

## Folding the Square —Six Lessons in the Geometry of Japanese Creativity

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### Abstract

In contrast to the cerebral style of contemporary approaches to creativity, traditional Japanese culture offers an approach steeped in spatial, sensory, and kinesthetic intelligence. While mainstream approaches tend to be outward bound in thinking *outside of the box*, Japanese culture tends to be inwardly innovative by thinking *inside the box*. The culture that created the *Origami* art of paper folding brings the same sense of geometric intelligence to the martial arts, brush calligraphy, and even the lifestyle and daily movements of life in Japan. This paper explores *six lessons in the geometry of Japanese creativity* as a psychophysical process, and its practical applications to enhance the flow of ideas and innovation. The connection between body movement and creativity has been made in the West through such activities as walking, running, and juggling, but the Japanese approach adds a dimension that is both practical and aesthetically pleasing. The author has spent nearly four decades in the study of Aikido (7<sup>th</sup>-dan), Calligraphy (*Shihan*), and the Japanese language. As a columnist and consultant, he specializes in the application of Japanese cultural concepts to the path of continuous improvement as a consultant to corporations, and as a Guest Lecturer at several Japanese universities. *Illustrations* and *references* are found at the end of the article.

### 概要

クリエイティビティーについて、現代のアプローチは身体より脳や頭を重視している傾向があります。それに対して、日本の伝統文化を表現するクリエイティビティーのアプローチは空間、五感などの身体感覚を重視してきました。自由な発想を求める者は通常「枠をはみ出して考える」（英語では **thinking outside of the box**）ことをクリエイティビティーへの近道だと考えています。しかし日本の文化ではその逆方向、つまり「枠や制限の中でいかに創意工夫できるか」（**thinking inside the box**）を求めて極める傾向があります。折り紙はその例の一つであるし、その幾何学的能力を武道、書道、そして日常や生活のなかにもよく見ることができます。この論文では、日本文化から発想した日本的幾何学発想のレッスンを6つ取り上げています。心身共に使うと発想が自然に溢れ出し、非常に役に立つ実践的な成果を生み出します。欧米の研究の中にも、心と身体の密接な関係を認めているものがあり、歩くこと、走ること、そしてジャグリングなども発想力を高めるものとして勧められています。これらのことも加味すると同時に日本の伝統文化の中から学んだ新たな手法で、実践と美を結びつける次元の発想力を提案できると確信しています。ウィリアム・リードは40年近く日本語と日本文化を勉強し続けています。合気道七段、書道師範の資格を持ち、コラムニスト、コンサルタント、そして日本の大学の客員教授として、日本文化の知恵や秘訣を現代の社会の中で活用する方法を伝授しています。この論文のイラストと参考資料を論文の最後のページに掲載しておきます。

## 1. Folding the square

The folded paper crane of *Origami* is an icon of Japanese culture. A square piece of paper is repeatedly folded in on itself in symmetrical triangles, and without scissors or glue, magically emerges as a paper sculpture of a crane (Fig 1. *Origami Crane*). The almost limitless varieties of shapes that can emerge from folding a simple square symbolize the unity of dexterity and imagination that characterizes much of Japanese creativity.

The geometry of inward bound movement is also the key to understanding the distinct character of traditional Japanese dance, *Kabuki* theater, *Ukiyoe* prints, brush calligraphy, and even the martial arts. One reason that it takes so many years to master these arts is that the essential movements are subtle and internal, difficult to explain and impossible for a beginner to imitate.

A Japanese proverb says that, *Mastery of one art leads to understanding of them all*. This is because at their core, the Japanese arts and Japanese creativity have this remarkable quality in common: *the ability to sense and shape the internal geometry of physical materials and the human body*. Sophisticated systems of training have developed in the traditional arts to pass on this ability from master to apprentice. Though training secrets are typically not shared with outsiders, there are certain parts of the process that shed new light on creativity.

## 2. Thinking inside the box

Creativity is often associated with thinking *outside the box*, the province of artists and free thinkers who think and move easily outside the bounds of convention. The problem with thinking out of the box is that it is simply too easy. The presence of rules and limits is a prerequisite for progress in nearly all sports and performing arts. It would certainly be easier at first to play tennis by taking down the net and ignoring the lines on the court, but players would not progress and audiences would find nothing worth watching. What kind of theater would there be if actors all carried their scripts onto the stage rather than internalizing their roles and lines? Ideas and approaches that appear to come from outside of the box are more often the product of rigorous discipline working within a set of limitations. The most exciting and

productive creative work is often produced and performed *inside the box*.

The Chinese character 創 means to *create, make, or improvise*. The character is made of two radicals, 倉 meaning warehouse (a box), and 刃 meaning sword. An instrument of severity and decision inside a box. Not a definition for creativity that you are likely to encounter among contemporary creativity advocates, yet one that is actually much closer to the real experience of productively creative thought and action.

The traditional Japanese arts place a high value on the discipline of ritual practice. Training involves the repetition of forms, and the goal is incremental improvement, with occasional flashes of insight.

