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GENERAL ARTICLE

The Image of the Change

From the I Ching to the Evolution of Chaos

YUTING ZOU

ABSTRACT

This article is dedicated to artistic explorations of change, with the I Ching (*The Book of Changes*) as a stepping stone. The author uses modern mathematics to identify the basic types of change in the I Ching codes and to build a bottom-up I Ching systemization with an associated aesthetic principle. Moreover, the author introduces other (chaotic) types of change to sparsely fill the gap between the basic I Ching orders and the ultimate Change, allowing artistic speculation reflecting the evolution of many types of change by means of digital simulations, 3D volumetric display, etc.

The I Ching (*The Book of Changes*) is an ancient Chinese text about change that uses binary symbols. The I Ching has been connected to chance operations in art, indebted to John Cage's pioneering usage of this book in his musical compositions and Roy Ascott's "Change Paintings" containing predetermined shapes rearrangeable by human intervention [1], etc. Works created by such aleatory methods are often interactive, indeterminate, combinatorial and process-oriented. Inspired by these forerunners, this article is dedicated to artistic explorations of the "Change" beyond the context of chance, with the I Ching as a stepping stone.

To conceptualize artworks that anatomize the ultimate "Change"—infinite and incorporeal—mathematical and technological means are deployed. Firstly, I decipher the I Ching for a fourfold purpose: to extract from the codes the basic types of change; to expose the "gap" between the basic types and the ultimate Change; to build a correlative I Ching system; and thus to derive its associated aesthetic principle extensible to contemporary practice. Subsequently, the aforementioned gap is sparsely interpolated by mathematical types of change, especially chaotic ones. On that basis, I propose artistic possibilities of unfolding the evolutionary process of Change, realizable through digital simulations, multi-screen projections and 3D volumetric display.

Therefore, this paper is organized in the following structure:

1. A new method is proposed to decipher the I Ching codes, so that their meanings are generative from the codes, independent of external commentaries. That makes it possible to build a bottom-up I Ching system.
2. Exemplified by Chinese landscape paintings, the aesthetic principle of balanced harmony is derived from the new I Ching system to extend the classical overarching principle of *Qi Yun* (Qi: breath of life; Yun: dynamism) [2].
3. Given the connection between the I Ching system and mathematical chaos theory, the latter is used to complement the former to reveal artistic potentials toward an anatomy of Change.

THE I CHING SYSTEM

The Book of Changes discusses states of change and their correlations, evolutions and predictions. The book comprises a set of codes in two symbols, "--" (Yin) and "—" (Yang), accompanied by an explanatory text.

The book has served as source material for Taoism, Confucianism and other systems and developed a unique mode of correlative thought that would come to underlie Chinese science and art [3,4]. Assuming homology and synchronization among different orders of reality, from microcosm to macrocosm, it constructs systems of correspondence among various realms of the cosmos. The three most influential correlative schemata developed from the I Ching and its commentaries, according to Henderson, are numerological, and they fall short either by departing far from the original codes or by resorting to awkward numerological adjustments and forced fits [5]. Here I derive a bottom-up correlative schema by returning to the I Ching codes themselves, from which dynamic patterns and an aesthetic principle emerge, independent of numerological cosmographies and voluminous, sometimes quaint, commentaries.

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“Change,” the source of the basic orders inherent in the I Ching codes, has several names, with different emphases due to its manifold characterizations. It is known as the “primordial chaos” (*hun-dun*) to emphasize its undifferentiated state of confused orders. It is called the “primordial pole” (*tai-ji*) to emphasize its all-encompassing state of unity and the interchangeability of binary poles/opposites. It is at times identified with the “Tao”—the invariant core of the way things change—to emphasize its deterministic indeterminacy of evolving changes. These can be seen from the following quotations, where “Qi” means a *continuous field of forces*. The classic “I Ching • Qian zuo du,” a late Western Han dynasty study of the I Ching, says:

Forms are generated from the formless. There are four stages: the primordial change (太易), the primordial beginning (太初), the primordial initiation (太始) and the primordial substance (太素). In the primordial change, Qi was not yet manifest; Qi appeared in the primordial beginning; the primordial initiation is the stage in which forms emerged; the primordial substance is the origin of substances. The primordial chaos (*hun dun*) is the confused state in which Qi, forms and substances had come into existence but remained undifferentiated. The primordial chaos is invisible, inaudible and untraceable, and it is also called the Change (易) [6].

