

BALANCE

DESIGN



**POLITECNICO
DI MILANO**

SCHOOL OF DESIGN
PRODUCT DESIGN FOR INNOVATION
THESIS OF MASTER DEGREE

BALANCE DESIGN

research, analysis and innovation
of the different types of balance design

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ABSTRACT



Abstract

Balance is a theme that the human being has began to search in thousands of years ago. Us human being was inspired by the nature, o they can call it the universe, to see the amazing balance system around us. they are surprised to notice that it could work all on it own, like balance of nature, conservation of mass, chemical balance, dynamic balance and so on. So if the balance is all round us, so does it make it easier to find the "balance point", is there exist one fiscal point named "balance point"? In this thesis, I start from the visual design: analysis the different types of balance to see the what kind of the "image" can give the person who have seen it get the ideal of "balance" o "uni-balance"; from the different point of view to achieve the balance point.

From the stand point of biomechanics, balance is an ability to maintain the line of gravity (vertical line from centre of mass) of a body within the base of support with minimal postural sway. Sway is the horizontal movement of the central of gravity even when a person is standing still. A certain amount of sway is essential and inevitable due to small perturbations within the body, like breathing, shifting body Weight from one foot to the other or from forefoot to rear foot, or from external triggers . An increase in sway is not necessarily an indicator of dysfunctional balance so much as it is an indicator of decreased sensor motor control. Maintaining balance requires coordination of input from multiple sensory systems including the vestibular, somatosensory, and visual systems.

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Vestibular system: sense organs that regulate balance (equilibrioception); directional information as it relates to head position (internal gravitational, linear, and angular acceleration). Somato sensory system: senses of proprioception and kinesthesia of joints; information from skin and joints (pressure and vibratory senses); spatial position and movement relative to the support

surface; movement and position of different body parts relative to each other.

Visual system: Reference to perpendicularity of body and head motion; spatial location relative to objects. As a basic principle of design, the definition of balance refers to the ways in which the elements (lines, shapes, colors, textures, etc.) of a piece are arranged. Balance is one of those useful terms to know, if one is to employ Art Speak. Balance can be symmetrical ("formal"), where elements are given equal "Weight" from an imaginary line in the middle of a piece. For the most basic example of symmetry, think of your eyes in relation to either side of your nose. Balance doesn't necessarily mean symmetry, though. Asymmetrical ("informal") balance occurs when elements are placed unevenly in a piece, but work together to produce harmony overall.

The senses must detect changes of spatial orientation with respect to the base of support, regardless of whether the body moves or the base is altered. There are environmental factors that can affect balance such as light conditions, floor surface changes, alcohol, drugs, and ear infection.

There are balance impairments associated with aging. Age-related decline in the ability of the above systems to receive and integrate sensory information contributes to poor balance in older adults. As a result, the elderly are at an increased risk of falls. In fact, one in three adults aged 65 and over will fall each year.

In the case of an individual standing quietly upright, the limit of stability is defined as the amount of postural sway at which balance is lost and corrective action is required. Body sway can occur in all planes of motion, which make it an increasingly difficult ability to rehabilitate. There is strong evidence in research showing that deficits in postural balance is related to the control of medial-lateral stability and an increased risk of falling. To remain balanced, a person standing must be able to keep the vertical projection of their center of mass within their base of support, resulting in little medial-lateral or anterior-posterior sway. Ankle sprains are one of the most frequently

occurring injuries among athletes and physically active people. The most common residual disability post ankle sprain is instability along with body sway. Mechanical instability includes insufficient stabilizing structures and mobility that exceed the physiological limits. Functional instability involves recurrent sprains or a feeling of giving way of the ankle. It is found that nearly 40% of patients with ankle sprains suffer from instability and an increase in body sway.[8] Injury to the ankle causes a proprioceptive deficit and impaired postural control. Individuals with muscular, occult instability, and decreased postural control are more susceptible to ankle injury than those with better postural control.

Balance can be severely affected in individuals with neurological conditions.



Patients who suffer a stroke or a spinal cord injury for example, can struggle with this ability. It has also been determined that impaired balance is strongly associated with future function and recovery in some cases, particularly in stroke patients. Additionally, balance problems have been identified as the strongest predictor of falls.

Another population where balance is severely affected is Parkinson's disease patients. A study done by Nardone and Schieppati (2006) showed that individuals with Parkinson's disease problems in balance have been related to a reduced limit of stability and an impaired production of anticipatory motor strategies and abnormal calibration.

balance can also be negatively affected in a normal population through fatigue in the musculature surrounding the ankles, knees, and hips. Studies have found, however, that muscle fatigue around the hips ,glutes and lumbar extensors, and knees have a greater effect on postural stability like sway. It

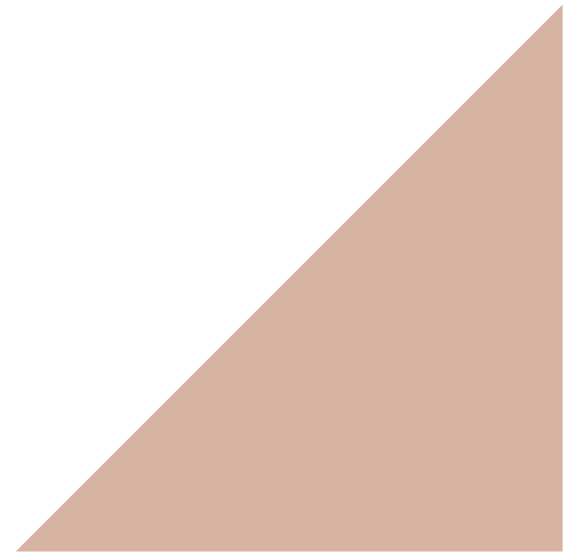
is thought that muscle fatigue leads to a decreased ability to contract with the correct amount of force or accuracy. As a result, proprioception and kinesthetic feedback from joints are altered so that conscious joint awareness may be negatively effected.

While balance is mostly an automatic process, voluntary control is common. Active control usually takes place when a person is in a situation where balance is compromised. This can have the counter-intuitive effect of increasing postural sway during basic activities such as standing. One explanation for this affect is that conscious control results in over-correcting an instability and "may inadvertently disrupt relatively automatic control processes." [citation needed] While concentration on an external task "promotes the utilization of more automatic control processes."



2. ABOUT THE WORD "BALANCE"

2.1- the definition of balance



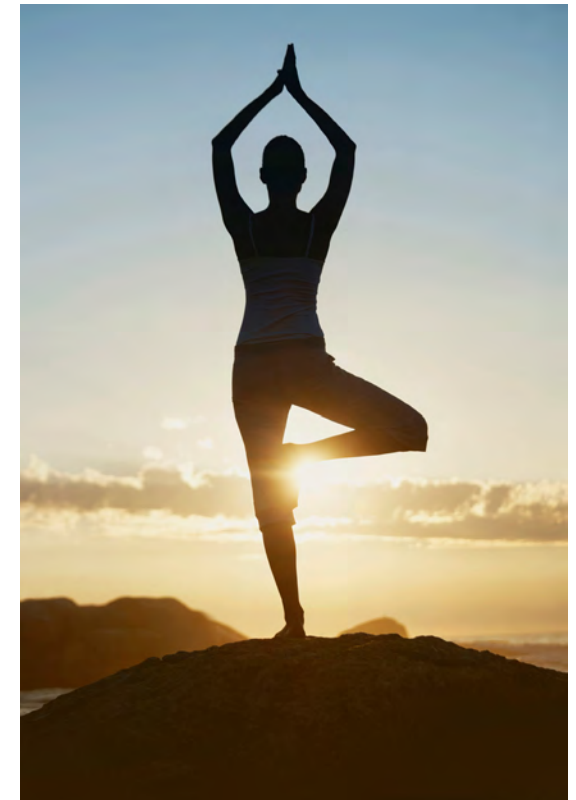
To know the whole ideal of "balance", they could start from the beginning, the definition of "balance".

In general and physical, it means :a stable condition in which forces cancel one another, or a state or feeling of mental balance; composure. In physics, more like (1)"thermodynamic balance", any unchanging condition or state of a body, system, etc, resulting from the balance or canceling out of the influences or processes to which it is subjected. In Chemistry, it means: The state of a chemical reaction in which its forward and reverse reactions occur at equal rates so that the concentration of the reactants and products does not change with time.

Thinking of balance, biologically speaking, one can refer to stasis along evolutionary lines, but there is also a sociological basis to balance theory that most systems existing in an extended period of stasis where there is little change in development or ways of living. It is common knowledge that evolution is a very long process but is occurring as this is being written; inadvertently organisms are developing better means with which to cope in the world that they occupy while others are being weeded out either because of spreading human populations or because they have not been able to compete as successfully as others. balance then would be re-established between the varieties of organisms within a given ecosystem as those areas re-establish a new sense of order.

(1) Thermodynamic equilibrium:
It is an axiomatic concept of classical thermodynamics. It is an internal state of a single thermodynamic system, or a relation between several thermodynamic systems connected by permeable walls.

balance on a human scale would entail the equalization of human relationships to offset troublesome periods and undo stress. In Russia polygamy has been suggested because of the high women to men ratio in certain regions; there is already a defecated relationship between the husband, his wife and mistress. Currently because of the extra relationship in non-Islamic republics, there is a high divorce rate. This brings in another factor, the traditional precepts of Islam where the woman is less likely to divorce because polygamy is more common in



Islamic compared to Catholic ones. One wonders whether polygamy would be a solution to the extra relationship the man has in so far as it has been known that he could still have favorite wives and that in itself does not favor equality in the way they are all treated.

In terms of economics they live in a world that is jostled; having an excess produce on the market that goes to waste, as prices then drop because the demand drops and a world where there isn't enough to supply foreign needs or our own. This is a world where the law of supply and demand balance each other when there is market balance but retailers don't want that; their desire is for consumables to be cleared off the market, to be used so that the market can be replenished and employment is guaranteed to manufacture those items. One can think of the balance price, below which items are cleared from the market place, which could lead to a shortage of the item. This could of course stimulate the black market trade, which steps in and produces the item at a competitive price and put government pricing in a quandary.

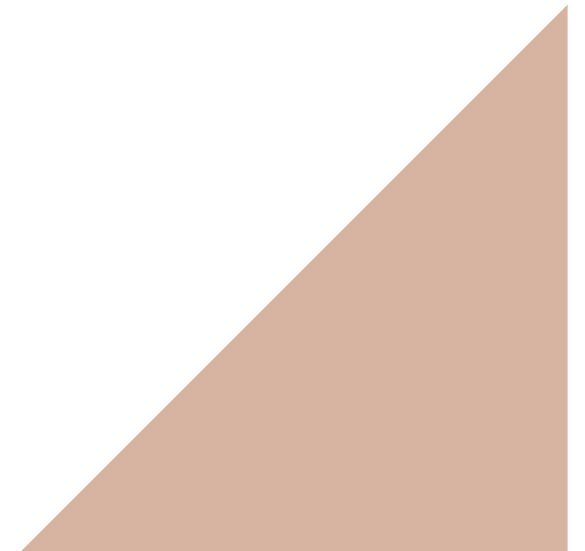
Philosophers have touched on the need of an balance in life which is difficult to obtain because of a concept that one is generally constrained in this life; although people strive to liberal minded in western societies, they cannot obtain true happiness because of those constrains enforced through the social contract they had settled for centuries earlier. Obviously

that contract has been modified over the years allowing for degrees of happiness, women can now hold political posts and are more independent, the quality of life has improved in the west as has longevity but what about the quality of life in overpopulated regions of the world? Some have been so bold as to blame the Darwinian theory of survival for a potential lack of caring by those who would consider themselves as more fit to survive. The fact is human populations have always had factions that have survived better than others because of their ingenuity and prowess and this is independent of being selfish or not.

Psychologically speaking that balance is understood as a balance between one's primitive desires, or id, ones ego, or one's real world and one's superego, or ones morals and values. These elements were characterized by (1) Freud's understanding of the human psyche. There would then be upsets in ones psyche should one or more of those elements be out of balance with the others as in the case of animalistic urges where the id is largely uncontrolled by the ego and the superego. His model was understood as characteristic of the mind and not associated to the somatic parts of the body.

(1) freud:
Sigmund Freud-born
Sigismund Schlomo
Freud; 6 May 1856 – 23
September 1939.
He was an Austrian
neurologist, now
known as the father of
psychoanalysis.

2.2- constant phenomenon:
a piece of history about balance



In sociology, a system is called to be social equilibrium when there is a dynamic working equilibrium among its interdependent parts. -by (1) Davis & Newstrom, 1985

At thermodynamic equilibrium the dynamic processes for changes in a system have reached a steady state (not changing with time) where temperature has stabilized to a constant, no heat is being exchanged, no work is occurring, composition is constant (reactants are being converted to products at the same rate that the products are converting back to the reactants), pressure is constant, if there is more than one phase, movement between the phases is balanced (for example evaporation and condensation are occurring at the same rate), and there are no concentration gradients.

Each subsystem will adjust to any change in the other subsystems and will continue to do so until an equilibrium is retained. When different groups start to work in relative ease and harmony instead of working against each other. Let's put it into an example, often times there are cliques in high school where the groups are very different but they work together in that they don't grate against each other. Most times the jocks will keep to themselves and the nerds will keep to themselves. When you put a bunch of people into a room, after a couple of hours, groups will start to form. This slow forming is social equilibrium.

(1):Davis & Newstrom:
John W. Newstrom and
Keith Davis: scientist of
Organizational Behavior

The process of achieving equilibrium will only work if the changes happen slowly, but for rapid changes it would throw the social system into chaos, unless and until a new equilibrium can be reached.

The (1) Han dynasty (206 BC – 220 AD) was an imperial dynasty of China, preceded by the Qin Dynasty (221–207 BC) and succeeded by the Three Kingdoms (220–280 AD). It was founded by the rebel leader Liu Bang, known posthumously as Emperor Gaozu of Han.

(1) The Han dynasty:
(206 BC – 220 AD)
It was the second
imperial dynasty of
China, preceded by the
Qin dynasty (221–207 BC)
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It was founded by the
rebel leader Liu Bang,
known posthumously as
Emperor Gaozu of Han.

The Religion of the Han Dynasty was largely Taoism. Taoism is the belief of opposites such as there can be no love without hate. The central idea of Taoism could be generalized into two in Chinese: wu wei. Wu Wei is an important concept in Taoism that literally means non-action or non-doing. In the Tao Te Ching, Lao Zi explains that beings (or phenomena) that are wholly in harmony with the Tao behave in a completely natural, uncontrived way. In a sense that when the planets revolve around the sun, they effortlessly do this revolving without any sort of control, force, or as an attempt to revolve themselves, instead the planets just revolve around the sun in an effortless and spontaneous movement. The goal of spiritual practice for the human being is, according to Lao Zi, the attainment of this natural way of behaving.

Several chapters of the most important Taoist text, the Tao Te Ching, attributed to Lao Zi, allude to "diminishing doing" or "diminishing will" as the key aspect

of the sage's success. Taoist philosophy recognizes that the Universe already works harmoniously according to its own ways; as a person exerts their will against or upon the world they disrupt the harmony that already exists. This is not to say that a person should not exert agency and will. Rather, it is how one acts in relation to the natural processes already extant. The how, the Tao of intention and motivation, that is key.

A rubbing of a Han pictorial stone showing an ancestral worship hall



“wu wei” is often associated with water and its yielding nature. Since it is an element that adapts itself to reality, instead of an attempt to fight, argue, oppose, or change reality. In illustration, its nature itself is assuming any form or shape it inhabits through any container it is being filled. Droplets of water, when falling as rain, gather in watersheds, flowing into and forming as a collective group, joining the proverbial sea. In a sense that while it at times diverge itself from its source, it also goes back again to where it came from. Showing its cyclical nature.



the writing from Han, with the word: the success will come after follow the world.

According to Lao Zi, the importance of being or finding equilibrium is always at the first place for a country. And to finding the social equilibrium, the best way is just let it to be itself and give enough time and space for every subsystems to adjust and regulate.

Not only as big as a country, when we focus on human nature, each person also has its own equilibrium to follow. From the history, the relationship between religion and politics is complex, religion will affect the law. Religion is also a social ideology, is part of the superstructure. Historically, the

religious ruling class is often used as a tool for the ruling spirit of the people. On the other hand, religion has often been used by rebel as a tool to against oppression.

In the Middle Ages, there are many countries in the world have adopted the theocratic regime, state power and religion union into one, religious leaders



are heads of state, they have the power to control the whole state directly; Religious rules is the law of the land, citizens must believe in and abide. Citizens do not have the freedom of religious belief, otherwise it will be considered "infidels" and persecuted.

Because that, when the economic situation fell down, people's life became suffering, lots of riots and revolutions have been held. To pacify and solace, o even comfort the people from lower hierarchy, the religion become more advocate people to bear the suffer, and gave people the hope --- Reincarnation.

In Buddhist doctrine the evolving consciousness, becomes one of the contributing causes for the arising of a new aggregation. At the death of one personality, a new one comes into being, much as the flame of a dying candle can serve to light the flame of another. The consciousness in the new person is neither identical to nor entirely different from that in the deceased but the two form a causal continuum or stream. Transmigration is the effect of karma or

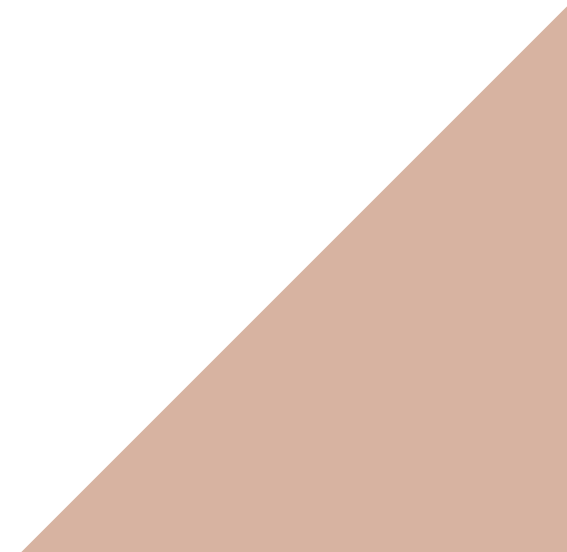
volitional action. The basic cause is the abiding of consciousness in ignorance: when ignorance is uprooted, rebirth ceases.

The Buddha's detailed conception of the connections between action (karma), rebirth and causality is set out in the twelve links of dependent origination. The empirical, changing self does not only affect the world about it, it also generates, consciously and unconsciously, a subjective image of the world in which it lives as "reality". It tunes in" to a particular level of consciousness which has a particular range of objects, selectively notices such objects and forms a partial model of reality in which the ego is the crucial reference point. Vipassana meditation uses "bare attention" to mind-states without interfering, owning or judging. Observation reveals each moment as an experience of an individual mind-state such as a thought, a memory, a feeling or a perception that arises, exists and ceases. This limits the power of desire, which, according to the second noble truth of Buddhism, is the cause of suffering (dukkha), and leads to Nirvana (nibbana, vanishing (of the self-idea)) in which self-oriented models are transcended and "the world stops". Thus consciousness is a continuous birth and death of mind-states: rebirth is the persistence of this process.

Karma continues to exist and adhere to the person until it works out its consequences. For the Sautrantika group, each act "perfumes" the individual or "plants a seed" that later germinates.

Tibetan Buddhism stresses the state of mind at the time of death. To die with a peaceful mind will stimulate a virtuous seed and a fortunate rebirth; a disturbed mind will stimulate a non-virtuous seed and an unfortunate rebirth. The medieval Pali scholar Buddhaghosa labeled the consciousness that constitutes the condition for a new birth as described in the early texts "rebirth-linking consciousness".

2.3- Balance NOW



In modern society, as it's identity of fast development and high efficiency. The "mission" of finding equilibrium remain and become more difficult and specific.

Considered as a whole, we find that the process of reproduction is a process of constant disturbance and reestablishment of equilibrium between society and nature. (1)Marx distinguishes between simple reproduction and reproduction on an extending scale. Let us first consider the case of simple reproduction. We have seen that in the process of production, the means of production are used up (the raw material is worked over, various auxiliary substances are required, such as lubricating oil, rags, etc.; the machines themselves, and the buildings in which the work is done, as well as all kinds of instruments and their parts, wear out; on the other hand, labor power is also exhausted (when people work, they also deteriorate, their labor power is used up, and a certain expenditure must be incurred in order to reestablish this labor power). In order that the process of production may continue, it is necessary to reproduce in it and by means of it the substances that it consumes.