This is consistent with research on musicians and athletes described in *The Talent Code*, by Daniel Coyle, in which he concludes that in many fields, world-class skill is a result of roughly 10,000 hours of deep practice.

The lesson for us is that *creativity can be cultivated through repetition and ritual practice*.

## 3. Physical finesse

Another quality associated with Japanese creativity is that of *physical finesse*. This is demonstrated in fine craftsmanship where materials are manipulated in processes that require high levels of dexterity and precision. The tradition of making things (*monotsukuri*) is part of the Japanese national identity, and the predecessor to Japanese skill in manufacturing.

Skills are often honed at the very edge of perfection. Consider the Japanese sword (*nihontō*), the forging and folding of steel in thousands of layers, a process that traditionally could take months, and was considered a sacred act.

The sword was believed to be the soul of the Samurai, and it is a sacred symbol in Japanese mythology (Fig 2. *Samurai*). The precise and fluid motions of a master drawing, wielding, and sheathing the sword is breathtaking to watch. Its danger and difficulty can only be appreciated by first-hand experience.

In swordsmanship, the unity of mind, technique, and

body (*shingitai*) is the result of years of disciplined practice, and can only be achieved through the correct geometry of movement. How else would it be possible to cut through thick rolls of straw without resistance, or to sheath a live blade at lightning speed entirely by feel?

High degrees of precision are also demonstrated in traditional Japanese performing arts, and their performance depends on highly integrated geometric movements of body, instrument, folding fan, or weapon. The principle behind this process is that of *kaizen*, or the quest for continuous improvement.

The mind-body connection, and the transformative effects of exercise on the brain and mental health have been demonstrated through research revealed in *Spark: the New Science of Exercise and the Brain*, by Harvard Medical School professor John J. Ratey, MD, whose revolutionary work in physical fitness training with 19,000 kids in a Chicago school district put the district's science test scores first in the world. Body movement is beneficial for the brain.

The lesson for us is that *kaizen brings incremental improvements through full engagement that leads to significant breakthroughs over time.*

#### **4. The art of flexible focus**

Reliance on computers and printing devices has taken us away from the art of handwriting, or in the case of Japan from traditional writing with the brush. While this has led to great advances in legibility and convenience, it does come with the loss of individual character in writing.

In comparison with typing, which is the same regardless of which key you hit, and writing with a pen that is fast and easy to manipulate, brush writing is a more challenging and engaging experience. Brush calligraphy (*Shodō*) is the art of writing characters with rhythm, balance, and depth on flat paper. The brush is highly responsive to factors such as speed, pressure, connectivity, and your mental and physical state. In fact, the painted character is considered to be a portrait of the person who painted it.

The ability to render a character that *has character*, that is which clearly shows the rhythm and dimension of the

movement depends on having a feeling for the geometry in your body and fingertips as you move the brush on paper. The brush does exactly what you tell it to, and magnifies it for the world to see.

The composition of the character adds another dimension for the imagination through the radicals or elements which compose its meaning. In this case, the radicals for fish (魚) and sheep (羊) create an unusual composition in the character for *fresh* (鮮), suggesting a new and imaginative combination (Fig 3. 鮮 FRESH).

Like a form of *visual jazz*, brush calligraphy looks improvised, but in fact can only be created by a sense of subtle movement and internal geometry that takes years of practice to achieve. When you first try it you become painfully aware of how one-dimensional and mechanical your arm movements are, and how disconnected you are from the medium and the message. The brush is unforgiving until you make that connection and move into the creative dimension with mind and body.

In one sense, creativity is a controlled accident. In a paradoxical sense, it is holding on and letting go at the same time. No wonder that Zen has been a key source of inspiration in the Japanese arts.

Improvisation is the close cousin of creativity. Stephen Nachmanovitch delves into the improvisational aspects of creativity and explores this process in depth in *FREE PLAY: Improvisation in Life and Art*.

The lesson is that *creativity occurs at the fine edge between discipline and spontaneity known as improvisation.*

#### **5. Nanba Walking**

While the Japanese arts provide an intriguing and exotic reference for the creative process, unless you are actively engaged in the practice of an art, the reference can remain somewhat remote. To really be useful we need to dig deeper and find the relevant references for daily life, and specifically to the creative process. The first connection is with how we move in daily life, through the process of *walking*. The word *Nanba* (ナンバ、難場) is defined as a trouble spot or a crisis, alternately defined in Japanese as a *dangerous opportunity* (危機, *kiki*). The word *Nanba* is

also applied to the *way* in which you think, move, and improvise *to get out of trouble*. As a psychophysical skill it is in essence the art of physical finesse.

More specifically, *Nanba* refers to the geometry of body movement that is the most natural, efficient, and appropriate for the task at hand. Hence it has applications in the arts, but also particularly in daily life.