Furthermore, the Tao Te Ching says: “There was something in the chaos before the universe was born. It stands alone and empty, solitary and unchanging. Eternally present and inexhaustible, it is the mother of the whole world. Because I do not know its name, I call it the Tao” [7].

In other words, the Change is conceived as the all-encompassing virtual infinite that is capable of producing all possible changes, from order to chaos. As the driving force of all changes, Yin and Yang are the basic constituents of the I Ching codes. Bifurcated from the Change, the primal Yin-Yang pair gives rise to 8 trigrams, whose interactions further produce 64 hexagrams. Different levels of complexity thus arise.

Yang has the force pattern of the sun/light, outward expanding and upward rising; the complementary Yin has the moon/dark force, inward contracting and downward descending. Hence, Yang and Yin have “directional vectors” attached to their symbols (Fig. 1). When Yang reaches its maximum expansion and ascension, it is torn apart in the middle, starts to descend and then becomes Yin. Likewise, when Yin attains its limit, it starts to ascend; its broken lines, moving towards the center, merge into a solid Yang line. That is the *Yin-Yang interchangeability*, taken as a universal invariant principle of the way things change or, metaphorically, the breathing pattern of the universe.

A trigram is composed of three Yin-Yang lines. Eight trigrams exhaust all possible triple combinations of Yin and Yang. Their topological diversities are shown in Fig. 2, where all figures are generated based on Fig. 1. We will look at each entry in the table, where the figure on the right is the simplification of the one on the left.

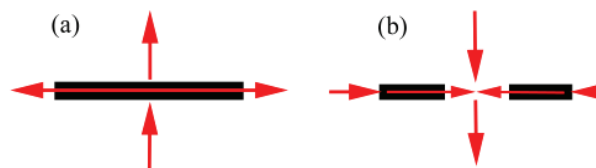


Fig. 1. Yang (a) and Yin (b) lines with directional vectors. (© Yuting Zou)

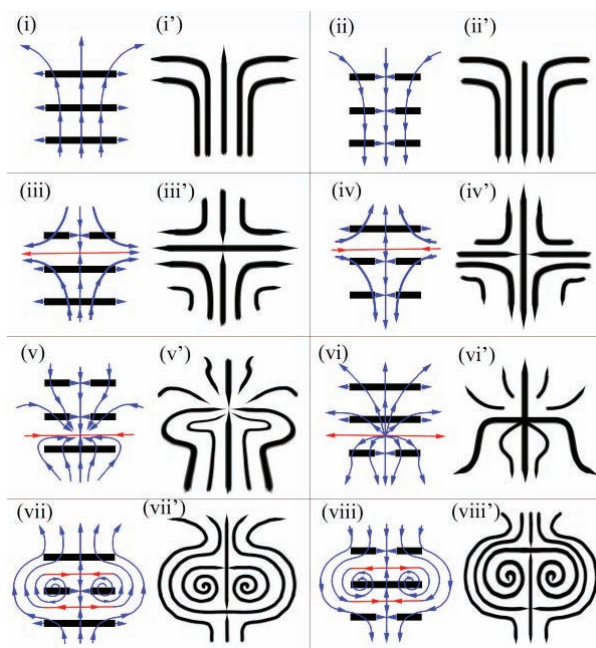


Fig. 2. Typical phase portraits of the eight trigrams. (© Yuting Zou)

Figure 2(i) shows the directional vectors attached to each line of the trigram ☰ and nearby forces. ☰ is associated with the “initiating heavenly power” due to its expansive and rising forces. The binary opposite ☷, plotted in Fig. 2(ii), implies the “receptive earthly power,” for its forces are contractive and falling.

☳ has its Yin-Yang forces meet on an interface somewhere between the top two lines. Since Yang outweighs Yin in ☳ in Fig. 2(iii), the interface stretches out horizontally. Figure 2(iii') gives an image of forging a blade vertically to achieve horizontal sharp edges, which further relates to a lake’s metallic surface that cuts through mountains; it is traditionally named “Lake.” Inversely, Fig. 2(iv') of ☶ demonstrates the mountain-like force that squeezes the earth horizontally to lift it up and press it down simultaneously, affirming its traditional name “Mountain.” Both trigrams possess saddle-type critical points in their interfaces.

