary value is called a bit, which can either be ON or OFF. If a bit is OFF, it does not increase the size of the integer quantity which the binary number represents. If a bit is ON, it increases the size

of the integer quantity according to the position of that bit in a sequence of binary values. When binary numbers are converted into integer quantities, the lowest bit can contribute 1, the second bit can contribute 2, the third bit can contribute 4, and the fourth bit can contribute 8. When one speaks of the size of a binary number, one refers not to the integer quantity (139) that the binary number represents, but rather to the quantity of possible binary values that can be used to represent an integer. Thus, a 1-bit binary number can represent 0 or 1, a 2-bit binary number can represent 0 or 1 or 2 or 3, a 3-bit binary number can represent 0 or 1 or 2 or 3 or 4 or 5 or 6 or 7, and so on. To convert a binary number into an integer, one simply adds together the positional values of all the ON bits, where each ON bit X represents the integer quantity 2^X .

The DVD specification allows for 16-bit binary numbers, which can be used to represent any integer quantity between 0 and 65355:



Just as integer quantities have patterns (such as alternating between even and odd), binary numbers have patterns. Notice in the diagram above how the lowest bit (written in the rightmost column) alternates to correspond with even and odd integer quantities. Notice also the pattern of repeating bits in the second column (from the right). Binary numbers are filled with interesting patterns.



Digit sequences of successive numbers written in base 2. The overall pattern has an intricate nested form.

Artistic Application of Binary Operations

Interference for Television with Metaphysical Re-Runs treats integers as symbols. The formal features of these symbols derive from the binary digit sequence used to represent the integer that corresponds to the number of seconds elapsed since the DVD is put into a DVD player. Time becomes a symbolic entity.

The lowest two bits in the integer quantity stored by the timer function instruct the DVD player how to behave every time the DVD player reaches the end of a scene on the disc. Because two bits can represent four possible values (the integers 0,1,2, or 3), this method of evaluating an integer can be thought of as behaving like a probability generator that will always instruct the DVD player to do one of four things during playback: skip to the next scene in the same sequence, skip to an arbitrary scene in the same sequence, skip to a scene with the same position in an arbitrary sequence, or skip to an arbitrary scene in an arbitrary sequence. If the DVD player is instructed to play the next scene in a sequence, but has just played the last scene (and hence, there is no next scene), the DVD player will wait for the probability function to tell it to do something useful.

Whenever the DVD player is instructed to skip to an arbitrary sequence, it finds the appropriate sequence to which it should skip by looking at the third, fourth, and fifth bits in the value stored by the timer. Because the third, fourth, and fifth bits can be used to represent eight

possible integer values, and *Interference for Television with Metaphysical Re-Runs* is comprised of eight distinct sequences, this works out quite nicely mathematically.

Whenever the DVD player is instructed to skip to an arbitrary scene, it finds the appropriate scene to which it should skip by looking at the sixth, seventh, eighth, and ninth bits in the value stored by the timer. Because these bits can be used to represent 16 possible integer values, and *Interference for Television with Metaphysical Re-Runs* is comprised of 16 distinct scenes per sequence, this also works out quite nicely.

Patterns in Information

Below are examples of 2-color cellular automata with nearest-neighbor rules (there are a total of 256), with a single black square for initial conditions. These pictures are built one row at a time by coloring discrete squares according to definite rules that refer to squares in the previous row. Each row can be viewed as a binary digit sequence that represents an integer quantity. With appropriate initial conditions, these systems can be set up to quite directly model a variety of natural phenomena or to perform any well-defined mathematical or logical operation (in virtue of the fact that cellular automata can be set up to emulate a universal Turing machine).

