

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ БІЛІМ ЖӘНЕ ҒЫЛЫМ МИНИСТРЛІГІ  
Л.Н. ГУМИЛЕВ АТЫНДАҒЫ ЕУАЗИЯ ҰЛТТЫҚ УНИВЕРСИТЕТІ



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XI Халықаралық ғылыми конференциясының  
БАЯНДАМАЛАР ЖИНАҒЫ

СБОРНИК МАТЕРИАЛОВ  
XI Международной научной конференции  
студентов и молодых ученых  
**«НАУКА И ОБРАЗОВАНИЕ - 2016»**

PROCEEDINGS  
of the XI International Scientific Conference  
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**«SCIENCE AND EDUCATION - 2016»**

2016 жыл 14 сәуір  
Астана

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## **THE PSYCHOLOGY OF COLOUR**

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Colour vision is the ability of an organism or machine to distinguish objects based on the wavelengths (or frequencies) of the light they reflect, emit, or transmit. Colours can be measured and quantified in various ways; indeed, a person's perception of colours is a subjective process whereby the brain responds to the stimuli that are produced when incoming light reacts with the several types of cone cells in the eye. In essence, different people see the same illuminated object or light source in different ways. We see colours because rods and cones in our eyes, and we've got three types of cone cells for seeing red, green and blue. A lot of other mammals have only two

kinds for seeing: blue and yellow. Birds have four, and could see all three of those colours and ultraviolet light. So, you may assume that, the vision of colours is the same for everyone, and it is based on specific wavelengths. But, here is the thing: the number of cones in people's eyes vary hugely. One person may have mostly red cones, someone else has more blue. This means that the brain is more instrumental in decoding colours. Our brain analyzes the information, and helps us sort everything out. But, the fun fact is: we can't see all the colours, so the brain constantly filling in missing information, making educated guesses, to keep us running smoothly through the day. And here is something interesting about colour: the more you learn about it, the more you can see variations in it. For example, an artist can distinguish up to a million shades of one colour[1].

So, how does that happen, the same for everyone, if we see colours differently? Well, here is the psychological part of seeing colours. We are all living creatures, we awake during the day and asleep at night. That's because of light, you might guess. Well, actually we aren't reacting to brightness, as much as we reacting to the colour of light. That means that we all psychologically respond to the colour spectrum in the same way. It doesn't matter if we see the different shades of yellow, our bodies know that seeing it means it's time to be energized[1].

Not only psychologists, but also artists and interior designers have long understood how colour can dramatically affect moods, feelings, and emotions. It is a powerful communication tool and can be used to signal action, influence mood, and cause physiological reactions. Certain colours have been associated with increased blood pressure, increased metabolism, and eyestrain.

In 1666, English scientist Sir Isaac Newton discovered that when pure white light passes through a prism, it separates into all of the visible colours. Newton also found that each colour is made up of a single wavelength and cannot be separated any further into other colours. Further experiments demonstrated that light could be combined to form other colours. For example, red light mixed with yellow light creates an orange colour. Some colours, such as yellow and purple, cancel each other out when mixed and result in a white light.

While perceptions of colour are somewhat subjective, there are some colour effects that have universal meaning. Colours in the red area of the colour spectrum are known as warm colours and include red, orange and yellow. These warm colours evoke emotions ranging from feelings of warmth and comfort to feelings of anger and hostility[2].

Being the longest wavelength, red is a powerful colour. Although not technically the most visible, it has the property of appearing to be nearer than it is and therefore it grabs our attention first. Hence its effectiveness in traffic lights the world over. Its effect is physical; it stimulates us and raises the pulse rate, giving the impression that time is passing faster than it is. It relates to the masculine principle and can activate the "fight or flight" instinct. Red is strong, and very basic. Pure red is the simplest colour, with no subtlety. It is stimulating and lively, very friendly. At the same time, it can be perceived as demanding and aggressive. The colour red can stimulate the appetite, often being used in restaurants for this purpose. It also increases craving for food. Being surrounded by too much of the colour red can cause us to become irritated, agitated and ultimately angry. Too little and we become cautious, manipulative and fearful. In Eastern cultures such as China red is the colour for good luck. Although times are changing and many Chinese brides now wear white, it is traditionally the colour for weddings. In Indian culture it symbolizes purity and is often used in their wedding gowns.