For example, in textile production, cotton is consumed as a raw material, while the weaving machinery deteriorates. In order that production may continue, cotton must continue to be raised somewhere, and looms to be manufactured. At one point the cotton disappears by reason of its transformation into fabrics, at another point, fabrics disappear (workers, etc.,

(1)Marx:Karl Marx
(5 May 1818 – 14 March 1883)
He was a philosopher, economist, sociologist, journalist, and revolutionary socialist.

use them) and cotton reappears. At one point, looms are being slowly wiped out, while at another they are being produced. In other words, the necessary elements of production required in one place must be produced somewhere else; there must be a constant replacement of everything needed in production; if This replacement proceeds smoothly and at the same rate as the disappearance, we have a case of simple reproduction, which corresponds to a situation in which the productive social labor remains uniform, with the productive forces unchanging, and society moving neither forward nor backward.

It is clear that this is a case of stable equilibrium between society and nature. It involves constant disturbances of equilibrium (disappearance of products



in consumption and deterioration) and a constant reestablishment of equilibrium (the products reappear); but this reestablishment is always on the old basis: just as much is produced as has been consumed; and again just as much is consumed as has been produced, etc., etc. The process of reproduction is here a dance to the same old tune.

But where the productive forces are increasing, the case is different. Here, as we have seen, a portion of the social labor is liberated and devoted to an extension of social production (new production branches; extension of old branches). This involves not only a replacement of the formerly existing elements of production, but also the insertion of new elements into the new cycle of production. Production here does not continue on the same path, moving in the same cycle all the time, but increases in scope.

“This is production on an extending scale, in which case equilibrium is always established on a new basis; simultaneously with a certain consumption proceeds a larger production; consumption consequently also increases, while production increases still further. equilibrium results in each case in a wider basis; we are now dealing with unstable equilibrium with positive indication.”

---(1)Nikolai Bukharin

The third case is that of a decline in the productive forces. In this case, the process of reproduction falls asleep: smaller and smaller quantities are

(1)Nikolai Ivanovich Bukharin: (1888 – 15 March 1938) He was a Russian Bolshevik revolutionary, Soviet politician and prolific author on revolutionary theory.

reproduced. A certain quantity is consumed, but reproduction involves a smaller quantity still; less is consumed; and still less is reproduced, etc. Here again, reproduction does not repeat the same old cycle in each case; its sphere grows narrower and narrower; society's condition of life becomes poorer and poorer. The equilibrium between society and nature is reestablished on a level that goes lower and lower each time.

Society meanwhile is adapting itself to this continually narrowing standard of living, which can only be done by the partial disintegration of society. We are here dealing with unstable equilibrium with negative indication. The reproduction in this case may be termed negatively extended reproduction, or extended insufficiency of production.

Having discussed the subject from all angles, we have found the same result always, each case depending on the character of the equilibrium between society and nature. Since the productive forces serve as a precise expression of this equilibrium, these forces enable us to judge its character. Our remarks would apply just as well if we were speaking of the technology of society.

The "only indispensable global environmental politics reader."

—(1)Green Planet Blues: Four Decades of Global Environmental Politics—has been newly revised and updated. Co-edited by University of Maryland Professor Ken Conca and ECSP Director Geoff

(1)Green Planet Blues: Blue Planet is an environmentalist science fiction role-playing game and setting from Biohazard Games.

Dabelko, the book was made available January 10 from Westview Press. "It is essential reading to understanding the dynamics shaping international environmental law and institutions now and in the foreseeable future," says Carl Bruch of the Environmental Law Institute. "This edition builds gracefully from the must-read classics of the 1970s to today's need-to-know issues," says Robin Broad of American University. The 4th edition covers key debates about climate, water, forests, toxics, energy, food, biodiversity, and other environmental challenges of the twenty-first century.

Ken Conca is a professor of government and politics at the University of Maryland, where he directs the Harrison Program on the Future Global Agenda. He is the author or editor of several books on environmental politics, peacebuilding, and global governance. Geoffrey D. Dabelko is director of the Environmental Change and Security Program (ECSP) at the Woodrow Wilson International Center for Scholars in Washington, DC, and an adjunct professor at the Monterey Institute of International Studies.

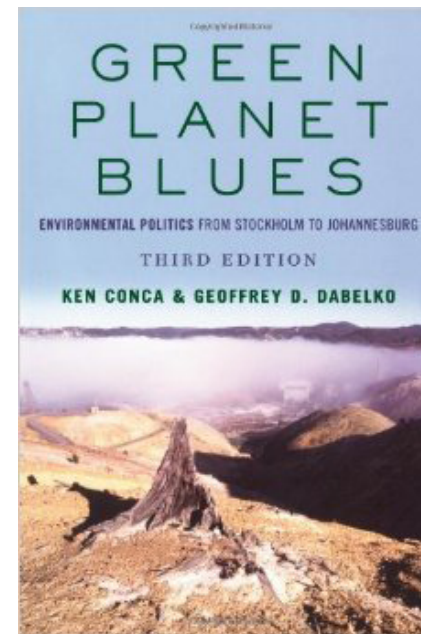
In this updated edition of their classic textbook, Conca and (1)Dabelko have produced a volume that stimulates and challenges. The diverse views represented in the volume challenge orthodox thinking, making for stimulating reading and class discussion. The fourth edition reflects recent trends and new knowledge. It is essential reading to understanding the dynamics shaping

(1)Dabelko:
Geoffrey D. Dabelko is
Professor and Director of
Environmental Studies at the
George V. Voinovich School
of Leadership and Public
Affairs at Ohio University in
Athens, OH.

international environmental law and institutions now and in the foreseeable future. Green Planet Blues remains the only indispensable global environmental politics reader.

This is a book that has stood the test of time, and it remains an invaluable guide to past and present debates in global environmental politics. It is notable for its clear introduction, concise chapters, and strong representation of voices from the South, and this makes it a book for globally minded students everywhere. As a professor of environment and development, I would be lost without Conca and Dabelko's Green Planet Blues.

This edition builds gracefully from the must-read classics of the 1970s to today's need-

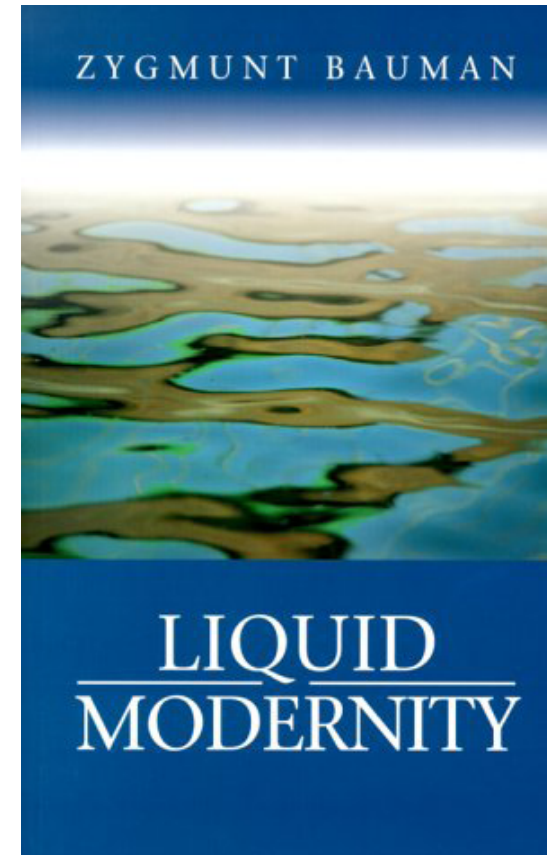


(1) WTO:
The World Trade Organization (WTO) is an intergovernmental organization which regulates international trade.

(2) Zygmunt Bauman:
born 19 November 1925
He is a Polish sociologist.
He has resided in England since 1971 after being driven out of Poland by an anti-semitic campaign engineered by the Communist government.

to-know issues—such as globalization, the (1)WTO, and the role of local and global civil society. Using a political economy lens to bring together a multiplicity of voices, Conca and Dabelko have assembled a spectacular volume. This is the best and most lively introduction to the study of global environmental politics. The editors have assembled a rich and diverse array of voices that capture all of the key ideas, actors, conflicts and themes in this burgeoning field. The fourth edition of Green Planet Blues also confirms, yet again, the editors' finely honed skills in talent spotting. The fourth edition of Green Planet Blues provides a thorough overview of global environmental policy and politics since the 1972 Stockholm summit. This up-to-date revised version is one of the few essential books for anyone interested in environmental issues, and particularly an excellent resource for students and teachers in this field. Highly recommended.

True to its habits, science promptly took the hint from the new historical experience and reflected the emerging mood in the proliferation of scientific theories of chaos and catastrophe. Like (2)Zygmunt Bauman said in "Liquid Modernity": Once moved by the belief that 'God does not play dice', that the universe is essentially deterministic and that the human task consists in making a full inventory of its laws so that there will be no more groping in the dark and human action will be unerring and always on target, contemporary science took a turn towards the recognition of the endemically indeterministic nature of



the world, of the enormous role played by chance, and of the exceptionality, rather than the normality, of order and equilibrium.

Also true to their habits, the scientists bring the scientifically processed news back to the realm in which they were first intuited, to wit to the world of human affairs and human actions. And so we read, for instance, in David Ruelle's popular and influential rendition of contemporary

science-inspired philosophy, that 'the deterministic order creates a disorder of chance' :

"Economic treatises make an impression that the role of the legislators and the responsible government officials is to find out and implement an equilibrium particularly favourable to the community. Examples of chaos in physics teach us, however, that instead of leading to an equilibrium, certain dynamic situations trigger temporarily chaotic and unpredictable developments. The legislators and responsible officials should therefore face the possibility that their decisions, meant to produce a better equilibrium, will instead produce violent and unanticipated oscillations, with possibly disastrous effects."

For whichever of its many virtues work had been elevated to the rank of the foremost value of modern times, its wondrous, nay magical, ability to give shape to the formless and duration to the transient figured prominently among them.

3. BALANCE IN DESIGN

A design may have unity and be a coherent whole, but it may also need to degree of visual balance. they like balance. they try to balance our financial affairs and strike the right balance between work and play. they are also mostly symmetrical beings, at least on the outside, with two of everything-eyes, ears, arms, legs-except for those parts, like the nose and mouth that are lined up along a central axis. But that symmetry is not quite a mirror image. Studies mirroring just the left or just the right side of faces show there are slight but distinct differences-the tiny flaws and subtle that make us look human.

balance in a design aims to distribute the visual Weight of elements so that the appear to be in balance. A fulcrum, or point of balance, is the point on which a lever pivots. On an old-fashion set of



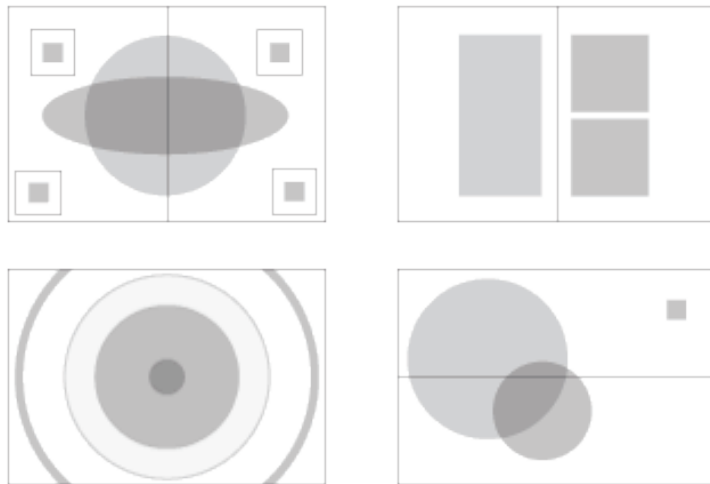
scales will be horizontal, tipping neither one way nor the other. If you have studied the math of levers, you will know that it is possible for a small Weight that is placed I long way from the fulcrum to be in perfect balance with a heavier Weight positioned nearer to the center point.

In art, a composition in which the main object is placed in the very center of the picture, with an equal distribution of elements at each side, is said to be symmetrical about the vertical axis, the line running from the center top to center bottom of the picture frame. Many early religious paintings are symmetrical, with all attention focused on a central figure, while subsidiary figures at the sides will generally emphasize this focal point by looking or gesturing toward the central axis. A symmetrical design is in balance, like a balance set of scales, but a perfectly symmetrical composition is generally static, and the only scope for movement is up o down the vertical axis.

Being off balance makes us feel uneasy and apprehensive-like waiting to see if a tightrope walker will fall- but an off balance composition can be more dynamic and visually interesting. A painting or sculpture with more appearing to be going on to one side of the composition than the other is said to be asymmetrical.

An asymmetrical design need not to be in-balance, however. In a symmetrical painting or sculpture, the elements in balance will generally be shapes and

forms of a similar size, but other factors, such as value, color, and texture, will also come into play. A large, dull, amorphous shape, or an area of white space, can be balance by a small but eye-catching patch of intense color. they anticipate balance, if they see something capable of motion is moving to its rightful space. Invisible lines, created by eye direction, can take up some of the Weight of an



otherwise in-balance element, trying it into the design like the anchor chain of a boat. Even a bearing on how they see elements balancing.

In addition to horizontal balance, artists also consider vertical balance, which is not so straight forward. they are familiar with seeing an expanse of relatively featureless sky at the top of landscape, and this affects the placement of

objects, which tend to be grouped mainly toward the lower portion of a picture. This positioning also ties in with our appreciation of gravity: the higher standing on an apex seems more unsteady than a pyramid. But if instability and movement are necessary themes of a design, the more off -balance elements are, both vertically and horizontally, the better.

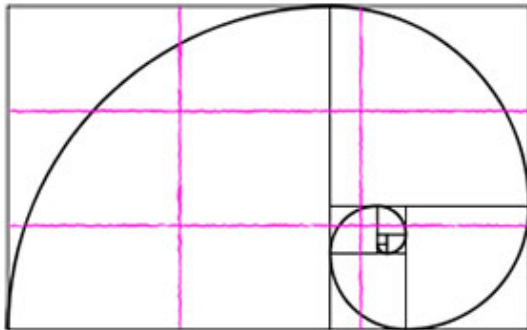
There are two kinds of balance or non-balance. Radial balance has symmetry in circular or spherical space, with lines or shapes growing and radiating of cathedral, creating an immediate and obvious focal point. Crystallographic balance occurs when there is equal emphasis or an allover pattern with an absence of a focal point, where the eye is attracted everywhere and nowhere.

Psychological Weight also plays a part in our reading of composition. A circle positioned toward the top of a picture might represent the sun or the moon or a hot-air balloon, and they would be happy with its placement and may even perceive the sensation of its ascending. But they would expect a heavy object to fall, thus creating tension in the design. Non-objective elements have fewer symbolic properties than realistic objects, but they nevertheless have perceptual balancing connotations, depending on their shape, color, and texture.

Static symmetrical balance is also called formal balance, especially in architecture. Symmetry conveys a sense of stability,

permanence, and dignity, as typified by Classical and Neo-classical designs. It could be argued that symmetrical buildings, like symmetrical product designs- an automobile, for example, is symmetrical in its plan view-are easier to make and build. Computer-aided design makes more complex asymmetrical forms possible, but whether they are as aesthetically acceptable to the public is another matter.

Symmetrical balance appeals to our sense of order-our tendency to make things tidy by putting pencils and pens in straight rows or arranging similar sized pictures on either side of the fireplace. If they are being more subtle, taking time to position objects that are dissimilar in terms of their shape, size and color so that



an overall sense of balance results. Compositions may seem more casual and unplanned, but they will require more thought and be richer than a simple, symmetrical, grid-like distribution. An asymmetric placement of

elements may be purely intuitive, or it may be done according to the rules of proportion.

Many of us will have been taught at school the "rules of third"-to divide a composition horizontally and vertically into three and to position key elements

at the points where the lines intersect. This is a useful rule and is based around a system of "ideal" proportion known as the golden section. For now however, they will examine the ways in which elements can be balance within a composition by their shape, size, and texture, by their position and direction, and by their value and color.

balance is a skill that everyone uses almost all of their waking hours. It is balance that allows you to stand up and walk around. You balance your checkbook and hopefully find a balance between your academic and social life.

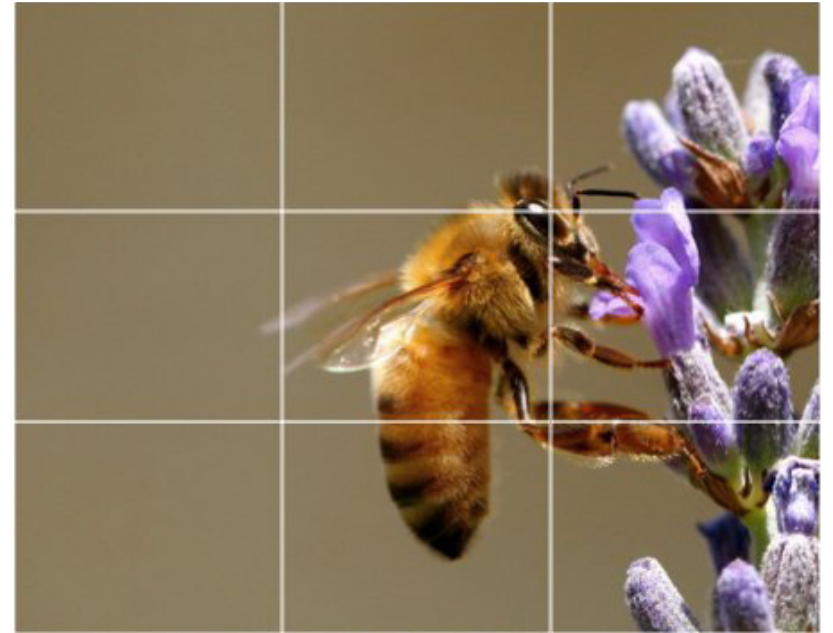
balance in design is similar to these kinds of balance. You have already had to balance between unity and variety, and in the last project balance figure and ground. Your physical sense of balance will play a part in your ability to balance the visual information in a composition.

3.1- Visual interest



Visual interest is what you equilibrium in design. Different colors, shapes sizes, etc. create different degrees of interest. It is the distribution of this interest that you need to control. We will study the abstract (non-figurative) aspects of equilibrium to make it easier to understand how equilibrium works. Subject matter changes the situation because different objects can call more (or less) attention to themselves because of their content and relationships to other objects in the image. equilibrium can also be described as achieving equilibrium. The problem with this definition is that artists rarely want things to be equal. It usually means that no part of the composition calls too much attention to itself at the expense of the rest of the image. This increases unity, but decreases variety, and hence interest. equilibrium is usually a desirable characteristic of a composition. There are times, however, when it is desirable to deliberately throw the equilibrium off in order to call more attention to some aspect of an image. For this lesson we will attempt to achieve equilibrium as a way of learning how to control attention in a piece of art.

If we take the difference about the infants, which are the most original and directly-respond kind of human being. We may know notice the importance and effect form visual interest. Evidence indicating that sex-linked toy preferences exist in two non human primate species support the hypothesis that developmental sex differences such as those observed in children"s object

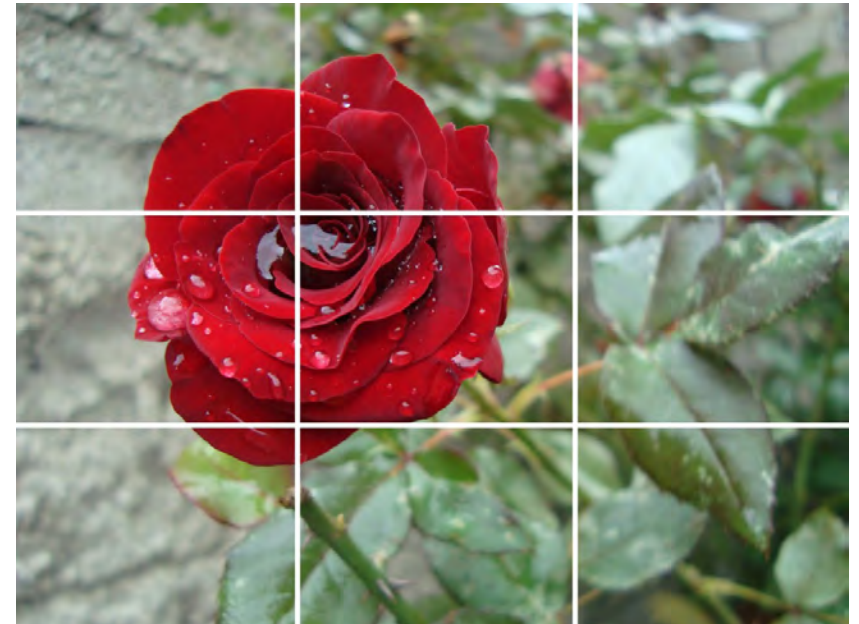




preferences are shaped in part by inborn factors. If so, then preferences for sex-linked toys may emerge in children before any self-awareness of gender identity and gender-congruent behavior. In order to test this hypothesis, interest in a doll and a toy truck was measured in 30 infants ranging in age from 3 to 8 months using eye tracking technology that provides precise indicators of visual attention. Consistent with primary hypothesis, sex differences in visual interest in sex-linked toys were found, such that girls showed a visual preference for the doll over the toy truck and boys compared to girls showed a greater number of visual fixations on the truck. Our findings suggest that the conceptual categories of "masculine" and "feminine" toys are preceded by

sex differences in the preferences for perceptual features associated with such objects. The existence of these innate preferences for object features coupled with well-documented social influences may explain why toy preferences are one of the earliest known manifestations of sex-linked social behavior.