In Fig. 2(v'), ☱ has an interface dominated by Yin, where all nearby forces point to the sink-type critical point. Called “Thunder,” this trigram’s phase portrait renders a battle-field between the Yang force of germinating seeds and the thunder-like Yin force.

The opposite, ☴, called “Wind” (Fig. 2(vi)), has a source-type critical point in its interface. Its phase portrait (Fig.

2(vi')) displays a branching tree with deep roots or dispersing wind blowing in all directions.

Between the top two lines of ☲ lies an interface where the upward Yang does not interfere with the downward Yin. The two bottom lines generate another interface dominated by Yang, for the double Yang lines join force to trap the middle Yin. The typical phase portrait in Fig. 2(vii') depicts a burning flame, giving it the name "Fire."

Analogously, the "Water," or "The Abysmal," ☵, generates two swirling vertices, as in Fig. 2(viii').

This method also applies to the 64 hexagrams—all planar pairings of the 8 trigrams. Here I only explicate those in Fig. 3, which are involved in the Chinese paintings in the next section.

The hexagram ☶ consists of ☶ and ☶, whose force patterns are matched smoothly in Fig. 3(a), showing a breathing pattern that can be embodied by a mountaintop lake.

With ☶ above ☶, ☶ gives an image of a flame vitalized by wood/wind, as in Fig. 3(b). Dominated by Yang, the interface between the two trigrams contains a saddle-type critical point that intensifies the flame. By interchanging the positions of ☶ and ☶, force patterns match perfectly to form a vitalizing relation in ☶, shown in Fig. 3(c).

☶ can be visualized as a waterway obstructed by rocks underneath. As in Fig. 3(d), the sink-type critical point connecting the two trigrams partly suspends and thus devitalizes the downward force. Likewise, having ☶ above ☶, ☶ can be embodied by the phenomenon of a billowing ocean of clouds, for the downward force is fully suspended by the pure Yang force, as seen in Fig. 3(e).

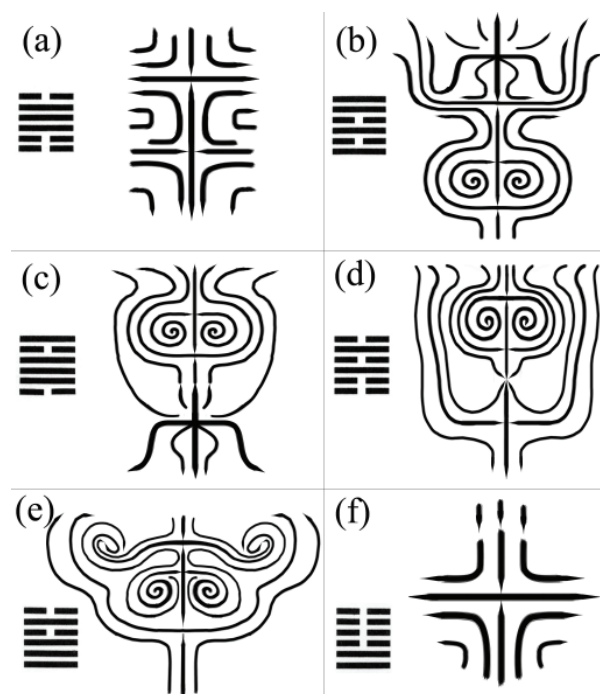


Fig. 3. Typical phase portraits of six hexagrams. (© Yuting Zou)

In Fig. 3(f) ☱, the Yin force intensifies the hyperbolic force in ☱ below, enhancing its horizontal expansion. A possible visualization is an island in a lake.

On that basis, I suggest a bottom-up correlative system as follows to frame the next two sections. I systematize the above building blocks in light of their individual orderings and mutual relations:

1. The eight trigrams can be put in cyclic order by their energy flux to correlate the seasonal cycle: the germinating force of ☳ corresponds to early spring; the branching force of ☴ is prevalent in late spring; the flame-like force of ☲ relates to summer; the receptive force of ☵ absorbs energy into the earth in late summer; on an autumn lake's surface, warm water meets cold air like the hyperbolic force of ☶; the rising force of ☱ takes energy away from the earth in late autumn; winter arrives as the sinking ☷; the recuperative force of ☴ starts in late winter before another seasonal cycle. Synced to the annual rotation of the Big Dipper, this ordering, with finer temporal coordinates added, may coincide with the space-time cycle known as the *fen-yeh* cosmography [8].