The yellow wavelength is relatively long and essentially stimulating. In this case the stimulus is emotional. Therefore yellow is the strongest colour, psychologically. This colour relates to acquired knowledge. It is the colour which resonates with the left or logic side of the brain stimulating our mental faculties and creating mental agility and perception. Being the lightest hue of the spectrum, the colour psychology of yellow is uplifting and illuminating, offering hope, happiness, cheerfulness and fun. In the meaning of colours, yellow inspires original thought and inquisitiveness. Yellow is creative from a mental aspect, the colour of new ideas, helping us to find new ways of doing things. It is the practical thinker, not the dreamer. Yellow helps with decision making as it relates to clarity of thought and ideas, although it can often be impulsive. Yellow helps us focus, study and recall information, useful during exam time. The colour yellow can be anxiety

producing as it is fast moving and can cause us to feel agitated. Yellow has a tendency to make you more mentally analytical and critical - this includes being self-critical as well as critical of others. Yellow is non-emotional, coming from the head rather than the heart. Yellow depends on itself, preferring to not get emotionally involved. Yellow is related to the ego and our sense of self-worth, to how we feel about ourselves and how we are perceived by others. Yellow is the most highly visible of all colours which is why it is used for pedestrian crossings. Take note of the crossings which are marked in white - they are less easy to see than those marked yellow, particularly on wet and cloudy days[2,3].

Since it is a combination of red and yellow, orange is stimulating and reaction to it is a combination of the physical and the emotional. It focuses our minds on issues of physical comfort - food, warmth, shelter etc. - and sensuality. It is a 'fun' colour. Negatively, it might focus on the exact opposite - deprivation. This is particularly likely when warm orange is used with black. Equally, too much orange suggests frivolity and a lack of serious intellectual values. Orange brings spontaneity and a positive outlook on life and is a great colour to use during tough economic times, keeping us motivated and helping us to look on the bright side of life. With its enthusiasm for life, the colour orange relates to adventure and risk-taking, inspiring physical confidence, competition and independence. Those inspired by orange are always on the go. In relation to the meaning of colours, orange is extroverted and uninhibited, often encouraging exhibitionism or, at the very least, showing-off. The colour orange relates to social communication, stimulating two way conversations. A warm and inviting colour, it is both physically and mentally stimulating, so it gets people thinking and talking. At the same time, orange is also stimulating to the appetite. If you love having people around the kitchen table, orange will keep them talking and eating for a long time. Many restaurants use pastel versions of orange, such as apricot or peach or deeper versions such as terracotta, for their décor as they are more subtle than red, yet still increase the appetite and promote conversation and social interaction, which in turn encourages patrons to have a good time and to eat and drink more. Orange aids in the assimilation of new ideas and frees the spirit of its limitations, giving us the freedom to be ourselves. At the same time it encourages self-respect and respect of others. Orange is probably the most rejected and under-used colour of our time. However, young people do respond well to it as it has a degree of youthful impulsiveness to it[3].

Colours on the blue side of the spectrum are known as cool colours and include blue, purple and green. These colours are often described as calm, but can also call to mind feelings of sadness or indifference. Blue is the colour of the mind and is essentially soothing; it affects us mentally, rather than the physical reaction we have to red. Strong blues will stimulate clear thought and lighter, soft blues will calm the mind and aid concentration. Consequently it is serene and mentally calming. It is the colour of clear communication. Blue objects do not appear to be as close to us as red ones. Time and again in research, blue is the world's favorite colour. However, it can be perceived as cold, unemotional and unfriendly. This colour is one of trust, honesty and loyalty. It is sincere, reserved and quiet, and doesn't like to make a fuss or draw attention. It hates confrontation, and likes to do things in its own way. From a colour psychology perspective, blue is reliable and responsible. This colour exhibits an inner security and confidence. You can rely on it to take control and do the right thing in difficult times. It has a need for order and direction in its life, including its living and work spaces. This is a colour that seeks peace and tranquility above everything else, promoting both physical and mental relaxation. It reduces stress, creating a sense of calmness, relaxation and order - we certainly feel a sense of calm if we lie on our backs and look into a bright blue cloudless sky. It slows the metabolism. The paler the blue the more freedom we feel. In the meaning of colours, blue relates to one-to-one communication, especially communication using the voice - speaking the truth through verbal self-expression - it is the teacher, the public speaker. The colour blue is idealistic, enhancing self-expression and our ability to communicate our needs and wants. It inspires higher ideals. Blue's wisdom comes from its higher level of intelligence, a spiritual perspective. Blue is the colour of the spirit, devotion and religious study. It enhances contemplation and prayer. On the other hand, blue's devotion can be to any cause or concept it believes in, including devotion to family or work. Blue is the helper, the rescuer, the friend in need.