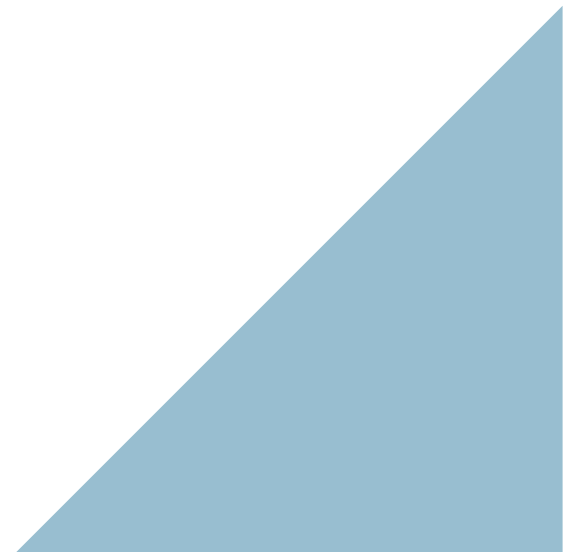
Their conclusions and speculations are based on the presentation of only two strongly sex-typed toys for two 10-s intervals. The procedure was very similar to that used to demonstrate visual preferences for attractive animal faces and the design permits a clear analysis of the presence or absence of a spontaneous visual preference for specific visual stimuli in infancy.



However, internal validity always comes at a cost. For example, including a larger number of toys would have increased the generalizability of our findings to broader categories of "masculine" and "feminine" toys. Similarly, the sex differences we observed across the two 10-s trials may or may not be evident in more natural situations, where toys are in view for much longer periods of times and appear in the context of other stimuli. We can conclude on the basis of our method, however, that sex differences in early visual interest in two objects that are differently preferred by older girls and older boys are present during infancy. This finding is, therefore, strong support for the hypothesis that cognitive and social processes in later development build on preexisting preferences for specific toy categories and suggest that eye-tracking technology may be a useful tool in research on emerging human sex differences.

By using larger stimuli that would permit definition of more discrete areas of interest (e.g., eyes, wheels), for instance, it may be possible to identify and compare the characteristics of a doll or a toy truck that are of interest to children of both sexes.

3.2-Visual Blance

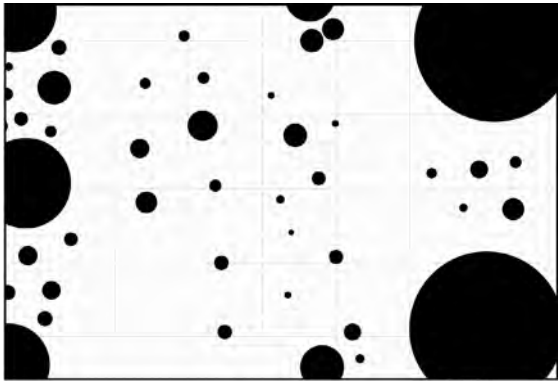


Visual balance results from 2 major factors, visual Weight and visual direction. If you think about objects in the real world it's not hard to understand. Consider the image below of a small block and a large block on a lever.

You likely see the larger block as being much heavier than the smaller block. Note too how your eye is attracted more toward the color red, giving additional visual Weight to the block. The main force acting on the large block is gravity which is acting downwards. There's tension because you'd expect the large block to move down on the lever. The blocks on the image are out of balance based on the relative Weights of the blocks and the direction of the forces acting on them. While I described the image above in terms of what the image is depicting physically, the same thing is happening visually. The blocks are out of balance based on their visual Weight and visual direction.

Visual Weight: The perceived Weight of a visual element. It's a measure of how much anything on the page attracts the eye of your viewer. How can the things they see have any kind of Weight when they aren't actually present? Psychologists have another special term for this. They call it synesthesia. It's what happens when one sensory system triggers another. In this case, your visual system is giving you a distinctly kinesthetic feeling. It is as if you can feel the elements in the scene.

Our visual Weight system works by assigning a psychological form of "heaviness" to different things they see. There are few general rules that determine how much Weight gets assigned to any particular element in a scene. You can create all kinds of interesting images just by playing with visual Weight. Simply remember that every "heavy" element needs to be balanced out by something with the same amount of visual Weight. Where you place things matters too. The same element, when placed about 1/3 into the frame, has a little more visual Weight than an element placed directly in the center of the frame. Don't ask me why. It's just the way our brains work. Are there exceptions to this? Yes there certainly are. If you follow the rule of thirds and place your most visually heavy element



somewhere about 1/3 into the scene, you can almost never go wrong. That's because it creates an automatic visual balance. As long as the rest of the scene doesn't have too much visual Weight, you can get away with whatever you

want. It's not an exact science, but it works most of the time. It's the reason why the rule of thirds is so effective.

---14 Factors that Influence Visual Weight
Many factors affect the perceived visual Weight of your design elements and these

will be summarized in the table below. Some are obvious and some not so obvious.

Most of these factors come from the work of Rudolph Arnheim, a noted author of the psychological principles of art. I've mixed in some other factors I discovered during my research, though many are related to Arnheim's work and mainly add a little more detail.

Remember that visual Weight is a measure of how much something attracts your eye. If you keep that in mind some of the factors below will make more sense.

Size: Larger objects appear visually heavier than smaller objects

Shape: Objects of regular shape appear heavier than irregularly shaped ones; Objects of compact shape are visually heavier than those not compact.

Form & Space: Positive forms Weigh more than negative space. A large space can be balance against a smaller positive form.

Isolation: Objects isolated in a space appear heavier than those surrounded by other elements

Density: Packing more elements into a given space gives more Weight to that space. Multiple small objects can balance one larger object

Color: Red seems to be the heaviest color while yellow seems to be lightest. In general warmer colors appear heavier than cooler colors. High-Intensity colors appear heavier than low-intensity ones. A small area of bright color can counter balance a larger area of dull neutral color.

Value: A darker object will have more Weight than a lighter object. The higher the value-contrast (between object and background), the heavier the Weight of the object.

Intrinsic Interest: Complex, intricate, or peculiarly shaped objects appear visually heavier than objects not possessing these features.

Texture: An element with more complex texture is heavier visually than one with a simple texture or no texture at all. A block of text has the quality of a rough texture

Volume: 3-dimensional volumes carry more mass and visual Weight than 2-dimensional surfaces

Depth: The greater the depth of field of an area, the greater the visual Weight it carries.

Perceived physical Weight: An element that looks like a car will appear heavier than an element that looks like a feather.

Location/Position: The visual Weight of an object increases in proportion to its distance from the center (or dominant area) of the composition. A large object placed near the center can be counterbalanced by a smaller object placed near the edge. An object in the upper part of a composition appears heavier than an object in the lower part. Objects on the right of the composition appear heavier than those on the left

Orientation: Vertical objects appear heavier than horizontal objects. A diagonal orientation carries more visual Weight than a horizontal or vertical one.

they should keep in mind that visual Weight is a combination of all of the above. Your largest element on the page may also have the lightest value. Another element that's smaller, but also bright red in color may carry more visual Weight as a result.

Visual Direction: The perceived direction of the visual forces. It's the direction they think an element should be moving if it was given a chance to move based on the forces acting on it.

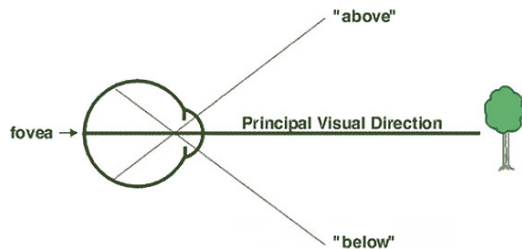
The laws of visual direction describe a method by which the visual system

estimates the visual directions of binocular targets. Alhazen, wells, and Hering originally formulated this method. Ono revised the Laws in 1991 and Howard and Rogers again revised them in 1995. This method is known as "Hering's Laws of Visual Direction" (1942). One of Hering's laws, "The Law of Common Binocular Direction", states that the directions derived from the two eyes' images will be perceived as if the observer is viewing the scene from a single vantage point between the two eyes. This point is called the "Cyclopean Eye". More recently, Map and Ono (1999) have gone as far as to assert that the cyclopean eye is both a logical and functional necessity for judging the direction of objects.

In 2000, C.J. Casper and Raymond Van Ee showed from their experimental findings that the cyclopean concept could also be explained by angular information without the need for cyclopean eye. They suggested that binocular perception is incompatible with vision from a single vantage point and the concept of the cyclopean eye is "sometimes inappropriate and always irrelevant" as far as vision is concerned. When they understand SSSRD and the cortex eye and how the two eyes coordinate, they can clearly observe that the comments made by all the previously mentioned people are not well founded, mainly due to those individuals not fully understanding the function of the cortex eye. It plays a very important function in vision science by creating the mathematical structure that allows depth perception to be judged. Previously illustrated, the vantage angle of each eye is retained from a single vantage point of the cortex eye. The purpose of the cortex eye is not for visual direction and it is certainly not "irrelevant" as far as vision is concerned. As they have observed, the function of the cortex eye works in complete coordination with all the other functions in the visual process, a notion pervasively illustrated and explained throughout this book.

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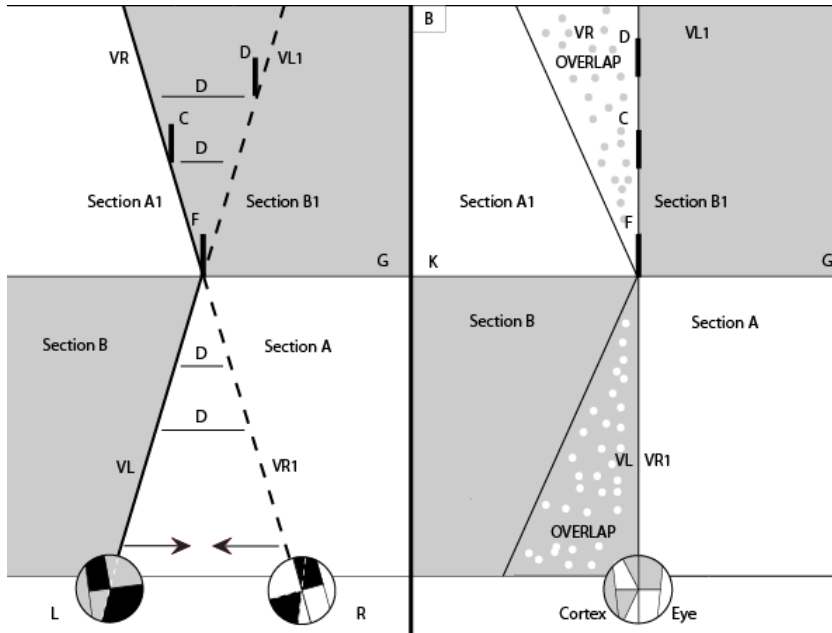
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The figure is an example of what Hering correctly, but unknowingly, observed in the context of SSSRD and the cortex eye. When we observe these targets in the context of SSSRD and the cortex eye, the black spot on the pane of glass is "F" and it is aligned with the distant tree "D" with only the left eye. "C" is the house and it is aligned with "F", the black spot, with only the right eye. "F", "C", and "D" are each viewed as if aligned in a straight-ahead direction, when "F" is the point of focus. Hering interpreted this observation as if the house and tree were viewed from a single location. The observation was correct but could not be logically explained. The only explanation for this observation can be derived by first gaining a complete understanding of SSSRD in conjunction with the cortex eye.

5 Factors that Influence Visual Directions

There are several factors that affect visual direction, though not quite as many as those affecting visual weight. Where we can equate visual weight with what attracts our eye the most, we can equate visual direction with where an object leads our eye. That area where the eye is led gains more of our attention.

Location of elements: The visual weight of an element attracts neighboring elements, imparting direction to them.

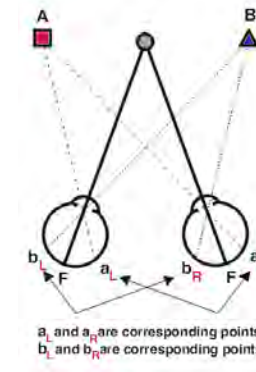
Shape of element: The shapes of an object creates an axis that imparts directional forces in two opposing directions along that axis.

Structural Skeleton: Objects appear to move along the structural axis of a design as a whole or parts of the design

Subject matter of an element: Objects in a design may naturally point in a direction. For example an arrow. Objects opposing the intrinsic directional forces of an object can impart visual direction to other elements in the composition.

Movement: Objects can be designed to appear moving in any direction

A couple more points worth mentioning. The center and the corners of the page are each magnets attracting the eye. The center is a little stronger, though, which means the point of equilibrium between center and corner is a little closer to the corner than the center.



Also because we generally read from left to right and move through a page from top left to bottom right any diagonal that runs from upper left to lower right is seen as descending. By contrast any diagonal that runs from lower left to upper right is seen as ascending. Naturally both would be reversed in cultures where reading is done right to left.



The Taylor & Ives home page above uses both visual weight and visual direction to create equilibrium. The weight of the large and small red ampersands on the right are equilibriumd by the navigation at the top and the text block down the left. The text block has a downward visual direction, which contributes to the two sides of the design balancing.

Naturally visual weight and visual direction affect the equilibrium of a composition, but understanding weights and direction give us greater control over a variety of design principles.

Your composition needs to be in equilibrium, whether symmetrical, asymmetrical, or radial. You'll achieve this equilibrium by placing elements of combined equal visual weight on either side of the optical center.

Dominance/Focal Points – Focal points are elements that attract the eye. They're elements of greater visual weight. The dominant element of a design is the element with the greatest visual weight.

Scale – is generally considered to be the relative size of different objects. Here we can consider it in the context of the relative visual weight of different objects.

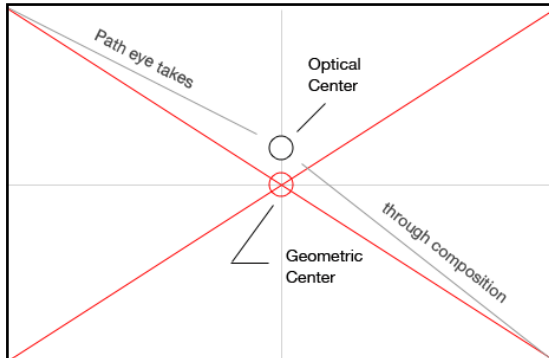
Proportion – is the relationship in scale between elements. Different proportions in a composition relate to different kinds of equilibrium and can help establish visual weight and depth.

Hierarchy – By creating a scale of focal points or elements of different visual weights you can create a hierarchy of design elements. The difference in visual weights is what makes certain elements stand out improving scanability.

Flow – Through focal points, hierarchy, and visual direction you can lead the eye from one part of your design to the next.

You'll create a flow through your design.

Depth – Elements with greater visual weight appear to move forward in a design while visually lighter elements recede into the background. We can use this understanding to create depth in a design.



Optical Center- Objects and elements equilibrium around a point. In the image of the blocks it's the fulcrum of the lever. On a page it's the optical center. The optical center is a point that attracts the viewer's eye unless other visual elements pull the eye elsewhere.

By default a reader's eye will naturally start in the upper left and proceed toward the lower right, passing through the optical center. Naturally in a country that reads from right to left you would reverse things a bit. Every shape has a geometric center. Draw 2 lines from corner to corner on a rectangle and the point where the lines meet is the geometric center. The optical center is slightly above the geometric center.

The optical center of a rectangular region—the place where a viewer's eye spends most of its time—is slightly above the geometric center. (This is why mat board for photographs and artwork is usually slightly wider at the bottom.) Balance can be achieved through either symmetric balance (equal weights in all directions from optical center), or asymmetric balance ("heavier" elements near the center are balanced by "lighter" elements farther away), to different effect. Symmetric balance produces a stable, calming effect. It can be used for entire layouts, or as a soothing background for more challenging material. Asymmetric balance becomes progressively more dynamic as one alters the weights in the horizontal, vertical, and diagonal directions, respectively. When designing you should equilibrium your elements around the optical center and not the geometric center.

(1)Herbert Edward Read: He was an English anarchist, poet and literary critic, best known for numerous books on art, which included influential volumes on the role of art in education.

On the visual senses, "This is also called symmetry or the equilibrium of equal measures. In this kind, both halves of the picture correspond to each other with minor variations."

-(1)Herbert Read, Art and Society.

Visual equilibrium occurs around a vertical axis; our eyes require the visual weight to be equal on the two sides of the axis. We are bilateral creatures and our sense of is innate. When elements are not equilibriumd around a vertical axis, the effect is disturbing and makes us uncomfortable .

3.3- Types of Balance



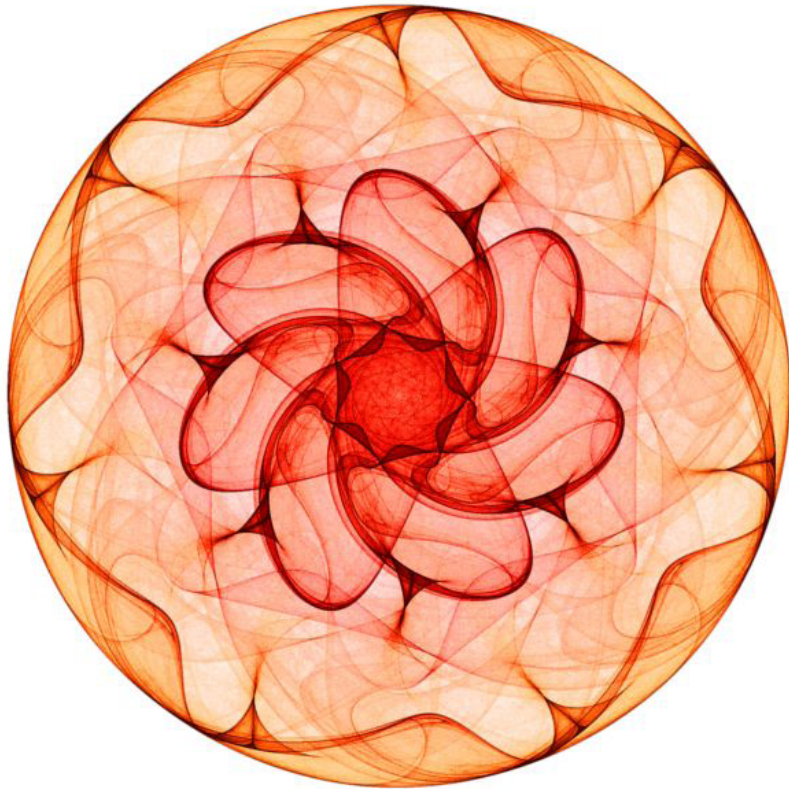
3.31-Symmetrical Balance

Symmetrical equilibrium also called as Symmetrical, or formal equilibrium, is also known as bilateral symmetry. It is created by repeating the reverse of a design on the opposite side of the vertical axis; each side, in essence, becomes the mirror image of the other. Symmetrical equilibrium is considered formal, ordered, stable and quiet. It can also be boring. Symmetrical equilibrium is often used in architecture. Asymmetrical equilibrium While symmetry achieves equilibrium through repetition, Asymmetry achieves equilibrium through contrast. Asymmetrical, or informal equilibrium, involves different elements that have equal visual weight; the weight is equal but the elements are not identical.

It is easiest to see in perfectly centered compositions or those with mirror images. In a design with only two elements they would be almost identical or have nearly the same visual mass. If one element was replaced by a smaller one, it could throw the page out of symmetry. To reclaim perfect symmetrical equilibrium you might need to add or subtract or rearrange the elements so that they evenly divide the page such as a centered alignment or one that divides the page in even segments(halves,quarters,ect.)

Symmetrical equilibrium arranges elements of text and graphics on the page so that each half (vertically or horizontally) or quarter of the page contains an even amount of components They do not have to be physically and actually identical but visually each segment of the layout has approximately the same amount and configuration (perhaps mirrored) of parts. Components that cross the imaginary halfway point (vertically or horizontally) do so by about the same amount on either side. Layouts with perfect symmetry tend to be more formal and static in appearance.

Symmetrical equilibrium is mirror image equilibrium. If you draw a line down the center of the page, all the objects on one side of the screen are mirrored on the other side (they may not be identical objects, but they are similar in terms of numbers of objects, colors and other elements. Sometimes they are completely identical (often seen in architecture).