2. The interaction of trigrams forms complicated relational networks:

(i) The simplest one is formed by the planar-paired juxtaposition of trigrams—hexagrams. According to their force types, trigrams can be grouped into five representative kinds to produce the so-called "Five Phases" named after essential materials: "water" (☵), "fire" (☲), "metal" (☱), "wood" (☴), "earth" (☷). The vitalizing or devitalizing relations between these phases give meanings to hexagrams. In fact, my previous interpretations of trigrams and hexagrams have pointed toward such grouping and relations. Traditionally, the five phases are correlated to numerous things in different hierarchical organizations to form a synchronized web, so as to analyze and predict changes [9]. In particular, the correlation between cosmology and landscape paintings will be discussed in the next section.

(ii) More complicated interactions among trigrams exist in higher dimensions. Beyond planar combinations (hexagrams), there are many ways to play with trigrams, i.e. projections, non-planar intersections, rotations, suspensions, etc. Moving toward higher dimensions, more varieties of changes emerge, as well as their artistic potentials. That will be my focus in the last section.

THE AESTHETIC PRINCIPLE OF BALANCED HARMONY

In this section, I will propose the I Ching-derived aesthetic principle of *balanced harmony*, which is extensible to contemporary artistic practice to be discussed in the next section.

The term "balance" in the I Ching system is understood as the central equilibrium of all types of forces—the center of the circle of ordered trigrams; and "harmony" is understood

as the coexistence of compatible forces in a synchronized totality. Derived therefrom, the aesthetic principle of balanced harmony suggests taking an artwork as a network of abstract forces embodied by objects associated with those force types. In particular, Chinese landscape painting can be viewed as the interaction of forces embodied by natural scenes. The principle is unfolded as follows:

An aesthetically “balanced” work traps the essence of life force inside, just as each of ☰ ☷ ☱ ☴ succeeds in containing within itself the interfaces of interaction. However, ☳ ☵ ☲ ☶ fail; Yang ascends but Yin descends indifferently.

The term “harmony” has at least twofold implications. It used to mean the artist’s spiritual communion with the undivided Whole. Artworks produced in this state become spiritual expressions of a world in flux and tranquility, a panorama of life at large. As Zhuangzi said: “When the mind is in repose, it becomes the mirror of the universe, the speculum of all creation” [10]. Nonetheless, recent studies suggest a rereading of Chinese paintings; the mystical aura of artistic production is largely diminished in the light of market forces, artist-patron relationships, etc. [11]. Therefore, we incline to construct in an artwork itself a “harmony” that is a persistent pattern generated by compatible forces—a dominating global force and multiple complementary forces.

Thus, a balanced harmony has structural strength, for it is not a static assemblage of irrelevant parts but a persistent whole of dynamically interacting constituents that are structured by force types. In this regard, this aesthetic principle of balanced harmony can be regarded as an extension of the classical principle known as the *Qi Yun*, contextualized by a noted group of later Ming painters and theoreticians [12].

To exemplify the use of that principle in two dimensions, the following four hanging scrolls are analyzed in chronological order. Each scroll depicts a season. In light of Cahill’s insightful discussions on the historical significance of each artist’s choice, the chosen paintings are stylistically representative: the first two monumental paintings are representative of the grand Northern-Sung style, although they differ in stability; after the relaxation of Northern-Sung austerity and before the arrival of the romantic Southern-Sung academy, Li Tang created the transitional style; the third scroll has a mixed style, as the artist Tang Yin stands between the “*Li Tang*”-derived manner and the literati style—the anti-representational trend that promotes self-expression; the last scroll, by Yuan Yao, shows the reclusive Individualist style of the Ch’ing dynasty with a noticeable Northern-Sung turn [13]. These paintings can be viewed at <www.yutingzou.com/1/post/2013/05/supplementary.html>.