Its success is defined by the quality and quantity of its relationships. It is a giver, not a taker. It likes to build strong trusting relationships and becomes deeply hurt if that trust is betrayed. Blue is conservative and predictable, a safe and non-threatening colour, and the most universally liked colour of all, probably because it is safe and non-threatening. At the same time blue is persistent and determined to succeed in whichever endeavors it pursues. Change is difficult for blue. It is inflexible and when faced with a new or different idea, it considers it, analyzes it, thinks it over slowly and then tries to make it fit its own acceptable version of reality. Blue is nostalgic. It is a colour that lives in the past, relating everything in the present and the future to experiences in the past[4].

Green strikes the eye in such a way as to require no adjustment whatever and is, therefore, restful. Being in the centre of the spectrum, it is the colour of balance - a more important concept than many people realise. When the world about us contains plenty of green, this indicates the presence of water, and little danger of famine, so we are reassured by green, on a primitive level. Negatively, it can indicate stagnation and, incorrectly used, will be perceived as being too bland. This is the colour of balance and harmony. From a colour psychology perspective, it is the great balancer of the head and the emotions, creating equilibrium between the head and the heart. From a meaning of colours perspective, green is also the colour of growth, the colour of spring, of renewal and rebirth. It renews and restores depleted energy. It is the sanctuary away from the stresses of modern living, restoring us back to a sense of well-being. This is why there is so much of this relaxing colour on the earth, and why we need to keep it that way. Green is an emotionally positive colour, giving us the ability to love and nurture ourselves and others unconditionally. It loves to observe, and therefore relates to the counselor, the good listener, the social worker. It loves to contribute to society. It is the charity worker, the good parent and the helpful neighbor. Being a combination of yellow and blue, green encompasses the mental clarity and optimism of yellow with the emotional calm and insight of blue, inspiring hope and a generosity of spirit not available from other colours. This is a colour that has a strong sense of right or wrong, inviting good judgment. It sees both sides of the equation, weighs them up, and then usually takes the moral stand in making appropriate decisions. On the negative side, it can be judgmental and over-cautious. Green promotes a love of nature, and a love of family, friends, pets and the home. It is the colour of the garden lover, the home lover and the good host. It is generous and loves to share, but it also looks for recognition. It is friendly and can keep confidences. This colour relates to stability and endurance, giving us persistence and the strength to cope with adversity. Green is the colour of prosperity and abundance, of finance and material wealth. It relates to the business world, to real estate and property. Prosperity gives a feeling of safety to green. On the negative, the colour green can be possessive and materialistic, with a need to own people and things[5].

The shortest wavelength is violet, often described as purple. It takes awareness to a higher level of thought, even into the realms of spiritual values. It is highly introverted and encourages deep contemplation, or meditation. It has associations with royalty and usually communicates the finest possible quality. Being the last visible wavelength before the ultra-violet ray, it has associations with time and space and the cosmos. Excessive use of purple can bring about too much introspection and the wrong tone of it communicates something cheap and nasty, faster than any other colour. This colour relates to the imagination and spirituality. It stimulates the imagination and inspires high ideals. It is an introspective colour, allowing us to get in touch with our deeper thoughts. The difference between violet and purple is that violet appears in the visible light spectrum, or rainbow, whereas purple is simply a mix of red and blue. Violet has the highest vibration in the visible spectrum. While the violet is not quite as intense as purple, its essence is similar. Generally the names are interchangeable and the meaning of the colours is similar. Both contain the energy and strength of red with the spirituality and integrity of blue. This is the union of body and soul creating a balance between our physical and our spiritual energies. Purple or violet assists those who seek the meaning of life and spiritual fulfillment - it expands our awareness, connecting us to a higher consciousness. For this reason it is associated with transformation of the soul and the philosophers of the world are often attracted to it. In the meaning of colours, purple and