When a design can be centered or evenly divided both vertically and horizontally it has the most complete symmetry possible. Symmetrical equilibrium generally lends itself to more formal, orderly layouts. They often convey a sense of tranquility or familiarity or elegance or serious contemplation. One way to tell if a piece has symmetrical equilibrium is to fold it in half then squint (so you aren't seeing the actual words and images) to see if each half looks the same.

Vertical Symmetry — Each vertical half (excluding text) of the Wordsplay brochure is a near mirror image of the other, emphasized with the reverse in colors. Even the perfectly centered text picks up the color reversal here. This symmetrically

equilibrium layout is very formal in appearance.

Vertical & Horizontal Symmetry — The do something poster design divides the page into four equal sections. Although not mirror images the overall look is very symmetrical and equilibrium. Each of the line drawings are more or less centered within their section. The graphic (text and image) in the upper center of the page is the focal point tying all the parts together.

3.32-Asymmetrical Balance

Asymmetrical balance even Asymmetrical design is typically off-center or created with an odd or mismatched number of disparate elements. However, you can still have an interesting design without perfect symmetry.

With asymmetrical balance you are evenly distributing the elements within the format which may mean balancing a large photo with several small intentionally avoiding balance. Asymmetrical balance can be subtle or obvious.

Uneven elements present us with more possibilities for arranging the page and creating interesting designs than perfectly symmetrical layouts are generally more dynamic and

by intentionally ignoring balance the designer can create tension, express movement, or convey a mood such as anger, excitement, joy, or casual amusement.

The Jiggy Carroll page uses a 3 column format to create a neat organized asymmetrical layout. The two columns of text are balanced by the blocks of color in the lower left topped



columns of text are balanced by the blocks of color in the lower left topped

by a large block of white space. In this case, because the white space is in a block shaped much like the text columns, it becomes an element of the design in its own right.



Asymmetrical Tension - Like a wild, unruly garden, the elements of this How Does Your Garden Grow? The plants spring up primarily along the left side but with a few stems escaping and arching across the page. The text, although randomly placed, follows the lines of the plants keeping them anchored to the overall design. The off-balance design creates a sense of freedom and movement.

Asymmetrical balance arranges elements of text and graphics on the page so that there is a somewhat visually even distribution of non-identically sized components or intentional use of white space or mismatched components to create layouts without perfect symmetry. Layouts with asymmetry tend to be more informal and dynamic in appearance. Unevenly balanced components create tension or movement.

It occurs when several smaller items on one side are balanced by a large item on the other side, or smaller items are placed further away from the center of the

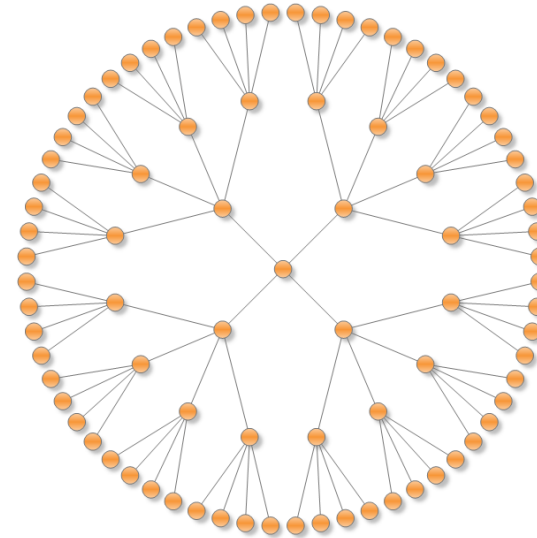
screen than larger items. One darker item may need to be balanced by several lighter items. Although asymmetrical balance may appear more casual and less planned, it is usually harder to use because the artist must plan the layout very carefully to ensure that it is still balanced. An unbalanced page or screen creates a feeling of tension, as if the page or screen might tip, or things might slide off the side, just as the unbalanced balance beam would tip to one side.

3.33- Radial Balance

Radial balance Radial balance occurs when all the elements radiate out from a central point and the visual Weight is distributed equally. Radial balance creates a strong focal point in the center of the design. Clock faces and daisies are examples of radial balance.



On square and rectangular pages they generally place elements in orderly rows and columns. With radial designs the elements radiate from or swirl around in a circular or spiral path. Parts of the design must still be arranged so that they are balanced across the width and length of the page unless you're intentionally aiming for a lack of balance or asymmetry. The center or focal point does not have to be right in the center of the page but if it is it can create an almost symmetrical balance. If the central point is at the edge of the page the resulting radial layout is more asymmetrical.



In the 2002 calendar represents the center of the design with the subtle color sections radiating from that center. The calendar month grids and their corresponding astrological symbols are arrayed around the year in a circular fashion.

Colors and text radiate out from the apple in the middle of this CD cover design. The effect is almost one of spiralling down into the center of the apple. The apple itself looks nearly symmetrical but the curving text and the outlines edging off the page to the top and right throws it all slightly off-balance.

Components of a radial layout seem to swirl around a central point. The arrangement of the text and images around the central point may be circular or spiral. Even distribution of similar components all around a central point create a symmetrical radial balance. Uneven distribution of components, an off-center (or off-page) focal point, or dissimilar components provide a more asymmetrical radial balance.

3.34- Crystallographic Balance



Painting by Pamela
Sukhum; Infinite Vision Art

Crystallographic balance, or an all-over pattern, is created by repeating elements of equal Weight everywhere. Emphasis is uniform; there is no distinct focal point. Quilts and chessboards are examples of crystallographic balance.

All "drawings" will have some sort of focal point, even if it is the center of canvas, the point furthest away from the edges and frame. They have to start looking at the drawing somewhere. Many of the compositions they have considered so far

have a focal point away from the center, and are balanced by other shapes or areas of texture, value, or color elsewhere on the picture plane. There are some obvious beginning or end. The same degree of visual attraction is distributed uniformly across the surface of the painting or print, and our eyes wander aimlessly all over the place, intrigued by the apparent lack of emphasis.

This type of design is described as having crystallographic balance, which can be defined as a composition in which the visual elements are spread fairly evenly over the entire surface, either scattered informally or according to a grid. It is chaotic and fractured, with a lively effect. The term refers to the endless symmetries inherent in crystalline structures. These arrays of atoms and molecules were first seen in x-ray diffraction patterns, and from these photographs, scientists were able to deduce and construct the latticed arrangements that make coal, for example, so different from diamonds, although both are made from a single element, carbon.

Of course, artists need not be restricted to using crystalline structures or patterns in their work and the term has come to mean any arrangement of elements that results in an all-over pattern. They associate this type of pattern with printed or woven fabric designs, wallpapers, quilts, and mosaics, in which any focal point would detract from their intended utility and versatility, but there is also a style of Weight, most commonly arranged

grid fashion, in rows and columns that occupy the whole of the picture plane or gallery wall. Here repetition, with or without added variation, is taken to its ultimate conclusion, and they are left to contemplate the subtle nuances created by the elements, forming directions, gestalt groupings, and symmetries before our eyes.

Crystals are three-dimensional structures, and crystallographic balance can also be found in geometric sculptures, often based around the forms of balls, spheres, or polyhedral solids. Polyhedral fascinated renaissance artists, including Uccello, Durer, and Leonardo, and the 20th-century print maker Escher. Although they are not artworks in their own right, they were used as intellectual exercises in perspective studies and as decorative elements in paintings, marquetry, mosaics and tromp l'oeil (mosaics made of pieces of inlaid wood). For contemporary sculptors, free from the material and representational constraints of earlier sculptural forms-and, with computer visualization, also free from the constraints of gravity forms-polyhedral provide inspiration and a wealth of shapes, forms, and symmetries to draw upon to produce works of sublime crystallographic balance.



one patch hexagon
design by Kathy K. wylie

3.35-Formal and informal Balance

Formal balance is generally geometric and usually symmetrical, and it is characterized by the repetition of identical or similar elements on either side of a central axis. Informal balance is asymmetrical and more curve linear, and it is often fluid and dynamic, creating a sense of curiosity and movement. Thinking of garden design. A formal garden is structured around geometric, often symmetrically positioned and planted beds, separated by clipped hedges and straight paths. An informal garden is characterized by sweeping curves and naturalistic areas of planting.

Formal balance is created when equal, or very similar, elements are placed on opposite sides of a central axis. It is the easiest kind of balance to recognize and to create. Many public buildings use formal balance to create a sense of permanence and dignity. Symmetrical balance is a special type of formal balance in which two halves of a composition are identical, a mirror image of one another. Because formal balance is so predictable, many artists use a more flexible form of near symmetry, also called approximate symmetrical balance, which is almost symmetrical, but not quite.

Formal balance is static and can be boring. Informal or asymmetrical balance is a way of organizing the elements of a design so that one side differs from the other but does not destroy the overall harmony. In informal balance, the elements create balance without being static. It is, therefore, dynamic and

(1)the detail
explantation of optical
center is mentioned in
this book at part 3.2

more exciting than formal balance, but it requires a little more imagination. Formal balance is consistent with more even divisions of the visual, where as informal balance may use unequal proportions to achieve its effect.

The renaissance architect Andrea Palladio was inspired by classical architecture to create carefully proportionally buildings, such as the Villa Capra, also known as La Rotonda, which are symmetrical both in the plane and elevation. These became models for stately homes and government buildings in Europe and North America, and US statesman Thomas Jefferson used Palladian ideals when he designed Monticello, his home in Virginia.

Greek architecture used the optical center, which is just above the mathematical center of a visual, as the exact center. An optical illusion cause the center of an object to appear slightly higher than its actual center, and the optical center of an image can be more pleasing to the eye than its mathematical center. This is the same principle that dictates that the bottom margin of a page or the width of a mat or mount in a picture frame is usually wider than the top and side margins.

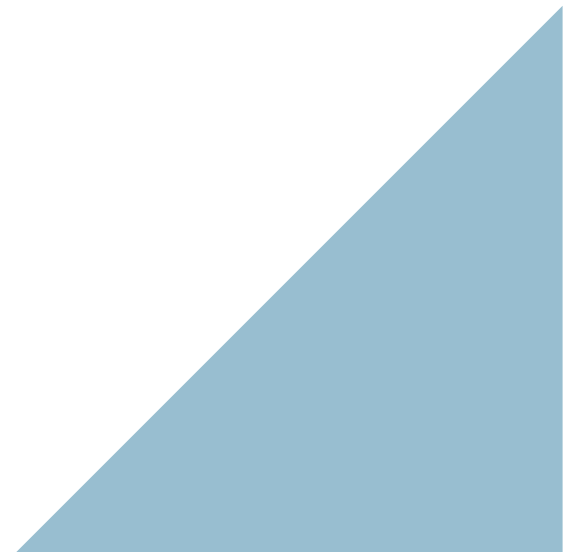
In contrast, buildings such as the Imperial War Museum North in Manchester, England, designed by Daniel Libeskind, and the Guggenheim Museum in Bilbao, Spain, designed by Frank Owen Gehry, can be said to be informally balanced because their fragmented, deconstructed

(1) Frank Owen Gehry:
born at 28 February 1929
He is a Canadian
architect, currently a
United States resident
based in Los Angeles.

forms display no symmetry at all. They
are, in effect, giant sculptures. Gehry has
commented: "I don't know where you
cross the line between architecture and
sculpture. For me, it is the same."



3.4 - Rules of being balace



3.41- Rule of Thirds

Rule of Thirds and balance The rule of thirds says that most designs can be made more interesting by visually dividing the page into thirds vertically and/or horizontally and placing our most important elements within those thirds. Take this concept a step further, especially in photographic composition, by dividing the page into thirds both vertically and horizontally and placing your most important elements at one or more of the four intersections of those lines.

Look at the previous balance examples and see how the rule of thirds is utilized. In the vertically symmetrical Wordsplay layout the headline appears in the upper third of the page, the logo in the middle third, and the supporting descriptive text in the lower third. The most important information is in that lower third and anchors the page.

The asymmetrical layout of the How Does Your Garden Grow design has most elements in the upper third and leftmost third of the page with the main focal point being around the intersection of the topmost and leftmost dividing lines (also seen in the top sidebar image of this lesson).

In the sidebar images, the "Jiggy Carroll layout" uses three even vertical columns. The 25th Anniversary design places a key component at one of the intersections of the vertical/horizontal lines. It's placement and size help to balance that text with the larger blocks of color.

The rule of thirds visually divides a page



into even thirds either vertically or horizontally. Even or uneven distribution of text and images into these three segments is one way to create an interesting symmetrically or asymmetrically balanced layout. Dividing the page into thirds both vertically and horizontally creates four potential focal points (intersections) for the placement of key components of the layout.

3.42-Visual Center and Balance

Visual Center and balance Placing important elements or the focal point of the design within the visual center of a piece is another design trick. The visual center is slightly to the right of and above the actual center of a page. See how the focal or center point of some of the designs from earlier discussion on balance actually falls in the visual center of the page.

In the symmetrically balanced Do Something poster it's easy to see the actual center, it's where the four box corners meet. The 'Do Something' phrase is centered on that point. But the real focus is on the earth which falls in the area of the visual center. This use of the visual center also helps to keep an almost perfectly symmetrical layout from appearing too static.



In the calendar arranged with radial balance, the months emanate from the year located front and visual center. This helps to create more tension in the design than if the year and the radiating months were all perfectly centered on the page.

The visual center is in the middle of but not in the mathematical center of the page. Design elements placed slightly to the right of and above the actual center of a page take advantage of this natural focal point in the design. Because it is near the actual center of the page, using the visual center for placement of key components can keep a generally symmetrical layout from being too static or formal.

3.43-Grids and balance

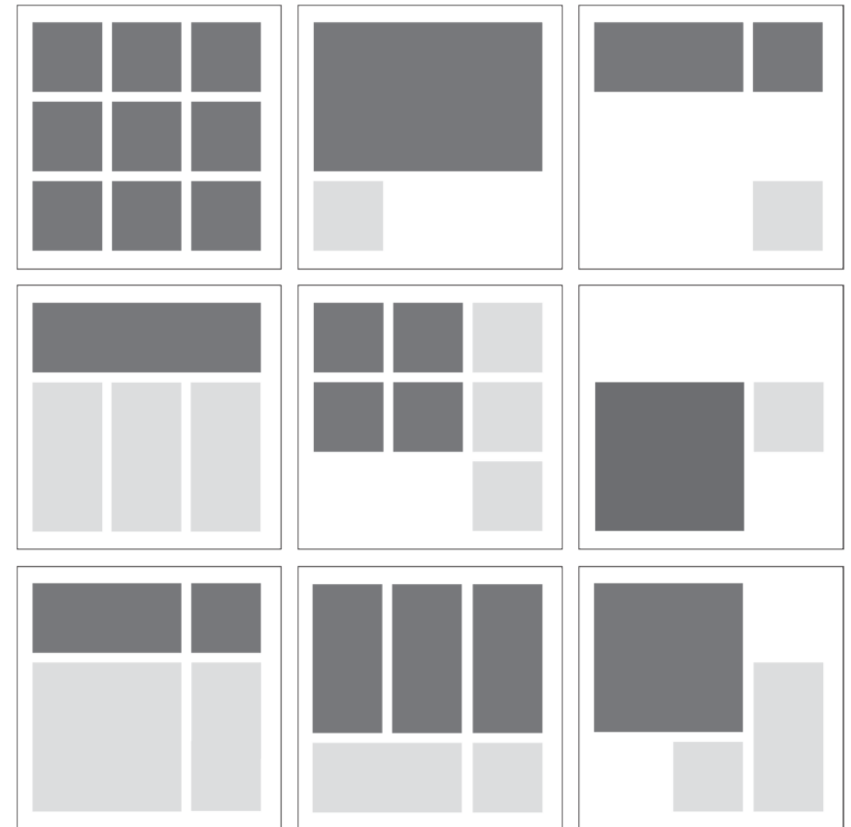
Grids and balance could roughly dividing a page into thirds or finding the visual center (2 previous lessons) are relatively easy and you don't usually have to be exact to achieve your goals. However, constructing the underlying structure of a piece is a bit more complicated — but essential for most designs. Most balanced designs (and even unbalanced ones) rely on a grid. This invisible structure (visible while working) helps ensure that you place all the elements in the right location to achieve balance as well as to help with alignment, continuity, and consistency of design.

Grids can be simple or complex depending on the needs of the design and the designer. This lesson is not an in-depth look at constructing and using grids. See the supplemental material linked at the end of this lesson if you want to dig deeper.

Sometimes the use of a grid is obvious. This asymmetrically balanced design they've looked at previously (Jiggy Carroll in sidebar) uses a simple three column grid to ensure that each text column is the same width and that it is balanced by the nearly empty column on the left. The grid also dictates the margins and ensures that the page number and header appear in the same place on each page.

The grid upon which a layout is built aids in the precise placement and alignment of text and images which also helps in creating a balanced page. Your desktop publishing software usually has tools for

applying certain principles of design. You can specify precise alignment options for text or create repetitive elements using copy/paste and style sheets or add white space through typographic controls or setting margins. For the principle of balance, the use of guides and grids help you arrange text and images in a way that creates the type of balance you desire.



3.44-Balance by shape and texture

Effective image retrieval by content from database requires that visual image properties are used instead of textual labels to recover pictorial data. Retrieval by image similarity given a template image is particularly challenging. The difficulty is to derive a similarity measure that combines shape, grey level patterns and texture in a way that closely conforms to human perception. In this paper a system is presented which supports retrieval by image similarity based on elastic template matching. The template can be both a 1D template modeling the contour of an object, and a 2D template modeling a part of an image with a significant grey level pattern. The retrieval process is obtained as a continuous interaction by which the original query of the user can be refined or changed on the basis of the results provided by the system.

Although it is easier to balance elements by near symmetry (few if any paintings are exactly symmetrical), asymmetrical compositions form by far the larger group. In attempting to balance elements asymmetrically, they are using combinations of many attributes- shapes, textures, color, value, position, and direction- to distribute visual interest around the canvas so that the overall effect is one of balance.

In symmetrical arrangements, shapes are matched either side of a reflecting axis, and in the most extreme case they will be identical or, rather, mirror images of one

another. The result is a static composition, and it will be necessary to introduce some variety. If there is a static composition, and it will be necessary to introduce some variety. If there is a figure either side of the central character, for example, they may be in similar positions, but could be expressing different gestures or striking slightly different poses. If the colors of the costumes are varied, however, the artist must be careful not to throw the composition off balance by using one set of colors that is more eye-catching than the other.



In asymmetrical design the scheme is more forgiving, and they can place different objects to balance one another. Two elements, differing only in shape, could constitute a balance composition if, for example, one was a large, simple shape and the other a smaller but more complex and busy shape. In effect, they are equalizing the amount of information in each shape. A simple shape could be described using only a small amount of data compared with a more complex shape in terms of dimensions, number of vertices, straight lines versus curves, angles of corners, and so on. It is as if our brains take longer to compute a complex shape, and this is compensated for the data required to describe size.

As complexity increases, shapes turn into textures. There is more information in a highly textured shape than in a flat, smooth shape. Given two identical shapes and ignoring the effects of value and color, our eyes will be attracted to the one with obvious texture. As shapes break down into amorphous areas of pure texture, it should be possible to balance a small, distinct shape by a patch of texture or pattern. In graphic design, blocks of text can be treated as areas of texture and can be used to balance photographs and illustrations on a page layout or website. Taken to a logical extreme, they can balance shapes with areas of nothingness, or white space, as long as it is obvious where the boundaries of the picture frame lie. This is a skill mastered by Chinese and Japanese artists - it is rare to see symmetry in Oriental art.

All shapes and forms have some sort of texture, whether they are smooth and shiny or rough and granular. Balance will best be achieved when both shape and texture balancing a larger area of less visual interest, and a range of different shapes with differing textures will add variety to a composition. Achieving asymmetric balance is not easy: there is no center point and no dividing axis of reflection. They have to use our intuition and judgment to estimate the implied weights of shapes and textures, their tensions and forces, to create a balanced yet dynamic visual experience.

3.45-balance by value and color

they can achieve asymmetrical balance by attempting to equalize areas of visual interest. The visual Weight of an element is determined by many factors- shapes, size, position, texture - but one of the most powerful eye-catching devices is value. they have lots of research about value patterns. The aim in balancing a value pattern is to position these areas so that these areas so that the areas of light and dark, high contrast and low contrast, form a harmonious balance.

Our eye are naturally drawn to a patch of light value against a predominantly dark background or to a dark mass that is surrounded by lighter space. The higher the contrast between light and dark, the greater our curiosity, as they shall see in other research. As in the similar cases of shape and texture, a small, intense area that attracts the eye can balance a larger, more diffuse area of gray. This could be achieved by using one of the extremes of black or white or by using both together to create an area of high contrast. Generally, a dark space will appear heavier than a light one the same size, and a smaller dark shape can balance a larger light one. A relatively small area with high contrast on one side of a picture can balance a larger area of various grays closely related in value.