It is worth noting that Henderson et al. suggest a parallel between Chinese cosmology and landscape art in the 11th and 17th centuries [14]. They regard the painting by Fan Kuan as an artistic microcosm that succeeds in embodying the orderly structure of the Neo-Confucian cosmology, which takes the world as a coherent whole. Moreover, they point out the irregularity and incompleteness realized in both Ch’ing cosmology and landscapes, in opposition to the Neo-

Confucian interpretation and usage of the I Ching. Indeed, the following paintings move from a high degree of order to a certain level of irregularity, which will be advanced in the next section. However, the following demonstration of the applicability of the I Ching-derived aesthetic principle is free from Neo-Confucian literatures, as I ground my systematization of the I Ching in the codes themselves.

Traveling among Streams and Mountains

by Fan Kuan

This hanging scroll (late 10th–early 11th century) adopts the classical three-level composition: the lowest level of travelers in the secular world, the middle level of hills and pavilions, and the highest level of gigantic mountains and sacred peaks of Taoism. Progressing in strength and size, the flame-like layers demonstrate the dominating force of ☲.

In this summer scene with full-blown leafy trees, the wood-type force of ☳ on the top and bottom vitalizes the middle “flame” to embody ☱ and ☴ (Fig. 3[b],[c]). Situated in mountains, the translucent lake veiled in mist (in level two) and the hidden lake, as the source of the waterfall of tremendous height, manifest the hyperbolic force of ☵. As in Fig. 3(a), the breathing pattern of ☳ makes mountains and lakes a living entity.

Early Spring by Guo Xi

This work (dated 1072) was executed with amazing details in three-level composition. The sprouting trees under heavy clouds and mists unambiguously reveal the dominating force of ☳. Craggy and twisted mountain ridges—the backbone of this painting—show the difficulty in the rise of Yang force in early spring. This painting is arguably the one that contains the most enjoyable organic complexity in all Chinese landscapes.

In level one, boatmen are disembarking on the shore, heading toward a humble cottage. The age-old twin pines and crab-claw and peach trees lead to the second level of multiple paths that broaden the perspective dramatically. Marching from left to right, climbers aggregate around the wooden bridge of bamboo handrails, where a gorgeous morning landscape unfolds. Transverse to the bridge, a string of pearly pools gently passes icy banks to form cascading waterfalls. Further up the waterway is a mixture of clouds, mists and vapors obscuring distant mountains. Another path from the bridge leads to magnificent pavilions, behind which clouds mingle with drizzling rains, billowing toward the center of the scroll. Above the clouds, an otherworldly village is dimly visible through the opening of cliffs, guarded by overhanging rocks and several twin pines.

The wood-type dominating force ☳ is vitalized by the complementary water-type force ☵ permeating this scroll. Water appears in three forms: solid (ice), liquid (waterway, lake) and gas (cloud and vapor). The half-obstructed waterway (☵, Fig. 3[d]), including cascading waterfalls, and the ocean of clouds and vapors (☵, Fig. 3[e]) are arranged in an alternating pattern. The life-vein of this painting is free-flowing.

Solitary Wild Geese in Sunset Glow by Tang Yin

This melancholic autumn landscape (executed around 1510) depicts the void of the sky and a lake. Willow trees, whose branches are reluctantly bent, surround the pavilion above the lake. The poet-artist Tang Yin pictured himself inside the pavilion, attended by a young servant. He is looking at the far horizon. The scene expresses Tang Yin's reflection of his hindered life.

Overlaying the sky, the poem clearly refers to the literary classic "Preface to the Prince of Teng's Pavilion," written by Wang Bo nearly a millennium ago. That preface talks about how Wang Bo dispelled his frustrations by understanding the Tao in levels: atop the high cliffs by the abyssal South Sea, Wang Bo's horizon was widened; he saw the deterministic nature and the interchangeability of the ebb and flow of life by glimpsing the infinite universe and the invariant North Star.

Correlated to that preface, this scroll also expresses a widened "horizon." The global force ☰ is made evident in the painting's horizontal emphasis. As in ☰ (Fig. 3[f]), horizontal expansions are reinforced by the complementary force ☷ from above, which is embodied by a low and earthly hill above the pavilion.

Penglai Island by Yuan Yao

This scroll (early 18th century) reflects a reclusive mental state at the end of imperial China, when the "Penglai Island"—the Chinese Arcadia—is on the verge of being engulfed by the roaring sea. Before a thunderstorm, swelling tides surge up the island to form violent collisions with the shore. The pines in the foreground are almost uprooted by the relentless wind, while the pink plum blossoms in the mid-ground shed a gleam of hope. These plum blossoms near the palace indicate that it is a winter scene.