violet represent the future, the imagination and dreams, while spiritually calming the emotions. They inspire and enhance psychic ability and spiritual enlightenment, while, at the same time, keeping us grounded. The colour violet relates to the fantasy world, and a need to escape from the practicalities of life. It is the daydreamer escaping from reality. From a colour psychology perspective, purple and violet promote harmony of the mind and the emotions, contributing to mental balance and stability, peace of mind, a link between the spiritual and the physical worlds, between thought and activity. Violet and purple support the practice of meditation. The colour violet inspires unconditional and selfless love, devoid of ego, encouraging sensitivity and compassion. Violet can be sensitive to all the different forms of pollution in the world today, whether it be air pollution, noise pollution, visual pollution or the pollution in our food chain. This sensitivity makes violet susceptible to illness and allergies, vulnerable to its everyday surroundings. Violet encourages creative pursuits and seeks inspiration and originality through its creative endeavors. It likes to be unique, individual and independent, not one of the crowds. Artists, musicians, writers, poets and psychics are all inspired by violet and its magic and mystery. Violet is the colour of the humanitarian, using its better judgment to do good for others. Combining wisdom and power with sensitivity and humility, violet can achieve a lot for those less fortunate. The colour purple is specifically associated with royalty and the nobility, creating an impression of luxury, wealth and extravagance. Purple has power. It has a richness and quality to it that demands respect. Purple is ambitious and self-assured, the leader. Too much of the colour purple can promote or aggravate depression in some. It is one colour that should be used extremely carefully and in small amounts by those who are vulnerable to these depressed states[4,5].

Several ancient cultures, including the Egyptians and Chinese, practiced chromo therapy, or the use of colors to heal. Chromo therapy is sometimes referred to as light therapy or colourology and is still used today as a holistic or alternative treatment. Red was used to stimulate the body and mind and to increase circulation. Yellow was thought to stimulate the nerves and purify the body. Orange was used to heal the lungs and to increase energy levels. Blue was believed to soothe illnesses and treat pain. Indigo shades were thought to alleviate skin problems[6].

Most psychologists view color therapy with skepticism and point out that the supposed effects of color are often grossly exaggerated. Colors also have different meanings in different cultures. Research has demonstrated in many cases that the mood-altering effects of color may only be temporary. A blue room may initially cause feelings of calm, but the effect dissipates after a short period of time. However, the existing research has found that color can impact people in a variety of surprising ways: One study found that warm-colored placebo pills were reported as more effective than cool-colored placebo pills. Anecdotal evidence has suggested that installing blue-colored streetlights can lead to a reduction of crime in those areas. The temperature of the environment might play a role in color preference. People who are warm tend to list cool colors as their favorites, while people who are cold prefer warmer colors. More recently, researchers discovered that the color red causes people to react with greater speed and force, something that might prove useful during athletic activities. One study that looked at historical data found that sports teams dressed in mostly black uniforms are more likely to receive penalties and that students were more likely to associate negative qualities with a player wearing a black uniform[7].

Studies have also shown that certain colors can have an impact on performance. No one likes to see a graded test covered in red ink, but one study found that seeing the color red before taking an exam actually hurt test performance. While the color red is often described as threatening, arousing or exciting, many previous studies on the impact of the color red have been largely inconclusive. The study found, however, that exposing students to the color red prior to an exam has been shown to have a negative impact on test performance[7].

In the first of the six experiments described in the study, 71 U.S. colleges students were presented with a participant number colored either red, green or black prior to taking a five-minute test. The results revealed that students who were presented with the red number before taking the test scored more than 20 percent lower than those presented with the green and black numbers. Interest in the subject of color psychology is growing, but there remain a number of unanswered

questions. How do color associations develop? How powerful is the influence of these associations on real-world behavior? Can color be used to increase worker productivity or workplace safety? What colors have an impact on consumer behavior? Do certain personality types prefer certain colors? As researchers continue to explore such questions, we may soon learn more about the impact that color has on human psychology[8,9].

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## ОСОБЕННОСТИ ДИЗАЙНА, ЕГО МЕСТО И РОЛЬ В СОВРЕМЕННОМ МИРЕ

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В связи с усложнением мира, расширением информационного поля культуры изменяется не только предметно-пространственная среда человеческого окружения, но и ценностно-смысловые и эстетические параметры ее функционирования.

На пороге третьего тысячелетия обострились проблемы, отражающиеся на среде обитания человека, связанные с нарастанием экологического кризиса, увеличением техногенных катастроф, и сокращения естественного ландшафта, способствующего стабилизации поведенческих реакций человека, его психологического комфорта и т.д. Но, между тем, открылись новые возможности в совершенствовании информационных систем и набирающей темпы межкультурной интеграции, позволяющих расширить возможности трансформации жизненного пространства, нахождения более адекватных способов приспособления человека в неблагоприятных условиях. Отсюда особое внимание современный человек обращает на ту форму обустройства своей жизнедеятельности, которая получила название «дизайн». Дизайн является, по сути дела, тем пространством, в котором человек может реализовать свою потребность в гармонизации среды своего обитания на локально-замкнутых территориях, в экологически загрязненных районах. В этой связи возникла необходимость изучать дизайн как сложный синтез процесса и результата одновременно, а также рассматривать его как специфическое явление, со свойственными ему закономерностями и структурой.