As they saw, value is a component of color. Everything that applies to value also applies to color, with the added influences of hue and saturation. Our eye naturally gravitate toward bright color, and some colors have a higher visibility than others- red and yellow, for example, which are used to identify hazards and safety equipment. This effect is accentuated if a vivid saturated color is surrounded by more neutral tones. they also have the contrast caused by complementary colors, so that a tiny fleck of red, say, can stand out and balance huge areas of green tree and foliage in a landscape. Paintings by English artist John Constable, for example, often use accents of red, which provide not only variety in a predominantly green landscape but also introduce balance by color.

Pure hues tend to eclipse all other colors, so they should be used sparingly, and using two or more pure colors in a composition

could cause confusion. A pure hue combined with shades of the other colors will achieve greater contrast and harmony, giving the eye somewhere to rest. Color and harmony, giving the eye somewhere to rest. Color temperature can also have an effect: small amounts of warm color can offset larger areas of cooler colors.

It is almost impossible to separate the influences of value and color. As Munsell discovered, different colors have different inherent values, yellow being naturally lighter than blue, for example. If a painting looks perfectly balanced in color, but off-balance when it is reproduced in black and white, they know that color has played its part. In the most successful compositions all the balancing strategies will work in concert. A painting in which the position, size, and direction of shapes suggest a dynamic, asymmetrical design can be "slowed down" by a careful distribution of colors. Conversely, an otherwise static symmetrical work can be activated and brought to life by added notes of color.

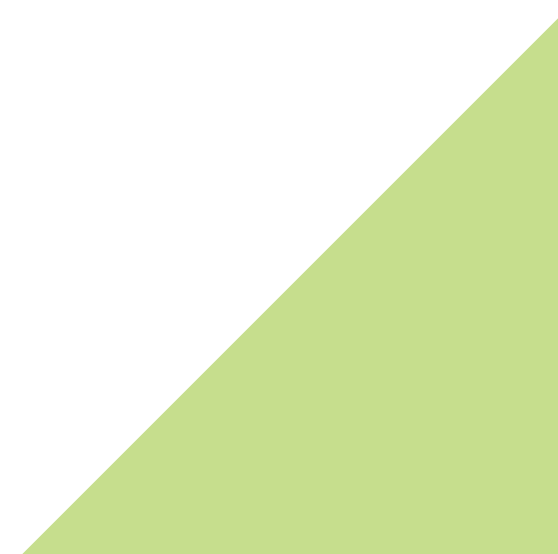
4. DIFFERENT TYPES OF BALANCE DESIGN

All objects, bodies, works, systems and "things" constantly strive to achieve static balance to with standing gravity and the other forces of nature, which, although they do not reveal themselves, constantly undermine the attained stability and state of rest. Nevertheless, some of them make this dynamic balance their grounding feature and very reason for being, in order to defy, theorize and demonstrate at all times that there can be something meaningful in precariousness, expectation and transience, constantly offering a new way forward. While balance is mostly an automatic process, voluntary control is common. Active control usually takes place when a person is in a situation where balance is compromised. This can have the counter-intuitive effect of increasing postural sway during basic activities such as standing.

In this thesis, they will focus on the physical balance, that is the type of balance that they could see directly and sometimes magically by our own eyes. These disturbing things, sometimes unexpected and other times intrepid, trigger off the imagination (steering well clear of symmetry) and courage of those who always look for the most certain point of departure in doubt itself.

A physical balance is a state in which a momentum coordinate of a particle, rigid body, or dynamical system is conserved. Usually this refers to linear momentum. For instance, a linear physical balance would be a state in which the linear momentum of the system is conserved as the net force on the object is zero. In the specific case that the linear momentum is zero and conserved, the system can be said to be in a static balance although for any system in which the linear momentum is conserved, it is possible to shift to a non-inertial reference frame that is stationary with respect to the object. In a rotational physical balance the angular momentum of the object is conserved and the net torque is zero. More generally in conservative systems, balance is established at a point in configuration space where the gradient with respect to the generalized coordinates of the potential energy is zero.

4.1-Precision



Systems, objects and sets, whose shape and meaning derive from their utmost precision: creating symbolic balance for coffee or lunch breaks or for making a debut in the world of more experimental design. This a system that reflect what they have talked about in the first chapter- the balance point.

In mathematics, stability theory addresses the stability of solutions of differential equations and of trajectories of dynamical systems under small perturbations of initial conditions. The heat equation, for example, is a stable partial differential equation because small perturbations of initial data lead to small variations in temperature at a later time as a result of the maximum principle.

In partial differential equations one may measure the distances between functions using L_p norms or the sup norm, while in differential geometry one may measure the distance between spaces using the Gromov–Hausdorff distance. Many parts of the qualitative theory of differential equations and dynamical systems deal with asymptotic properties of solutions and the trajectories—what happens with the system after a long period of time. The simplest kind of behavior is exhibited by balance points, or fixed points, and by periodic orbits. If a particular orbit is well understood, it is natural to ask next whether a small change in the initial condition will lead to similar behavior.

Stability theory addresses the following questions: Will a nearby orbit indefinitely stay close to a given orbit? Will it converge to the given orbit? The latter is a stronger property. In the former case, the orbit is called stable; in the latter case, it is called asymptotically stable and the given orbit is said to be attracting. Stability means that the trajectories do not change too much under small perturbations. The opposite situation, where a nearby orbit is getting repelled from the given orbit, is also of interest. In general, perturbing the initial state in some directions results in the trajectory asymptotically approaching the given one and in other directions to the trajectory getting away from it. There may also be directions for which the behavior of the perturbed orbit is more complicated (neither converging nor escaping completely), and then stability theory does not give sufficient information about the dynamics. The simplest kind of

an orbit is a fixed point, or an balance. If a mechanical system is in a stable balance state then a small push will result in a localized motion, for example, small oscillations as in the case of a pendulum. In a system with damping, a stable balance state is moreover asymptotically stable. On the other hand, for an unstable balance, such as a ball resting on a top of a hill, certain small pushes will result in a motion with a large amplitude that may or may not converge to the original state. There are useful tests of stability for the case of a linear system. Stability of a nonlinear system can often be inferred from the stability of its linearization.

In dynamical systems, an orbit is called Lyapunov stable if the forward orbit of any point is in a small enough neighborhood or it stays in a small (but perhaps, larger) neighborhood. Various criteria have been developed to prove stability or instability of an orbit. Under favorable circumstances, the question may be reduced to a well-studied problem involving eigenvalues of matrices. A more general method involves Lyapunov functions. In practice, any one of a number of different stability criteria are applied.

Here, they can respond that there exist this kind of balance point in the group/set of project. And the way to find it needs lots of experiment o accurate calculation. The interesting part of this combination is each component of the project find the balance point of others and while be found by another one, and at last, the different parts of project has been union into a whole one. No parts could exist- stay in the situation it has in the right moment, without the supporting of others. It's like the universe to tell one little story about unite and affiliates by a little design project.

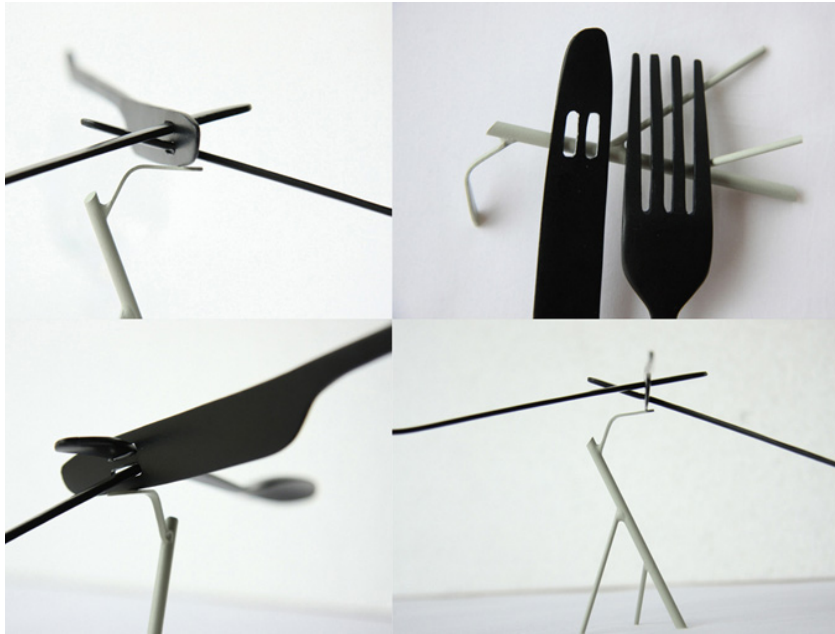
And about the projects have reflect the ideal of precision is not only about the balance point, also about the shape of every components. The shape is the reason, overall, exist one balance point. And shape of every components has to be connected, so here will to way to connect each components, like thrusting, stacking o even inserting... The result would like to balancing the forces, and every part inserted has perfect join into each other

and making each other immovable. So that the project is complete and stable.

The project FUNAMBULE design by Constance Guisset at 2009. It's three suspended pieces of cutlery fit together and create a striking table performance. It is a black cutlery collection whose elements can be assembled together to form a stable mobile, a table stable. The knife has a 2 symmetric holes where the fork and spoon can be placed. The knife rest becomes a supporting platform for the balance. Assembling: one small notch on each side of the fork and spoon's handles helps the fork licking automatically at the right place for balance.

The designer named Constance Guisset, is a French designer to your original route. She is born in 1976, Constance Guisset lives and works in Paris. After the economic and business studies at ESSEC and IEP Paris, then a year at the Tokyo Parliament, she chose to turn to creation. She graduated in 2007 from ENSCI - Les Ateliers, and quickly gets different awards such as the Grand Paris City Design Award in 2008, the Audience Award at the Design Parade of the Villa Noailles in 2009, the title Designer of the Year at the Salon Maison & Objets and Audi Talents Awards in 2010.

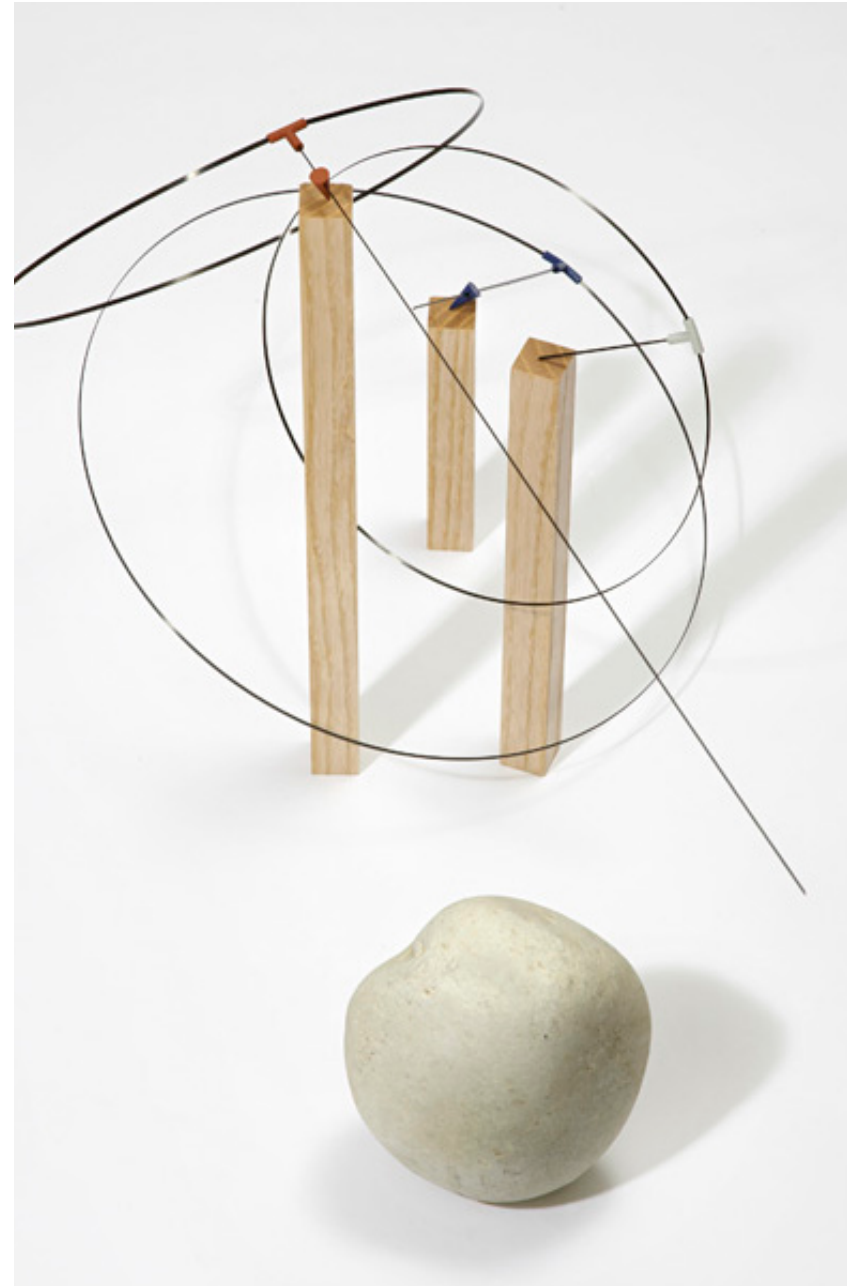
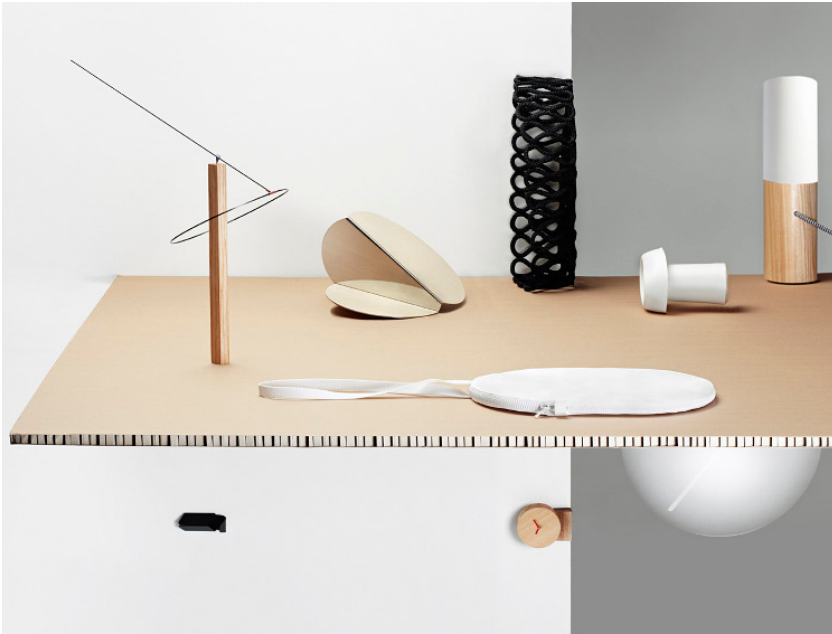




Round & Round by ECAL/Jean Besson. Balancing object made out of a section of ash and a carbon profile in several dimensions. Small sculptures made with a carbon profiled balancing on an ash section. Little plastic elements are used for connecting the parts together. It's a large ring and thin rod seeking the permanent point or center of gravity.

It's has been published by the site La Vague. La Vague is a platform that edits self produced objects. From the idea to the delivery, the designers are in control. Produced by craftsmen, local factories, or the designers themselves, the La Vague objects are distributed during events or through its website. As young designers, even a beautiful, original and well designed object is hard to promote. By trusting young creators, La Vague breaks the fence and gives them an opportunity to promote and sell their objects without any intermediates. In that sense, La Vague wants to be a new kind of furnishing and object company. As a self-produced object company, La Vague can propose several objects with different levels of production. Some mass produced, others almost unique pieces. Thanks to that approach, La Vague has the ambition to sell only unpublished objects at very affordable prices. Unique objects created by talented designers.





4.2- accumulation



Sets of objects in seemingly random positions as the only possible arrangement for creating real balance. To study the precision- this way of being balance, first of all, they need to bring a physical definition named equilibrant Force.

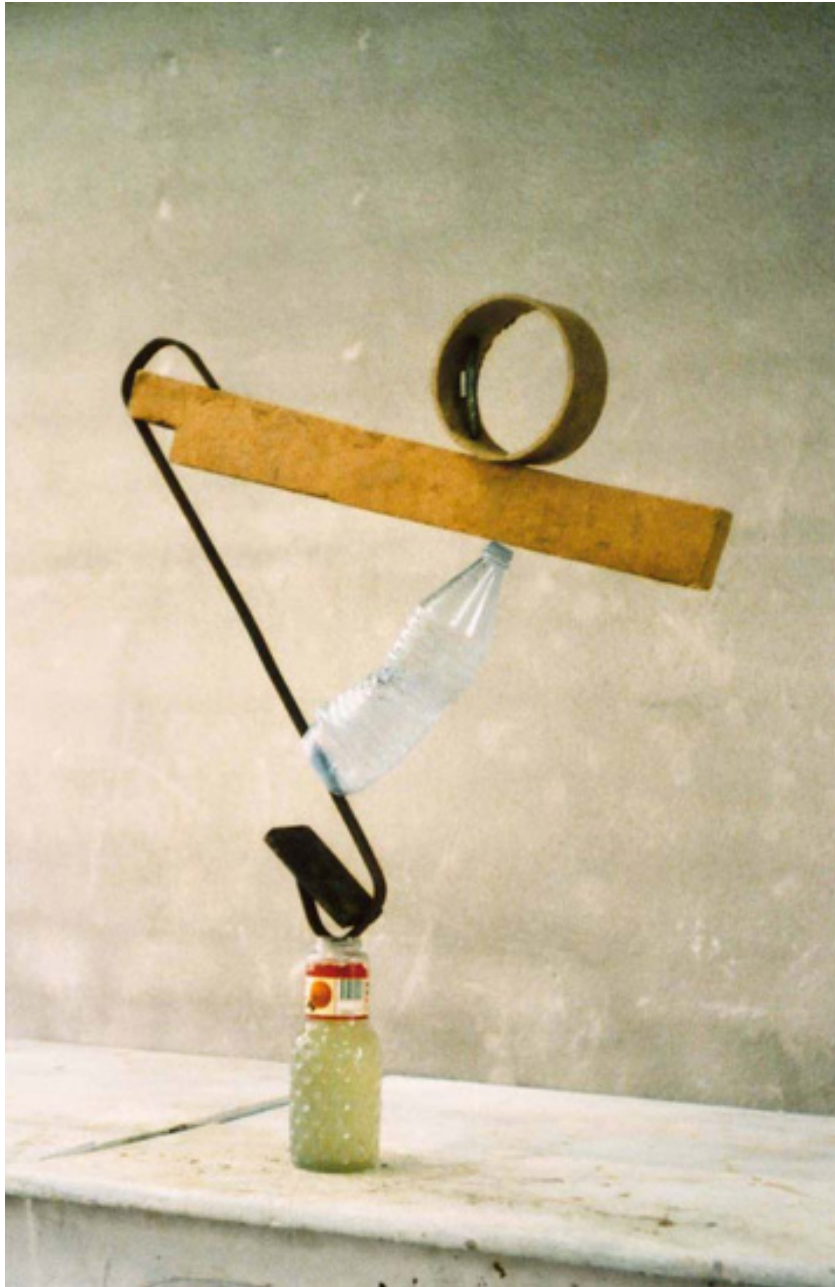
Equilibrant Force is a force which brings balance state. It is considered to be the equal and opposite of the resultant force. Equilibrant force is the force, which keeps any object motionless and acts on virtually every object in the world that is not moving. This term was first used in the 1800s to indicate counterbalancing a force system. A force equal to, but opposite of, the resultant sum of vector forces; that force which balances other forces, thus bringing an object to balance.

That each component of the project will naturally making one or more forces, and each of them will be connected and supported by one and other. And by the gravity and the Weight of material, even the shape of project, every little addition and they can also call limitation, when putting them together, become one-single integral project, what's more, the situation of project is stable - not moving or falling. Every component support one and other, and every detail is no more no less required.

The difference between this first two types: precision and accumulation, they can summarize into one sentence. Project in precision-balance is limited and supported by one point, there exist and only exist one center point-balance point. On the other hand, accumulation has a wider range of "center", it could be more than one point, or even not a point but a line or a surface. The similarities are more obvious, both of them could stand and stay stable without the help of outside force and both of them need more than one components, but if they consider the details, the accumulation usually have the same or similar exterior components, like both of them are chairs. On the contrary, precision usually has the total different appearance components, like one is fork, another is chopsticks or one is circle-shaped, another is cuboid.