The downward force of ☷ dominates the scroll. Even the half-melted Penglai Mountains are rendered like sea waves. Having ☷ in and above the ocean, the "doublewater" ☵ signals severe danger.

Following this line from order to irregularity chronologically, we are ready to apply that principle to dimensions higher than two.

INTERMEDIATE CHAOS BETWEEN THE I CHING CODES AND THE PRIMORDIAL CHAOS

In this section, I attempt to interpolate some intermediate types of chaos into the vast gap between the basic I Ching orders and the ultimate Change. Progressing from the I Ching codes' planar interplay to their higher dimensional constructions, one can extend the aesthetic principle of balanced harmony to generate a larger body of artworks reflecting more complicated types of change.

To enrich the varieties of change, we adopt mathematical means, which is not unnatural, for there are at least two essential connections between the I Ching system and modern chaos theory:

1. They share the common ground that complexities arise

from the evolution of simple dual elements: The primal Yin-Yang pair is the driving force of all changes inherent in the I Ching system, while the so-called "hyperbolicity" (uniform or non-uniform) has analogous function in dynamic systems. As the key ingredient of chaos, hyperbolicity characterizes the balance between the duality of stretching and squeezing, resulting in the "sensitive dependence on initial conditions." A notion similar to that sensitivity is also accepted as a basic criterion of chaos (anomalies) in Ch'ing astronomical reformation [15].

2. They both suggest the presence of sudden ruptures even in continuous systems: By switching a constitutive line from Yin to Yang, or vice versa, the phase portrait of an I Ching code is switched from one pattern to another; in a dynamic system, an infinitesimal change of parameter may lead to a bifurcation that structurally modifies the phase portrait into a topologically different one.

The history of chaos science has been richly investigated in literature [16]. Here I mostly focus on chaos types and their digital constructions.

One representative type is the "horseshoe" chaos, which is supported by a hyperbolic fractal (Cantor) set that repels nearby orbits eventually. The Smale horseshoe is a geometric and topological mechanism that produces deterministic chaos. It uses simple distortions of a planar square—squeezing, stretching and folding—to produce uncertainty of planar motion (up or down, left or right), like tossing a coin. That mechanism produces "horseshoe" chaos that contains a hyperbolic invariant set of elements in motion, whose trajectories are in one-to-one correspondence with all binary sequences (e.g. sequences of coin tosses). Due to the repelling force of the horseshoe, near which almost every point will eventually escape the chaotic region, one experimental indicator of the presence of horseshoe chaos is "transient chaos"—temporary chaotic states that are eventually taken over by regular states.

Unlike the above, a "chaotic attractor" refers to an attracting invariant set that paradoxically has expansions within itself. As an experimental indicator, "persistent chaos" refers to self-enclosed chaotic states inside a trapping region where constitutive orbits unceasingly trace out a fractal attracting set in an unpredictable manner.

Mixed with transient and persistent chaos, "intermittent chaos" has long stretches of orderly states between chaotic states. In intermittent chaos, trajectories may travel from horseshoes to horseshoes or from horseshoes to a chaotic attractor. Furthermore, there is "noisy periodicity" that has fuzzy states in an overall periodic pattern.

Each of the above chaos types already has countless different appearances determined by systems and settings, not to mention various syntheses of those types. For instance, chaotic attractors are found in diverse systems of varied complexity, among which the Rössler attractor and the Lorenz attractor are best known. The Lorenz attractor especially has drawn considerable attention outside the mathematics community and has been applied to some interesting cross-

cultural metaphors, including the Yin-Yang dynamism [17]. Thus far, we use this very system to exemplify and visualize the above species of chaos and their evolutions through bifurcation.

Edward Lorenz built the Lorenz system of three ordinary differential equations in 1963, when he was studying long-range weather predictions [18]:

$$\begin{aligned}\dot{x} &= a(y-x) \\ \dot{y} &= (r-z)x - y \\ \dot{z} &= xy - bz\end{aligned}$$

He discovered chaotic behaviors at “classical parameters”: $a = 10$, $b = 8/3$, $r = 28$. Since the choice of r affects the system much more than a and b , we fix the classical values of a and b while allowing r to vary. With a few exceptions, the following values of r are experimentally determined, rather than being mathematically proved, when bifurcations occur in simulation. All plots in Fig. 4 are generated by numerical simulations, written in Maxima language.