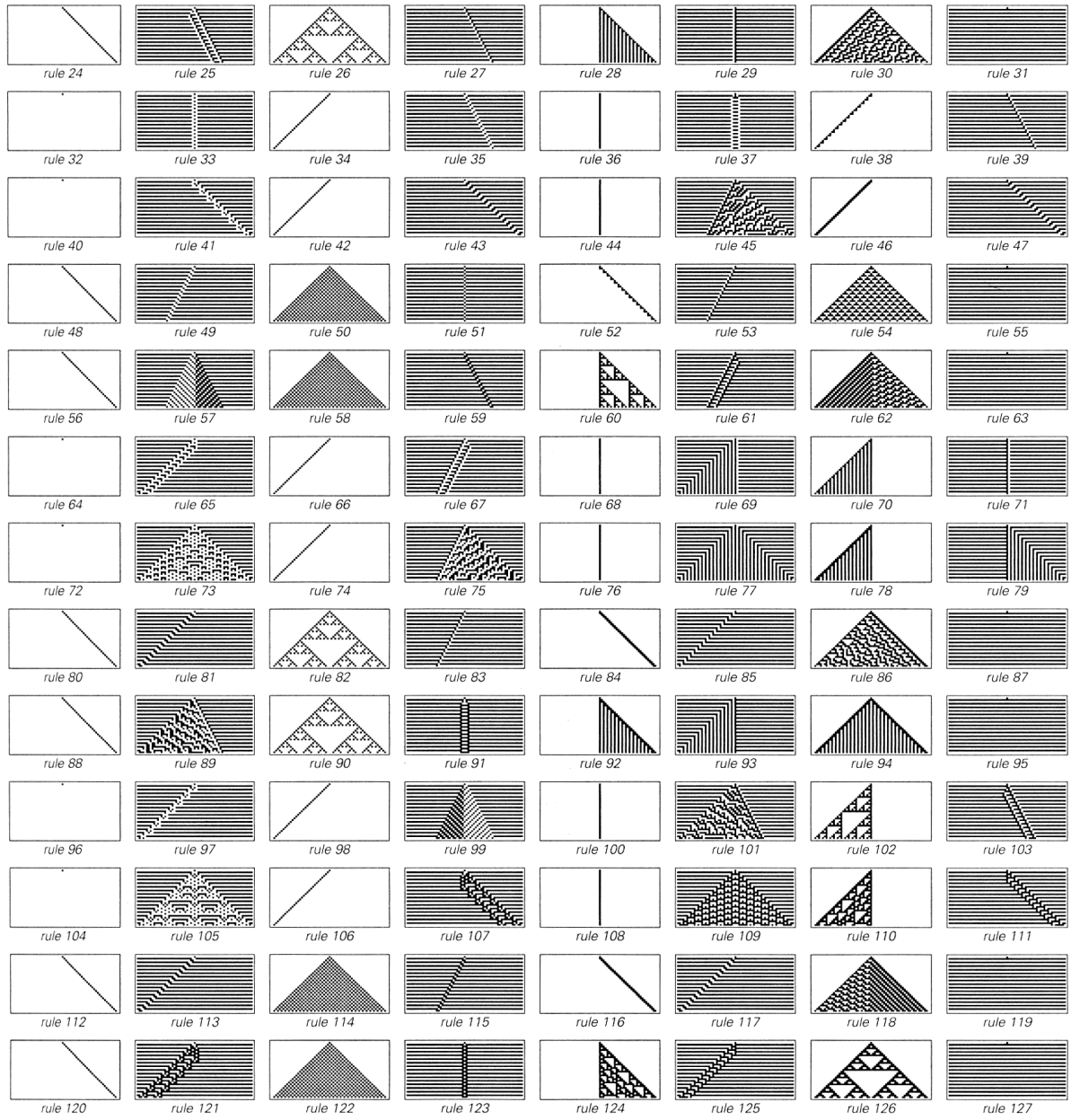
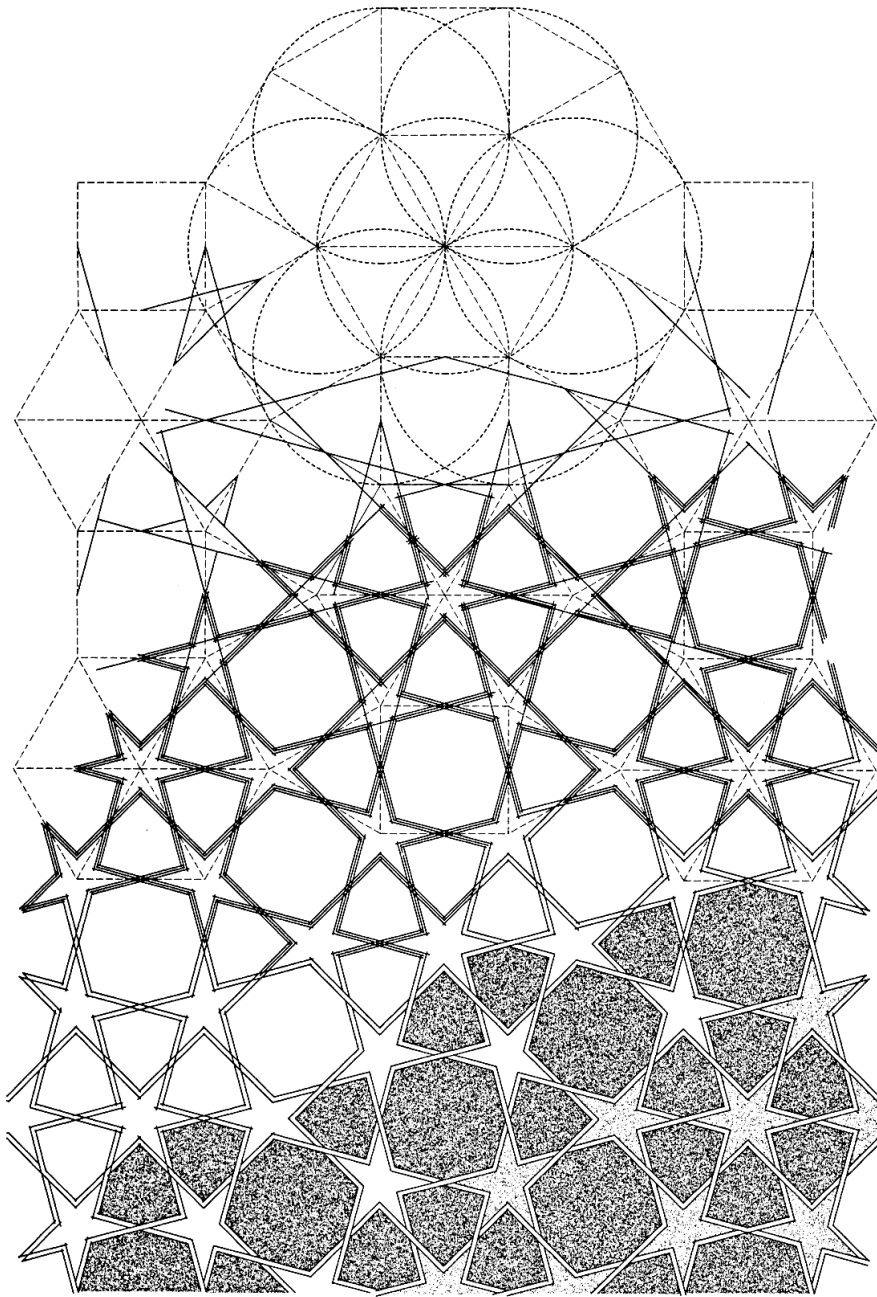


Illustration from A New Kind of Science by Stephen Wolfram.



Islamic Ornamentation

Illustration from Sacred Geometry
by Miranda Lundy.