If they stand on the point of project design, this two kinds of balance are easy to sabotage. Even one little component is undermined, like change its shape, Weight of material, the whole project is not stable any more. If they want to re-find the balance, it takes just as much work as it starts from the beginning.

A NEW THEORY designed by Peter Fischli and David Weiss. This is the second photographic series on view delves into a pseudo-reality where wine bottles are balanced by cheese graters and high-heeled shoes fuse into an infinite circle. Like the The Sausage Photographs, Fischli and Weiss's A Quiet Afternoon (1984-1986) pushes the boundaries of photography and sculpture by re-inventing a range of domestic materials. Again, what seems to be the result of idle hands translates to a rhapsodic celebration of the banal. With this series, Fischli and Weiss practice artistic adventurism at its best, gingerly balancing disparate objects and photographing them just before they collapse. An image (seen above) of two chairs precariously stacked upon one another, supported only by a ceramic jug and PVC pipe, illustrates the push and pull mentality of the Restless Night series. Despite the complex badinage of each vignette, Fischli and Weiss maintain the aesthetics of refined composition and outlandish design.





These series of consists of under exposed black and white photographs of paintings depicting fairy tale motifs, city scapes, exotic landscapes, animals, images of the universe and cosmic events, as well as scenes and characters from urban and popular myths, horror stories and science fiction. Fischli and Weiss came across these painted or airbrushed images in amusement parks and fairgrounds from around the world. Over a number of years the artists photographed them using black and white slide film, which is underexposed by two to three aperture points, and printed them on coloured paper to subdue tonal contrasts. Each print measures four by six inches, the standard size for snapshots and postcards. The colourful, large-scale, kitsch paintings are thus transformed into small, dark, haunting photographs.

“With photography, you always bounce on the wall of the visible. There is no way of going behind that wall. Using the trick of taking images of painted things “in the Photographs series”, most of them about dreams and fears, they found a sort of a fake hole in the wall of the visible, but maybe it was only a painted hole.”

- From Peter Fischli

Another important designer in this area is Francesco Faccin, who is was born in Milan 1977. In 2003 after having finished his studies in Industrial Design in Milan, Faccin works at the Enzo Mari design studio. In the meantime he starts up his career as a freelance designer, collaborating with Italian and International companies such as Tod's, Segis, DAE. From 2004 to 2007 he works in small scale self-production projects with local craftsmen, carefully supervising the whole process and development of the products and getting closely involved with the various issues of the new challenge: In particular to those regarding wood manipulation and craftsmen labour. At this same period he collaborates with the lute-maker and model-maker Francesco Rivolta. In 2009 Faccin meets Michele De Lucchi and since then they work in mutual collaboration. In 2010 he joins the SaloneSatellite for the second time and wins the Design Report Award 2010. Since 2010 he is professor at the NABA University where has a course entitled “Projects not Objects”.

During that experience, I wanna specially mention one of his exercises. It's a composition exercised as a design technique.

It's was a spoon with due different sizes of spherical stone. And Francesco Faccin used this due different kinds of Weight balanced the stone, make it hold in a certain angle. What's more, the curve of spoon has stopped the spherical stone to roll. At last, the whole project is stable assembled by three components. The 7th edition of the Triennale Design Museum 'Il design italiano oltre le crisi. Autarchia, Austerità, Autoproduzione' [Italian design beyond the crisis: Autarchy, Austerity, Self-production] organized by Beppe Finessi focuses on the topic of self-sufficient production. For the exhibition, Beppe Finessi has selected some previously unseen 'assemblies' that represent the abstract and germinal research that Francesco Faccin completed at the start of this third millennium; his work was inspired by his travels and his discoveries in times previous to the concrete activities of design. Included in the display is the table Binario, in the version that was self-produced by Faccin, in walnut heartwood, and Paneluce, a hybrid product of a bread basket and a candelabra, produced in 2012 for AnalogicoDigitale.

4.3-Propping



"Give me a pivot, I can prize up the earth."

---Archimedes

Ancient Greek mathematician, physicist, engineer, inventor, and astronomer.

Sometimes it takes very little to hold up something very big compared to its support: a thin prop relinquishing along a line all responsibility for a body seeking one final movement in space.

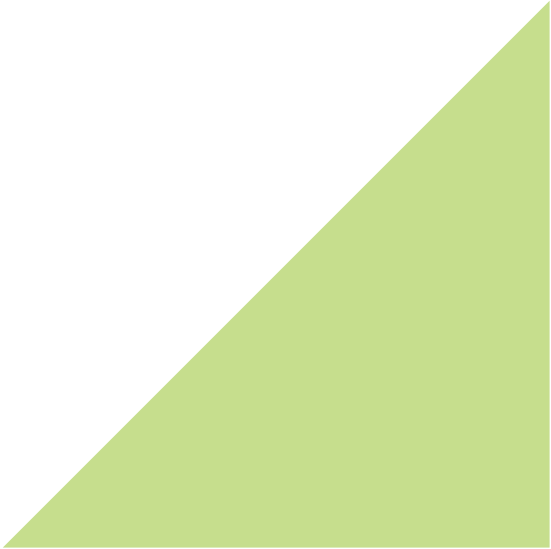
From here I want to mention a young Italian artistic- Arcangelo Sassolino and his works. He made a great success amount all the world, specially in his age. He is born in vicenza in 1967. He creates artworks mainly about the interaction between strength and heterogenous material, often made from industry. Student at the College of Engineering in Padova, Sassolino also attends the Visual Arts School of New York. He looked after many monographic exhibitions, some of them in Milan, Verona, Zurich, Berlin and Paris, all in prestigious cultural contest. In 2011 He realized "Piccolo Animismo" for the Contemporary Art Museum of Rome (MACRO), while in 2012 He takes part to the Zurich Art Festival "Art and the City". Very many collective exhibitions, many of them in the major cultural centers of the world.

He create a large number of artistic piece about joking with the gravity and lever principle. "When I design I ask my self: why do not try to force materials to them strenght limitations? Why do not force to the limits the materials features getting out of them the unfrozen in the form of shape and sound?" With these words the artist from Vicenza Arcangelo Sassolino describes his artistic moment, when he can create an artwork with a piece of wood and steel, and with that to communicate a message and to excite. An art form that find in General Fluid the best ally, because Arcangelo Sassolino is not an ordinary sculptor, its artworks are "alive", dynamic and they move. Wood, strings and others typical objects form a construction site (as for example the mechanical spider) come to life thanks to the hydraulic systems developed from General Fluidi, to change and push to the limits the materials resistance they meet, creating a state of tention that is physical and metaphorical at the same time.





4.4-Balancing



This is the most common ideal of balance that used in the area of product design. The human body interacts, integrates and thereby balance out of the state of balance between objects of balance between objects and systems.

This kind of work usually from are the designer who has a background of being an engineer, they consider the human body as a part of project and to moving the body is the part of the project itself. Personally, if they see from today back to here, it's the beginning of interactive design. The first time, designers pay more attention of users than the projects, more function and use have been considered in these masterpiece.

The ideal of Ergonomics has been thoroughly this kind of projects. The designer usually begin with a certain movement of human being, like shaking legs, waving hands, twister waist. From this kind of movements, designers collect and analysis them, use them as a Necessity, create the project support o improve this habitual action.

One of the greatest example is the chair SELLA from Castiglioni, who loves paradoxes and the new perception and wisdom they can engender. One of those is Sella (saddle), the pivoting stool designed with Pier Giacomo in 1957, which garnered the Castiglioni an incongruous "Dadaist" label because of its use of an already existing, everyday object in an unexpected context. The Sella is made of a leather bicycle seat,

a tubular metal stem, and a rounded cast-iron base. Its inspiration induces smiles: "When I use a pay phone," says the designer, "I like to move around, but I also would like to sit, but not completely." The Principal Design Component was in this case a new behavior, a consequence of a more probing understanding of an object's combined form and function, which is often the focus of Castiglioni's work. "I try to suggest different behaviors," he has declared, expressing his idea that the designer must be the interpreter of both real and virtual needs, those that people discover only after having them satisfied first. Virtual needs, the means to a consumers' market, are here demonstrated in their pre-cynical form. With the effortless composition of the three Sella elements, the designers both invented and fulfilled a need that arose from perceptive imagination; at the same time, they designed a new but thoroughly convincing behavior—a hybrid between sitting and pacing nervously.

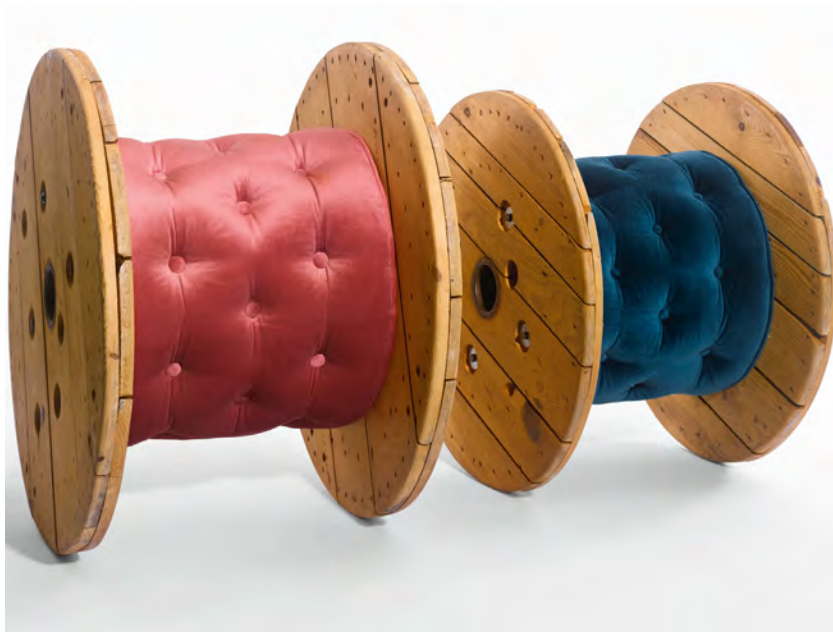
The Sella parable is instructive, but it is not necessarily representative of the whole of Castiglioni's production. His ideas are often inspired by everyday things, and the statement "Design demands observation" has become one of his many mottos. A street lamp was the springboard for the brothers' famous Arco lamp (1962), in which the light source is projected almost eight feet away from the marble base as if it were coming from the ceiling, while their Toio lamp (1962) was based on a car's front reflector. The idea for an object sometimes comes to Castiglioni

while he is working on an entirely separate assignment, such as an exhibition design. Ideas can also derive from technological advances, like the introduction of the thin fluorescent tube which suggested the Tubino lamp (1951).

Drawing on the classifications made by Paolo Ferrari in his 1984 book *Achille Castiglioni*, Castiglioni himself divides his work into various groupings. The Sella belongs to the category of Ready-made Objects, as do the Mezzadro (1957)—a stool composed of a mass-produced tractor seat, a bent steel bar, a wood bar, and a wing screw—and the above-mentioned Toio lamp—made from a car reflector, a transformer that also works as heavy base, a formed metal handle, a hexagonal stem, three fishing rod rings, and a single screw. His Ready-made Objects evolve like living things: the components of the Mezzadro stool have been updated as the manufacture of tractor seats has changed without damaging the purity of the object. Castiglioni refers to another grouping as Redesigned Objects, meaning traditional objects that he has perfected or updated according to current needs and technological developments. These include his personal takes on small outdoor café tables (*Cumano*, 1979), ashtrays (*Spirale*, 1971), glass globe ceiling lamps (*Brera*, 1992), and bedside tables (*Comodo*, 1989). The Minimalist group contains such subtle icons as the Luminator floor lamp of 1955, which is simply a bulb in a tube on a tripod—the tube just big enough to accommodate



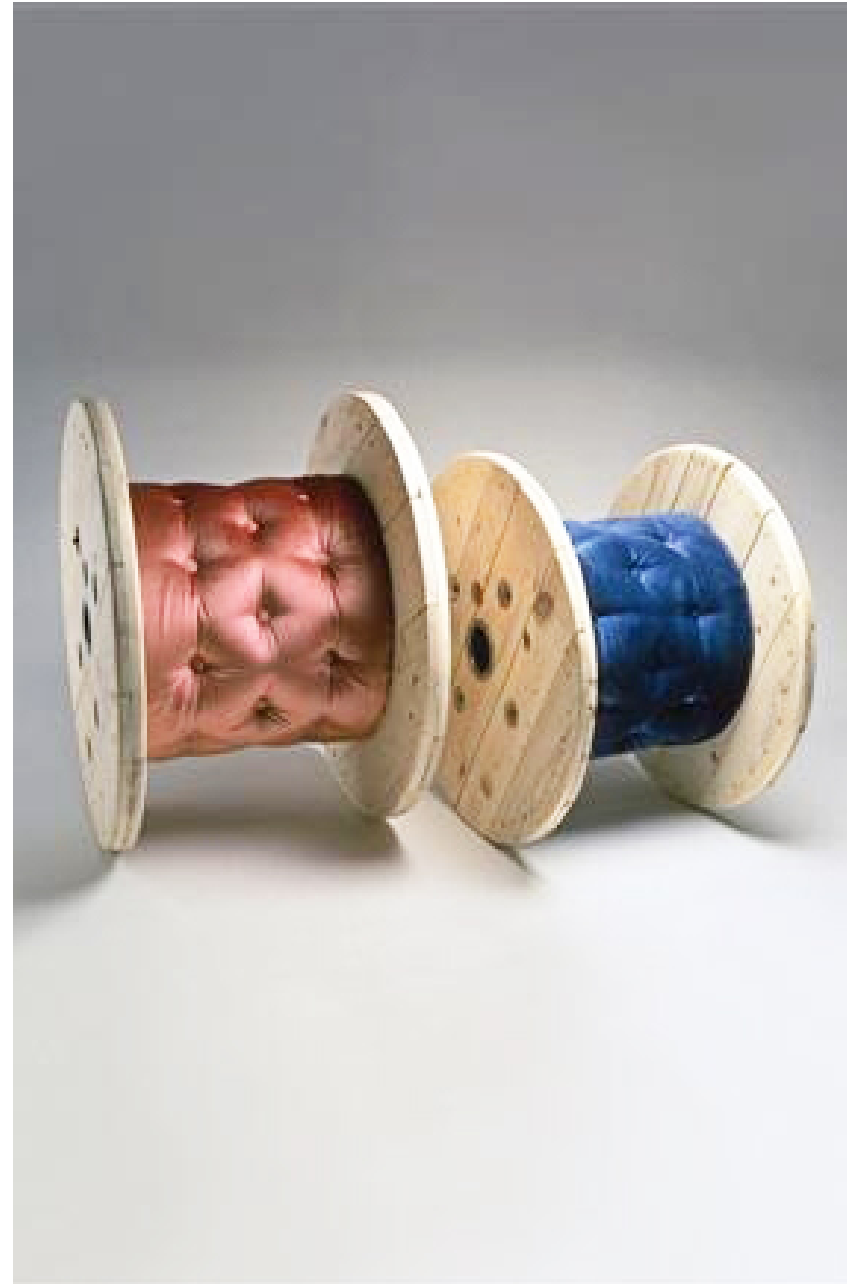
the socket and to contain the three thin legs during transportation-as well as the Fucsia hanging lamp of 1996, simply an upside-down glass cone with its edges sanded to protect the eyes from the bulb's glare. The Snoopy table lamp of 1967, so named after its prominent beagle-like nose, and the anthropomorphic RR126 stereo system of 1966, endowed with eyes, movable ears, and a mouth, are two of his so-called Expressionistic Objects, while the sleek curvilinear shells of appliances like the 1956 Spalter vacuum cleaner and the 1968 VLM light switch are among his Integral Projects.



SWING from Denis Santachiara for domodinamica. It's a footless armchair that rests on only one point to read, play, or dream on. It rotates and swivels and rocks you in every direction, even sideways. The swing chair is one that rests only on one point. It allows you to rock and swivel in any direction you choose. It can rock back and forth or side to side. The structure is padded with expanded polyurethane and Dacron; swinging base in gray metallized ABS. And it has a removable fabric cover. It will not be stable never when a person sitting on it, it will move depend on the force the person give to chair.

The project RULO is the artist's proof from an edition of three plus one artist's proof. The work is accompanied by a certificate of authenticity signed by the artist Maurizio Cattelan. It's a 360 degree armchairs defying every common habit. The project is assembly by two cushioned seats which comprise the present lot are ideal for attracting viewers, providing both a unique artwork and an inviting place to sit.

He once said : "I always chasing new challenges, new possibilities, and new locations. I'm not only interested in the art public, but also in those people who just happen casually to pass by. Art should not be a space shut in on itself, but rather a magnetic field that attracts the energies of artists into space, and possibly into the cities in which we circulate."



4.5-Pivoting



Allowing tiny movements emphasizes even further the importance of points of contact between different parts, which, paradoxically, the more constrained they are the greater freedom they allow and hence give greater balance to the system.

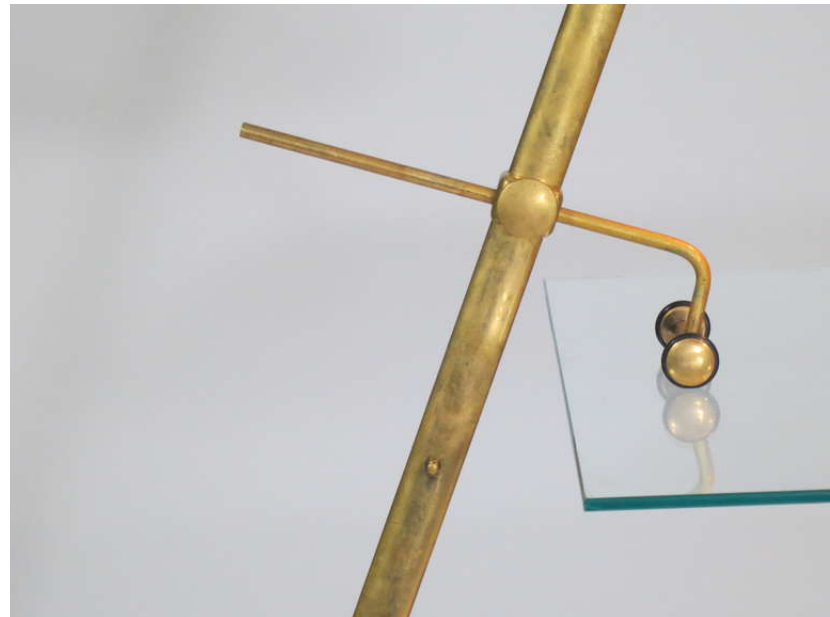
Differently from other kinds of balance, this is the specially and the only one of moving situation of balance. It let the project once occasionally moving inside a certain range. Basically, it's a joke of Weight. Although the project keep moving, but the center point, the base point never moved. In a certain sense, the project never moved.

(1) Roberto Menghi designed in 1948, Libra Lux is a forgotten masterpiece of the brilliant Roberto Menghi. Invention of form and use this table lamp, originally polished brass, is fitted with a counterWeight allows it to stay balanced on any support surface. The counterWeight also allows different degrees of inclination without the use of mechanical joints. Originally produced by Lamperti was reissued in 2009 by Omikron Design.

It's a table lamp orientable through a sophisticated balance system. The counterWeight system allows the lamp to be balanced on the surface with different angles without using mechanical junctions. Bulb is shielded by the diffuser. Structure in sandblasted nicked brass with chromed details.

(1) Roberto Menghi:
Milano
1920 – maggio 2006
è stato un architetto e
designer italiano.





Hang Around is designed by KiBiSi for MUUTO, it is precisely designed and crafted for a sleek modern look and improved functionality. The innovative extrusion cut in the back of Hang Around lets you work freely in the kitchen, while your utensils hang out on your pots or pans. Toss Around, the salad servers, tell the same story of craftsmanship, materials and processes used for centuries. But in KiBiSi's interpretation, the wooden tools are precisely designed and crafted for an essential contemporary look and functional ergonomics.

The series has been previewed for the first time at maison et objet 2011. the collection of simple wooden tools are precisely designed and crafted for improved functionality in the kitchen. Jens martin skibsted, partner of copenhagen based kibisi says: "they were originally inspired by bhutanese crafts. their wooden everyday tools seem to have layers of stories and thoughts. they concocted that with our Scandinavian design heritage and our idea-lead, no fluff design philosophy - and this little invention was bread." MUUTO is a Scandinavian design company that joins forces with the leading contemporary Scandinavian designers to create original products with new perspectives. The result is an innovative collection of Scandinavian furniture, lamps and accessories for modern homes all over the world.





The Serving Tray is another kind of project, designed by Alberto Meda for Danese. It shows the size of pivot- balance design project is very variable. Even a element in the cup is already been considered. But it's a quite functional change. Let's count, How many problems solved: the buffet, for example. The pot in one hand, glass in the other, and bread stick where I put it? And how do I shake hands with the friend who came? How to open a door? Alberto Meda, the designer, has created the flat-glass: ie a plate with attached glass called Poised. Comfortable and brilliant.