$0 < r < 1$: the origin is a globally attracting sink.

$r = 1$ is a transition value: for $r > 1$, two new symmetric equilibria emerge while the origin becomes a saddle.

$r = r_0 \approx 13.9265$ is the threshold value of the first homoclinic bifurcation; horseshoe/transient chaos appears when $r > r_0$.

$r_0 < r < r_1 \approx 24.0579$ is the so-called preturbulent regime, where horseshoe/transient chaos (Fig. 4(d),(e)) persists and grows in size as r increases.

$r_1 < r < r_3 \approx 30.1$: attractor/persistent chaos replaces horseshoe/transient chaos and grows in intensity with r .

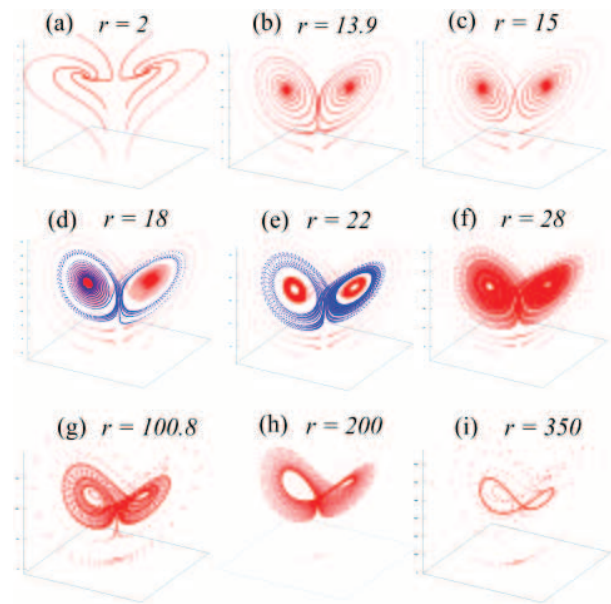


Fig. 4. Phase portraits of the Lorenz system; r varies. (© Yuting Zou)

$r_3 \leq r < r_4 \approx 214.364$: the chaotic attractor disappears, but transient chaos, intermittent chaos (Fig. 4(g)) and noisy periodicity (Fig. 4(h)) are still observable for many values of r .

$r_4 < r < \infty$: chaos annihilates. Especially when $r > 313$, only one (symmetric) stable periodic orbit remains, resembling the infinity sign “ ∞ ” in projection.

Ideally, 3D volumetric display is suitable for keeping track of the evolutionary process of those immaterial chaotic species. Figure 5, an initial design that I executed according to the proposed aesthetic principle, records an instance before preturbulence. This I subsequently developed into an audiovisual animation entitled *Infinite Change* [19]. *Infinite Change* records a complete experience of walking through an interactive object coded entirely in Processing. It syncs the realms of natural landscape, mathematics, sound and inner mindscape while showing an audiovisual anatomy of several species of change. In that interactive 3D object, the flowing particles give life force to the entire composition. Sounds are generated by particles’ spatial data using a single instrument in Minim. The system’s parameters are shifted interactively via keyboard to alter the dynamical structure of the scenes. As a viewer journeys through an immersive landscape, the structure alternates between calming types of order and exotic types of chaos. Continuing in this direction, there



Fig. 5. An infinitesimal step before preturbulence. (© Yuting Zou)

are many prospective artistic possibilities. One could build a user's interactive interface to make the following choices available:

- Different spatial constructions for multiscreen projections: The position of dissection planes affects the resulting landscape.
- Different parameters within a system: It is interesting that a single system is able to yield many types of change through varying parameters. Within a chosen system, there is a deep numerical ocean of artistic discovery.
- Different systems: There are well-known systems such as the Hénon map, the Rössler system and other newer systems [20].

- Higher hierarchies of chaos: The nascent field of "hyperchaos" in 4D or higher dimensions has taken shape wherein a continuous evolutionary process from chaos to hyperchaos has been discovered [21].

Blending Asian and Western art, mathematics, animation and interactive audiovisual installation, I will continue searching for an anatomy of the infinite, ranging from an infinitesimal change to a gigantic infinity. Aiming at creating immersive experiences in different levels of reality between the discrete and the continuum, I will go on exploring the actual infinite of completed data set and the procedural potential infinite.

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