It is most easily demonstrated in the form of *Nanba* walking, thought to be the way Japanese used to move when they wore traditional Japanese clothing and footwear, which was less forgiving of poor posture and clumsy movement. *Nanba* can still be seen today in the traditional arts. Its leading Japanese proponents, Kono Yoshinori, Yano Tatsuhiko, and Hasegawa Satoshi, have extensively explored the application of *Nanba* movement in fields ranging from sports, to music, to martial arts (see references).

*Nanba* walking is compact and fluid, characterized by small steps and integrated arm and leg motion, without swinging the arms or twisting the body. It is often described as moving the same side arm and leg together, as opposed to swinging the opposite arm and leg when you walk. The easiest way to visualize it is to think of how a cat moves, fluid and nimble, stepping light and alert. *Nanba* is described in greater detail in the website links and book references at the end of this paper.

The benefits of *Nanba* walking are numerous, and its natural movement enables you to walk and work without fatigue. By applying the simple principles of *don't force*, *don't twist*, and *don't disconnect* in the movements of your body (*funbaranai*, *nejiranai*, *uneranai*), your body awareness can be directed inwardly to the geometry of movements that we often ignore or take for granted.

Moreover, as in the traditional Japanese arts, in *Nanba* there is room for continual refinement through daily practice. By visualizing the internal movements of your bones and joints as if they were in a box-like frame, it is possible to move the frame in subtle ways in the image of a sliding parallelogram. The result is greater degrees of freedom in articulation and coordination of your body movements.

The author has worked with Yano Tatsuhiko and Hasegawa Satoshi at the Tōhō Gakuen School of Music in the application of *Nanba* principles to student's performance in classical music, dance, and sports, where the entire physical education curriculum is oriented to *Nanba* training. Students report that the shift to internal body awareness, focusing on bone and joint articulation rather than external muscle movements, enables greater precision and freedom of movement in performance in music, sports, and running. (Fig 4. *Nanba* Runner)

Japanese athletes such as Sydney Olympic Marathon Gold Medalist Takahashi Naoko, and Olympic speed star and medalist Suetsugu Shingo practice *Nanba* running.

Kubota Kisou, Professor Emeritus at Kyoto University, has written a book on running and the brain, and his research claims that running not only played a significant role in the development of the human brain, but that it also promotes neuroplasticity, memory, and creativity.

The lesson is that *Nanba walking can improve mental and physical finesse, as well as contribute to increased ability in creative performance.*

## 6. Walking and the Idea Marathon

Writers, inventors, and artists have long considered walking and creativity a winning combination. People interested in extending their range of thinking powers often find that they think better on their feet.

Julia Cameron, award-winning poet, playwright, and filmmaker, and author of the bestselling series *The Artist's Way*, also wrote a book called, *Walking in This World: The Practical Art of Creativity*, which explores how walking can awaken the creative mind.

Albert Einstein said that, *imagination is more important than knowledge*, and often engaged in fanciful thinking and creative roving to access insights that later became the focus of practical analysis and implementation. Many of the great geniuses of history such as Leonardo da Vinci and Thomas A. Edison kept extensive notebooks of observations, ideas, and creative sketching.

Genius shows us is that we can increase our creative powers through the simple combination of extensive

walking and the keeping of notebooks.

But the real power is not in simply keeping a notebook, but in *keeping on writing* in your notebook through a process known as the *Idea Marathon System (IMS)*, which was originated in Japan by Higuchi Takeo.

The idea is simplicity itself. Keep a numbered log of your ideas in an A5-sized notebook, in any order as they come, writing at least one idea per day, and whenever possible adding a sketch and discussing it with other people, and committing to implementing or presenting at least one idea per month. This is where you start, but you quickly pick up momentum through the process of logging, sketching, discussing, presenting, and implementing your best ideas day after day. The flow becomes a *fountain of ideas*, increasing your value, synchronicity, and serendipity.

The process is magnified many times when undertaken by a company as a *Group Idea Marathon*. Japanese companies such as Pioneer, Toshiba, and Japanet-Takata, have successfully implemented the Idea Marathon System. Of course this involves much more in the way of training, follow up, scanning to back up your notebooks, and teamwork in the implementation. It has also been used at the university level. Quantum leaps in creativity have been experienced after continuing the process for 3 to 6 months, after which it is likely to become a lifelong habit on its own merits.

The lesson is that *perseverance brings power through the daily ritual of walking and logging your ideas in a notebook*.

## **Conclusion:**

There is much to be learned from Japan in the field of creativity. In sum:

- *Creativity can be cultivated through repetition and ritual practice*
- *Kaizen brings incremental improvements through full engagement that leads to significant breakthroughs over time*
- *Creativity occurs at the fine edge between discipline and spontaneity known as improvisation*
- *Nanba walking can improve mental and physical finesse, as well as contribute to increased ability in creative performance*
- *Perseverance brings power through the daily ritual of walking and logging your ideas in a notebook*



Fig 1. *Origami Crane*



Fig 2. *Samurai*



Fig 3. 鮮 FRESH  
(calligraphy by the author)



Fig 4. *Nanba Runner*

#### Author Websites

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