4.6-Vary Center



In every free or rigorous geometric and formal composition there is always a precise point around which the active forces cancel themselves out.

Coffee table in rosewood named Cicognino designed by Franco Albini for Poggi Pavia in 1953, in the permanent collection of the Museum of Design Triennale Museum and MoMA in New York. Coffee Table is with frame and top available in walnut or ash, and with a natural or dyed black finish, this simple and elegant coffee table is easily adaptable to any environment. The extension of one leg ends in peak form, recalling the body of birds. It has three-legged side table with a circular board. Finishes table in walnut and ash. The handle, perfectly structure, means it can be moved with toppling over any objects on the tray.



The Arco Floor Lamp is designed by Achille Castiglioni and Pier Giacomo Castiglioni for A&D design. As a lecturer at the Politecnico di Milano in the 1980s, Achille Castiglioni would implore his students to "Start from scratch. Stick to common sense. Know your goals and means." He clearly took his own advice when he, with his elder brother Pier Giacomo, designed the dramatic Arco Floor Lamp (1962). Inspired by a streetlight, the Arco cleverly provides overhead lighting without requiring ceiling suspension, its polished shade extending nearly seven feet to accommodate a dining table or sofa beneath the light source. Aware that the 78-pound lamp would be difficult to move, the designers smartly placed a hole in the base to accommodate a broom handle. They also gave the Arco an adjustable arc and swiveling shade for precise lighting control. As groovy as it is elegant, the lamp's iconic status was sealed when it appeared on screen alongside Sean Connery in *Diamonds Are Forever* and in *The Italian Job* (apropos). The Arco is included in the permanent collection at MoMA.

It solves a practical problem of design: the need for a n overhead lamp that does not require drilling a hole in the ceiling. A street lamp inspired the Castiglioni brothers' design, demonstrating Achille Castiglioni's motto that "design demands observation." By inserting a steel arch into a heavy marble pedestal, the designers created a lamp that is able to illuminate objects eight feet away from its base—far enough to light the middle of a dining

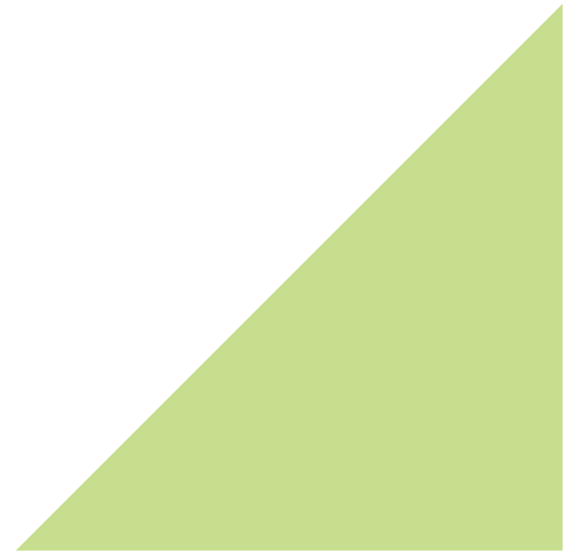
table. A marble base counterbalances a metal arm projecting the light source right over the table. A simple hole, apparently decent but actually at the barycentry of the structure, allows it to be raised and moved by means of a broom handle.

Arco floor lamp providing direct and indirect light. Inspired by streetlights, the Arco lamp has been in continuous production since 1962 and is now considered a design classic. The Arco floor lamp comes with a genuine Carrera marble base that supports a spun aluminum reflector via a curved stainless steel adjustable stem. The base has beveled corners for safety with a hole for carrying which is achieved by putting a stick through. The height extends to almost 7-feet, allowing placement of a table or a couch underneath. The Arco floor lamp is available in LED or incandescent.

Castiglioni designed more than sixty lamps and a host of other objects, working from 1945 until 1968 with his brother Pier Giacomo and then on his own. One of their best-known lamp designs, Arco, came about through the challenge of a practical problem: how to provide a ceiling lamp that would not require drilling a hole in the ceiling. Castiglioni's motto, "design demands observation," proved accurate, for it was a street lamp that gave the brothers the inspiration for this fixture. Street lamps, affixed to the ground, have a shape that enables them to project their light beams several feet away from their bases. In this domestic adaptation, the Castiglionis were able to illuminate objects eight feet away from the lamp's base—far enough to light the middle of a dining table—by inserting a steel arch into a heavy Carrara marble pedestal. They studied the span of the arch to be sure that its form would provide enough space for one person carrying a tray to pass behind someone sitting at the table. In addition, they made sure the heavy lamp could be moved by two people by inserting a broomstick through the hole in the marble base. Arco is a prime example of the Castiglionis' rigorous approach to design solutions.



4.7-In Position



Certain stylistic features and geometric patterns break with the obvious, clarifying directions for an object to gain stability and function properly, thereby encouraging carefully thought-out movement rather than just one single position.

The project On Off is designed by Alberto Meda for Luceplan. The idea starts from a 'gravity' switch-socket (originally used in freezers) which offers original qualities of relation for a lamp: the unit is turned on or off not with a control positioned along the wire, but by changing the position of the entire luminous body with the simple gesture of one hand. A green LED makes it easy to find the lamp in the dark. Since 1994 part of the Design Collection of the Museum of Modern Art of New York. It is not operated by the usual switch on the electric wire, but by a movement of the hand which moves it into its two positions of balance. It can be placed on a table, bedside-table or floor.

After graduating with a degree in mechanical engineering from Milan Polytechnic in 1969, Alberto Meda began his career as a technical director for Kartell, responsible for the control of projects. Six years later, Meda realized that design was much more fun than production and began consulting work as a free-lance designer for companies such as Alias, Alfa Romeo, Gaggia, Kartell, Centrokappa, Fontana Arte, Luceplan, Mandarina Duck, Philips, and Vitra. Meda sees modern technology as a "supermarket of creative possibilities" and exploits it in his designs with virtuosic versatility. In 1987, Meda began his collaboration with Alias presenting the LightLight chair and the Dry table. In 1989, he created the award-winning Lola lamp for Luceplan, as well as the Sistemino, Jack, Berenice, OnOff, Titania, Tibibi, Uni-Line lamps and the Bap and Metropoli lighting systems. In 1996, Meda designed the Meda swivel chair for Vitra.

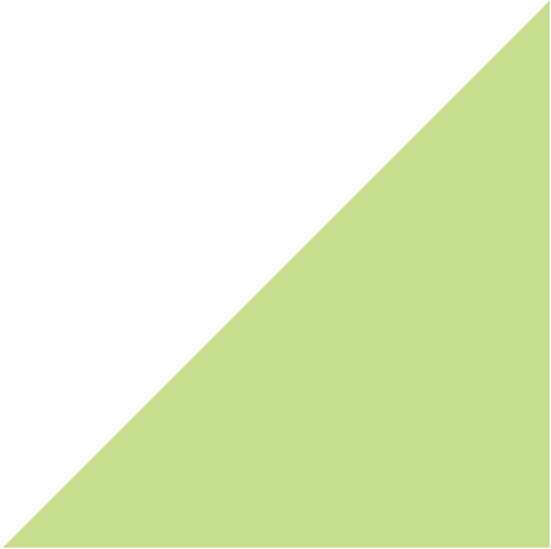


Oranienbaum is designed by Marti Guixé for Droog at 1999. Local traditional specialities have been the inspiration for Martí Guixé, who designs an orange liqueur glass. Its round base is faceted on the sides, which results in four different measures of drink depending on the position in which you lay down the glass on the table. Three different cuts art the base of a simple glass allow three possible doses of liqueur.

It's not only a special position of putting glasses, but also a innovation of thinking about the ideal of right and wrong. The turned over glass is always considered as a wrong place, not a "right" place to put. But in this project, designer change the ideal of wrong and right. That's the part make this project interesting and special.



4.8-By Friction



There could be an special contact between parts providing stability, and sometimes it's permanent, on other occasions temporary, without any joints; a set of reciprocal exchanges between materials, forms and physical principles that can always find respite as they slide vertically.

Another designer they have mentioned before have done a great job in this area also. It's Francesco Faccin with his work named Traverso Table. He exaggerated the idea of the beam as a key element. He tried to turn the beam in the central "spine" of the project. Without the beam the table doesn't exist. On the front of the table they can clearly read the section that is both decorative but absolutely structural. He likes to think about objects in which the structural and mechanical element, that is for this necessary, is also the focal point, the "decorative" point. The upper part of table is divided into two parts (made in wood or glass) to occupy very little space when it is dismantled. The structure is made of ash wood.

It is a table that can only be assembled using its well designed game of joints. The legs of the table are made of solid walnut and the round top is made out of Corian. It results to be an essential and immediate product where the perfection in its cuts translates in perfection in its joints. The visible joints on the table plane have both a decorative and functional role and are essential for the consistency of the table. Having successfully resolved both mechanical and aesthetic issues, the whole table creates a pleasant visual effect. When dismantled, the table occupies very little space. It is necessary the use of CNC machines to manufacture this table.



Anther great example is the Hook System from Pagani Perversi. It's a little painted metal structure comprising of curved tubes joined at the ends by wall and floor support strips. Self-supporting hook- style fixture in rubber-covered steel rods. Shelves in rounded folded, glass, aluminium, and wood lacquered UDF. This little is the best example about how little project design can change the whole ideal of product. It's a simple ringlet embraces the stand up right and holds up the shelf.

The lamp from Achille Castiglioni and Pio Manzù, named Parentesi for Flos. "Pio Manzù had the original idea for Parentesi. He thought up a fixed vertical boom and a cylindrical box with a slot for the light, which went up and down: you stopped it with a screw. He replaced the boom with a metal chord that, when bent creates friction and enables the lamp to be in position without requiring any screws." said by Achille Castiglioni.

This lamp connects the ceiling with the floor by a steel wire rope, that tautens with a Weight. The diffuse part its height adjustable. The Parentesi lamp body moves vertically by sliding on a ceiling-to-floor steel cable (up to 4 meters long). This allows the light to be fixed at whatever height is required and directed at whatever you want to illuminate. Parentesi is particularly great for task lighting or highlighting architectural details.



The counterWeight at the base, suspended above the floor, holds the cable which fits through the narrow tube of the bracket-shaped lamp holder, which leads to thanks to the friction between the cable and tube along the points of curvature, the light source is held in its desired positions.

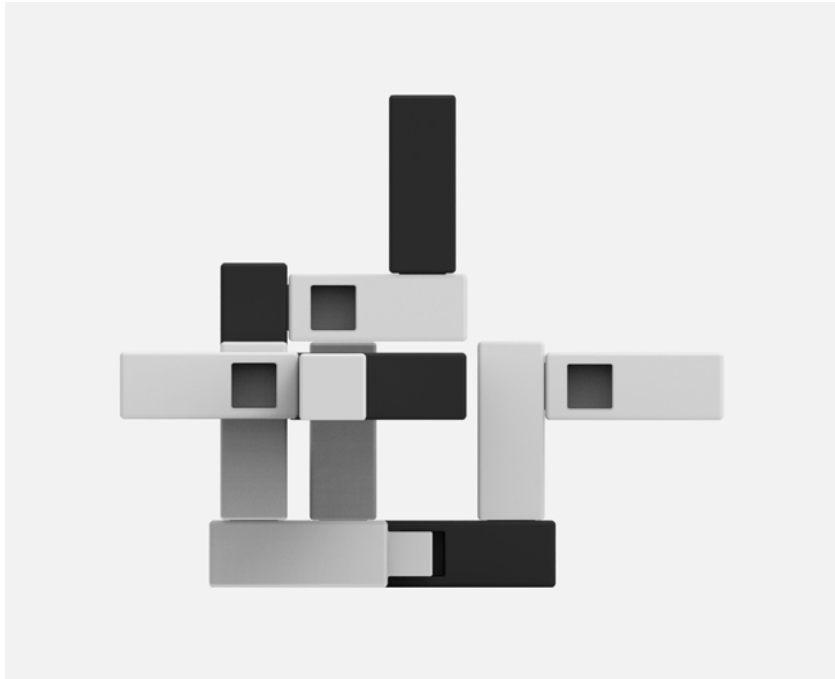




4. PROJECTS

4.1- 3D Wei Qi

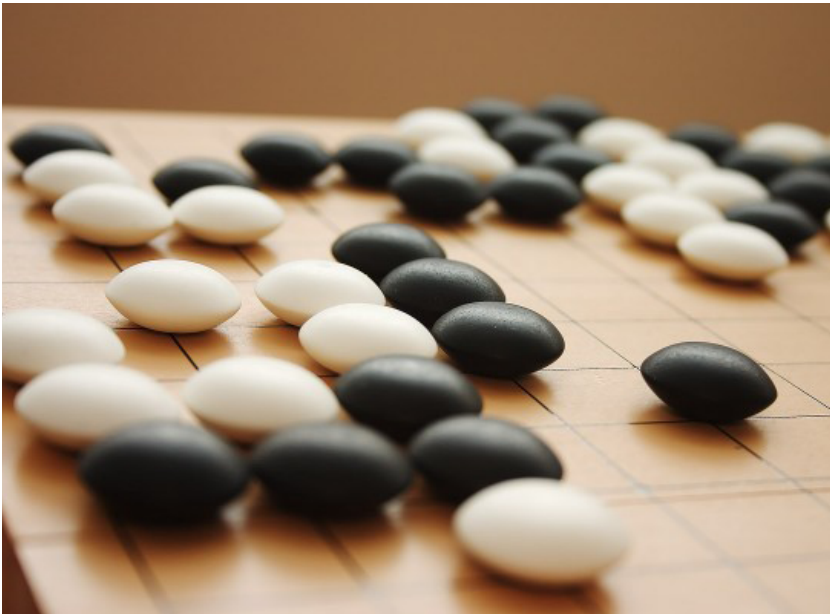




4.11-About Wei Qi

Wei Qi is a board game involving two players, that originated in ancient China more than 2,500 years ago. It was considered one of the four essential arts of a cultured Chinese scholar in antiquity. The earliest written reference to the game is generally recognized as the historical annual Zuo Zhuan (c. 4th century BC).

The two players alternately place black and white playing pieces, called "stones", on the vacant intersections ("points") of a board with a 19x19 grid of lines. Beginners often play on smaller 9x9 and 13x13 boards,[6] and archaeological evidence shows that game was played in earlier centuries on a board with a 17x17 grid. By the time the game had spread to Korea and Japan in about the 5th and 7th centuries CE respectively, however,



boards with a 19x19 grid had become standard.

The objective of the game—as the translation of its name implies—is to have surrounded a larger total area of the board with one's stones than the opponent by the end of the game, although this result typically involves many more intricacies than simply using surrounding areas directly.

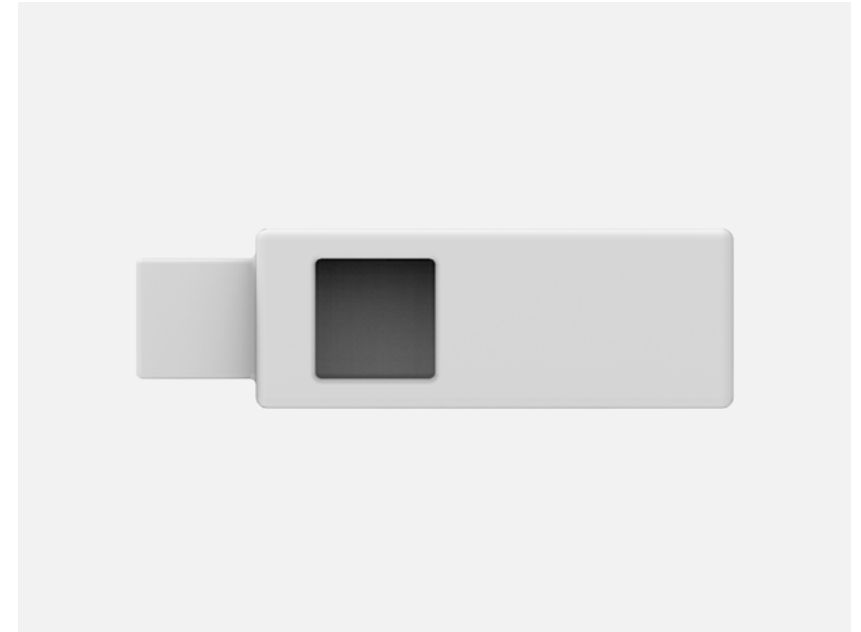
Once placed on the board, stones may not be moved, but stones may be removed from the board if captured—this is done by surrounding an opposing stone or group of stones by occupying all orthogonally-adjacent points. The two players place stones alternately until they reach a point at which neither player wishes to make another move; the game has no set ending conditions beyond this. When a game concludes, the territory is counted along with captured stones and komi (points added to the score of the player with the white stones as compensation for playing second) to determine the winner. Games may also be won by resignation.

As of mid-2008, there were well over 40 million Go players worldwide, the overwhelming majority of them living in East Asia. As of May 2012, the International Go Federation has a total of 74 member countries and four Association Members covering multiple countries. There are already lots of variation of the game GO/Wei Qi.

The more obvious variation is about rules. Because it's become from the difficulty in defining the rules of Go has led to the creation of many subtly different rule sets. They vary in areas like scoring method, ko, suicide, handicap placement, and how neutral points are dealt with at the end. These differences are usually small enough to maintain the character and strategy of the game, and are typically not considered variants. Different rule sets are explained in Rules of Go.

Alak is a Go-like game restricted to a single spatial dimension. Go can be extended to three dimensions. One example is Diamond Go, which uses the structure of a carbon diamond crystal lattice. With many such Go variants, the nature of the game changes dramatically the standard 4-connectivity of the points is changed, however, Diamond Go maintains this connectivity. Another example is Margo, by Cameron Browne, a variant played with marbles that can be stacked on top of one another.

A program called Freed Go can be used to play with boards with generic topology. It has embedded 11 different boards, either three-dimensional shapes (including cube, sphere, cylinder, diamond, torus and Möbius strip) or flat fields with points connected to three, five or six neighboring points, but it's also possible to create custom boards.



4.12-Balance Design in the Wei Qi

As they know, if they separate the games exist in the world into two types, it could be described like deterministic and non-deterministic. Chess and Go and Checkers are all deterministic. Because you never have a situation where you move a piece, but due to an unexpected combat die roll the piece gets lost somewhere along the way, or something. Candy Land and Chutes & Ladders are not deterministic. Each has a random mechanism for moving players forward, so you never know quite how far you'll move next turn. Now, this is not to say that a non-deterministic game is always "better." they need to remember, Chess and Go are deterministic games that have been played for thousands of years; as game designers today, they count ourselves lucky if our games are played a mere two or three years from the release date. So my point is not that one method is superior to the other, but rather that analyzing game balance is done differently for deterministic versus non-deterministic games.

Deterministic games usually could be an theoretically undergo some kind of brute-force analysis, where you look at all the possible moves and determine the best one. The number of moves to consider may be so large, as with the game Go, that a brute-force solve is impossible, but in at least some cases (typically early-game and end-game positions) you can do a bit of number-crunching to figure out optimal moves.



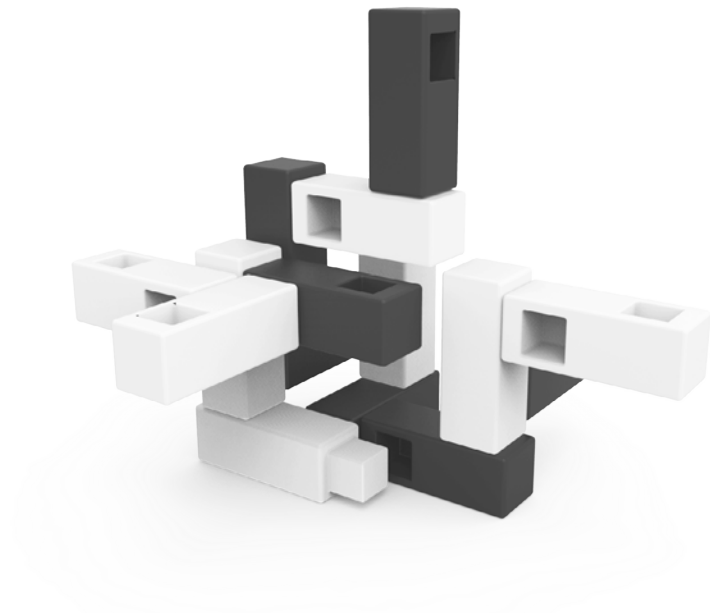
There are games like Chess and Go which are theoretically solvable, but in reality there are so many permutations that the human mind and even computers, can't realistically solve the entire game. Here is a case where games are solvable but still interesting, because their complexity is beyond our capacity to solve them.

It is hard to tell if games like this are balanced, because they don't actually know the solution and don't have the means to actually solve it. they must rely on our game designer intuition, the opinions of expert players, or tournament stats across many championship-level games, to merely get a good guess as to whether the game is balanced. Another impractical way to balance these games

is to sit around and wait for computers to become powerful enough to solve them within our lifetimes, knowing that this may or may not happen.

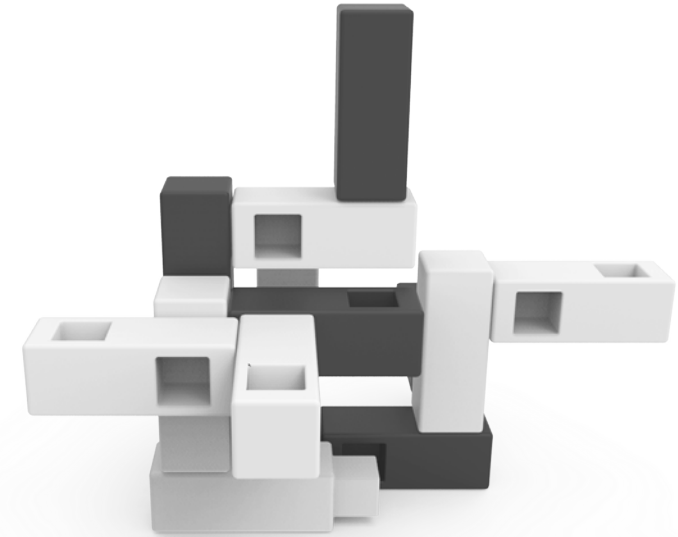
A related concept to the capacity to solve is that of information availability. In a game with perfect or complete information, all players know all elements of the game state at all times. Chess and Go are obvious examples. You might be able to see, then, that any deterministic game with perfect information is at least theoretically, completely solvable.

4.13- From 2D to 3D

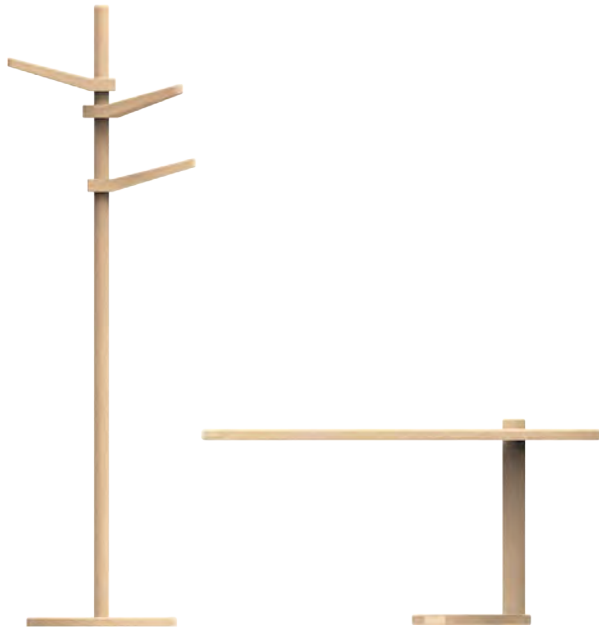


Over the years, there have been numerous attempts to develop rules for three dimensional chess using three standard 8 by 8 chess boards, however, many of these games suffered from major problems that distracted the players from the essential characteristics of traditional chess. Some of these 3D chess variations created new chess pieces while other 3D rules imposed mandatory or unusual moves. In addition, many of these "rules" were generally incomplete causing inconsistent interpretations. None of these game variations offered a truly playable chess game.

The original ideal is mentioned in the famous film Star Trek. Three-dimensional chess was a variant of the ancient Earth board game chess. It was an accustomed pastime of Kirk and Spock aboard the USS Enterprise in the 23rd century and its popularity extends into the 24th century. Because of the lack of playable rules, the Millennium 3D Chess rules were written with the objective of extending the traditional chess game into a multilevel environment without distorting the basic game. To this end, Millennium 3D Chess has not "created" new chess rules, but instead extended the traditional rules to allow for multi-board play. Other than the concept of moving between chess boards levels, all traditional 2D chess rules apply.



And above all the situation I have found, I think a innovation not in the board but into 3D could be a nice solution. So I change the simple cylindrical form of chessman, into a simple segmented rectangular form. Within the cavity on the both two sides, the player can choose one side and change the direction of chessman. So in a certain level, this new game is easier but more playful more the traditional GO/Wei Qi. The strategy is changing from "create" to "choose".



4.2- Coat Rack & Coffee Table



4.21- In its own balance

As a result of the research upon: the balance should be find itself. Rather it is a point, a mass, o a position even a certain angle. Balance can be described as achieving equilibrium. The problem with this definition is that artists rarely want things to be equal. It usually means that no part of the composition calls too much attention to itself at the expense of the rest of the image. This increases unity, but decreases variety, and hence interest.

To describing and justifying the importance of designing and enhancing the user experience seems almost unnecessary. I could simply say, "It's important because it deals with our users' needs — enough said," and everyone would probably be satisfied with that. However, those of designers who worked in the design industry prior to the codification of user-centered design, usability and web accessibility would know that they used to make websites differently. Before our users and ourselves understood the value of user-centered design, so I made design decisions based on just two things: what I thought was awesome and what the client wanted to see. I built interaction based on what I thought worked — I designed for

myself. The focus was on aesthetics and the brand, with little to no thought of how the people who would use the website would feel about it. There was no science behind what I did. I did it because the results looked good, because we were creative and because that was what's the users wanted.

Starting from this kind of view, I thing it's interesting and more variable if the product is half-made, making the user to be a part, and last part of the combination. It means, the user and the product will be connected in order to find the equilibrium of the product. That kind of the balance, become into a reason, a connection between the user and designer. The statue of equilibrium is not only a physical force, but also a result of search. And when the result of becoming a part of product, the product finally is complete.



4.22- The balance system



In this product, the first action I have done, is not to choose the type of products, but to choose the type of system. The products could be the application of the system, so the type or even the number are less important. And these products also could be a combination of a set. The system could be like invisible one, like the circled balance system; or like self-changing product, that will never stop moving, etc. Upon all the thought I have been through, I choose the simple hang system.

Here I would like to mention a perfect example of hang

system, it named Clip Tree. It was designed by MCO design studio in response to the need to centralize the place where the studio store the things they carry with themselves during the day: cell phones, bags, coats, hats, scarves, etc. Often they place these things throughout the home and then struggle to find them again when they need to head back outside. Clip Tree simplifies this process significantly. Taking functional inspiration from early hall trees and coat stands, Clip Tree combines both forms resulting in a configurable valet for use in the home, office, or hotel room. From cell phones to soap, from spring scarves to column, from messenger bags to a child's raincoat, Clip Tree provides a way to elegantly frame and store our possessions. Clip Tree consists of a wooden column with milled notches, 2 clips for attaching the column to the wall, and 3 clips that attach to the column itself. Clips can be easily rearranged in any configuration that is most useful.

This product is function by the use of different angles. If considering one of the column as 0° , another one is 10° . The number is under the certain experience and calculation: if the grand become to big, like over 25° , the height will be over 15cm, it will be uncomfortable for people in normal height. Otherwise, if the grand is too small, like less than 6° , considering it will have reasonable deviation in the industrial production, the production process will have to be very accurate process, even too much. And it will add the difficulty of the product's "correct" production. So after several experiment,

the angle is confirmed as 10° . And about the safety issue, because of the special structure of the element, the more the thing that carried, the more tight these two elements will get. So it can be told that it's not possible that the rack will loose and fall down. After the calculation on the force, it could stand just fine when the thing hanged is less a child. So if we consider the regular situation, like coat, a hat o an umbrella, it would not have any safety issue.



4.3- One-leg Chair



4.31-The beauty of incomplete

Like Venus broke back, incomplete, but left us with a lot of imagination. Perfect life does not exist, but many times we request is somewhat harsh. Perhaps over time, there will be changes in our view, is not perfect thing ever felt or regret things also make us feel very happy. It is because there is no perfect, we will be striving for perfection, and we will continue to progress. Incomplete, it should not only be a temporary condition. And it's also a thought out of box, think differently, unconventionally, or from a new perspective, novel or creative thinking, to break through the normal knowledge, giving people a surprise of new thinking, and sometimes because of the change, it could be used as a new solution of the problem. While solving the



problems you will be encouraged to think aloud. When thinking aloud you should do the following: "Say whatever is on your mind. Don't hold back hunches, guesses, wild ideas, images, plans or goals. Speak as continuously as possible. Try to say something at least once every five seconds. Speak audibly. Watch for your voice dropping as you become involved. Don't worry about complete sentences or eloquence. Don't over explain or justify. Analyze no more than you would normally. Don't elaborate on past events. Get into the pattern of saying what you're thinking about now, not of thinking for a while and then describing your thoughts. Though the experimenter is present you are not talking to the experimenter. Instead, you are to perform this task as if you are talking aloud to yourself." --- from The art of creative thinking how to be innovative and develop great ideas, Adair, John (2007).

4.32-The “incomplete” design

There are already some products in the market that refer to the beauty of incomplete design, the focal point is when these could remain the same, or get even more function by reducing the elements or parts from their old, well-known structure, such as no-leg table, suspension house, etc. The dimension is variable, it could change from as small as a spoon or a needle, as big as a house or a building. Also, the ideal of "element" is quite wide. It could be a fluent curve that suddenly stops, or a half-created rectangle. Sometimes even the structure, which is unusual from what we have seen, like a not-closed cup or a bulb formed lamp. That's kind of sensation of "lack" is what to make the product special and interesting.

This product has used a fluent line of section, and with one leg only. But thanks to the hanging structure, the affordability of this chair is just as well as other four-leg chairs. What's more, the user can choose which side he/she likes to face to. When we put these chairs in a restaurant, it will become a very interesting combination. The user will need to talk to each other to discuss



the direction of the chair and the direction of the face. So this chair becomes an excuse for opening a dialogue and a conversation. The one person in the middle can be the connection of two tables, which is very similar to the friendship in the real world. And through the "connection", these two groups of people could be linked.



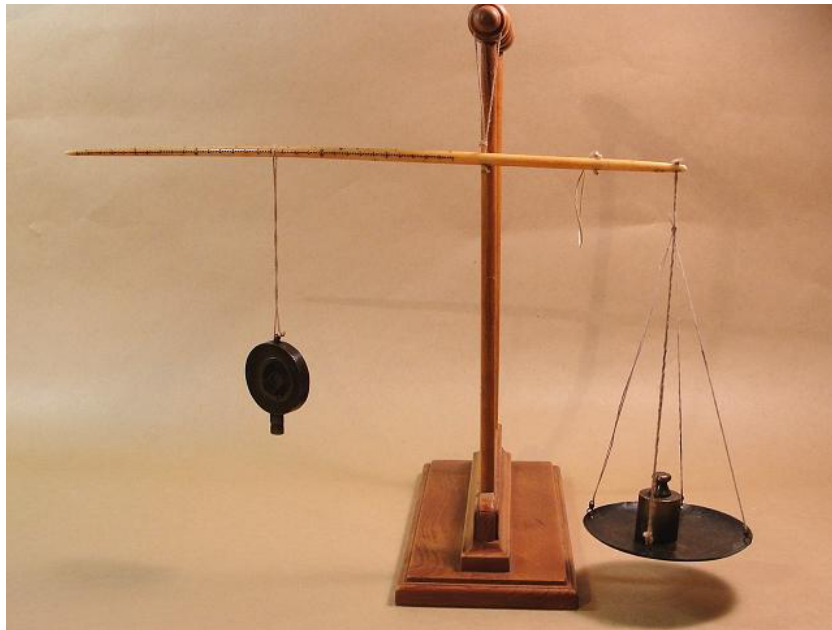
4.4- Lamp



4.41-Inspiration:Steelyard balance

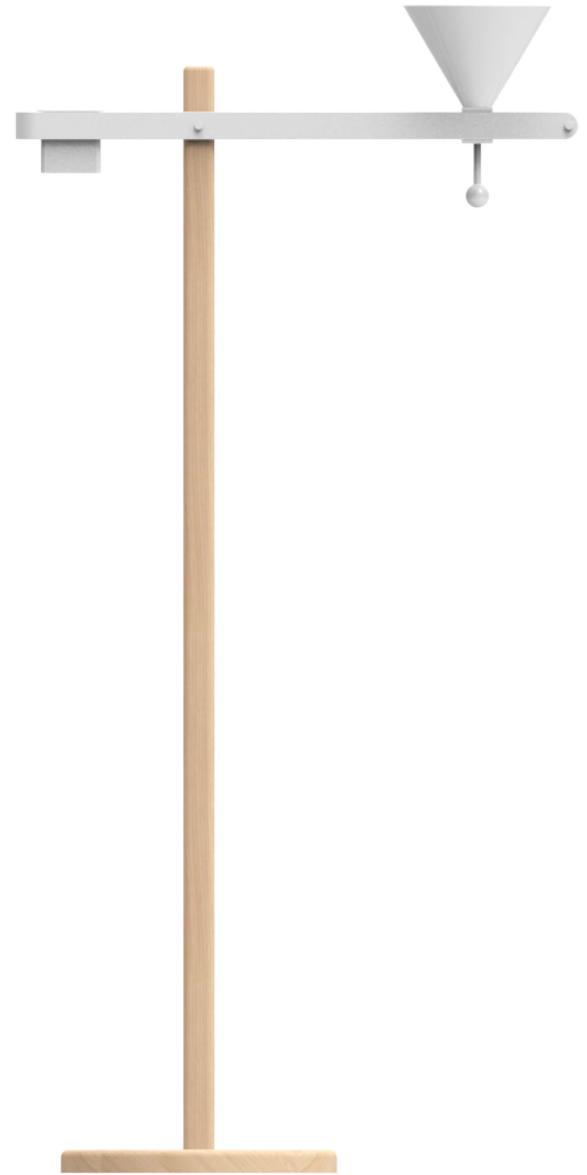
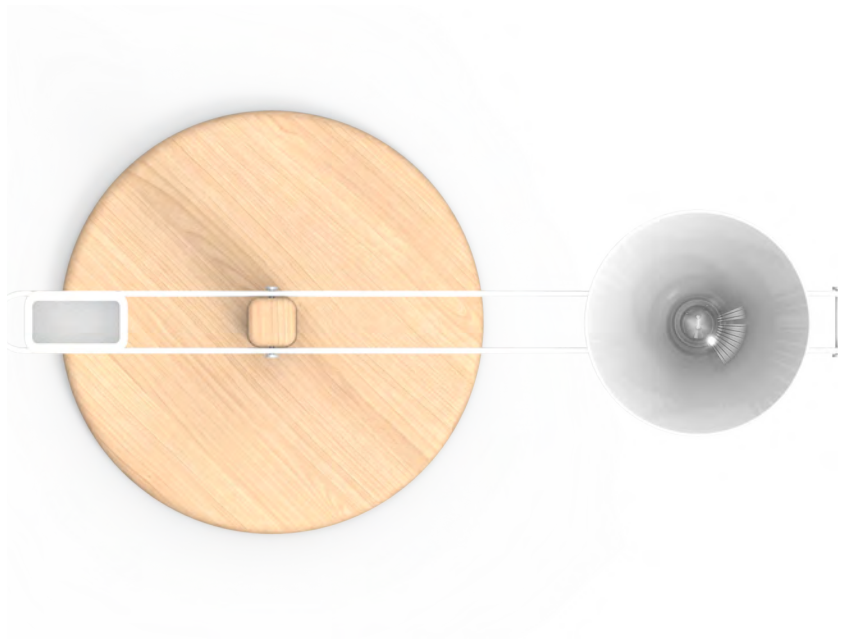
A steelyard balance or steelyard is a straight-beam balance with arms of unequal length. It incorporates a counterweight which slides along the calibrated longer arm to counterbalance the load and indicate its weight. A steelyard is also known as a Roman steelyard, or Roman balance. The steelyard comprises a balance beam which is suspended from a pivot (or fulcrum) which is very close to one end of the beam. The two parts of the beam which flank the pivot are the arms. The arm from which the object to be weighed (the load) is hung is short and is located close to the pivot point. The other arm is longer, is graduated and incorporates a counterweight which can be moved along the arm until the two arms are balanced about the pivot, at which time the weight of the load is indicated by the position of the counterweight.

According to Mark Schiefsky of Harvard University, the steelyard was in use among Greek craftsmen of the 5th and 4th centuries BC, even before Archimedes demonstrated the law of the lever theoretically. Roman and Chinese steelyards



were independently invented around 200 BC. Steelyards dating from AD 100 to 400 have been unearthed in Great Britain. Steelyards and their components have also been excavated from shipwrecks of the Byzantine period in the Mediterranean and even the Red Sea, such as the 7th-century wreck at Yassi Ada, Turkey, and the mid-first millennium shipwreck at Black Assarca Island, Eritrea. The Oxford English Dictionary suggests that the name "steelyard" is derived from the Steelyard, the main trading base of the Hanseatic League in London in the 14th century.

Steelyards of different sizes have been used to weigh loads ranging from ounces to tons. A small steelyard could be a foot or less in length and thus conveniently used as a portable device that merchants and traders could use to weigh small ounce-sized items of merchandise. In other cases a steelyard could be several feet long and used to weigh sacks of flour and other commodities. Even larger steelyards were three stories tall and used to weigh fully laden horse-drawn carts. A Scandinavian steel-yard is a variant which consists of a bar with a fixed weight attached to one end, a movable pivot point and an attachment point for the object to be weighed at the other end. Once the object to be weighed is attached to its end of the bar, the pivot point, which is frequently a loop at the end of a cord or chain, is moved until the bar is balanced. The bar can be calibrated so that the object's weight can be read off directly from the position of the pivot. This type is known in Sweden, Denmark and Norway.



4.42- The balance design from steelyard

The steelyard exemplifies the law of the lever, which is a machine consisting of a beam or rigid rod pivoted at a fixed hinge or fulcrum. It is one of the six simple machines identified by Renaissance scientists. Wherein, when balanced, the weight of the object being weighed, multiplied by the length of the short balance arm to which it is attached, is equal to the weight of the counterweight multiplied by the distance of the counterweight from the pivot. So a balance consisting of a scaled arm suspended off center, a hook at the shorter end on which to hang the object being weighed, and a counterbalance at the longer end that can be moved to find the weight. Upon all the research, which means that, the position, both in direction transverse and portrait, could be changed and all of them depend on nothing but the weight. In the variation of the steelyard, it could also be division into two parts: distance and weight. The distance is including the vertically and laterally of the both sides, so if we calculate the ways of combination, it will be lots of choice and variations. What's more, one distance will have an effect on another, so there will be a situation that two kinds of distance results to the same weight.

Starting from here, I want to recreate the

structure of steelyard, only the structure but not the function. Because the function of classic steelyard is disappearing in modern days, we already have so much substitutes, like electronic scales. But the structure has its own sense and beauty. Derived from is so many variation of combination and movable elements, I think it's very interesting if some project could be applied with this kind of structure. About the part of function, this structure is able to balancing two parts of things, one part is a in a constant weight, another is in a changeable weight. And both two parts could be moved to be in the right position to balancing the whole structure. So one part could be like a element fixed, another part could be a element that contains a changeable number of weight. That's reason and process I thought to design this desk lamp. I use the light bulb as the constant weight and the little basket to contain different things on the desk. There are always the little elements, like pencils,erasers,rulers,etc. So this product can be not only a lamp that can be used to bright the space, not also a little help to organize the desk.



5. CONCLUSION

In this thesis, I have started with a general reason why I choose "balance design" as the theme, and then I have shown my research step by step. I get the inspiration from the world around us, as a self-balancing world. So in the research, I began with this phenomenon that already exists for a very long time. I pointed it out and analyzed it from the view of history, because from the history we can tell the reason and the results, so in purpose to do the research, the analysis has been very inspired and helpful. Then I show the situation of the balance in the modern society, to tell how important the balance is.

The next chapter, I move from the social phenomenon to the design, to describe the balance that has been used or applied in different areas of design. And not only the theory but also with examples to explain how and why. Depend on the research, I find out that the ideal of balance is very widely used in the communication design, to achieve the

visual balance. Then after the general balance in the design chapter, I focus on the product design. In the chapter four, I divide 8 different types of balance that have been applied in the product design. As a result of the research of marketing, I explain the reason to divide and describe each character. In the chapter, I also show the examples I searched, and within the one by one explanation, to understand the special part of each product, also a foreshadowing for my own product.

The last part, which includes 5 products. Each one I have applied one of the results from the research in the chapter mentioned. As an innovation of a theory, or a structure, these products have been a solution of each question that comes from the research. In the subtitle of this chapter, I summed up the example in the marketing and extract the essence of these products, and use these essences to solve a question or provide a new solution.

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