

User satisfaction with aesthetics of urban park seating

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Abstract: Urban parks are considered among the most important areas of public space for relaxation and recreation. They are gaining ever more importance in our cities with their continuous physical, social and cultural development. They provide for the improvement of environmental conditions in the city, they also help improve the social and economic life of the people. This in addition to their great contribution to the visual beauty and aesthetic tranquillity of the urban environment. With these characteristics, urban parks preserve their distinguished position in the urban structure of cities. There is always a need to pay attention to their planning and design including park furniture and especially seating. Furniture of urban parks is considered to be a creative means of establishing a sense of space and identity. It is also necessary for enhancing the aesthetics experience of these spaces and creating pleasure and satisfaction. Seating in public parks is one of their main furniture elements. It enhances park functionality and liveability as an element for rest and socialising, but also is considered for its expressive visual beauty and aesthetics components that add to the visual pleasure and aesthetics satisfaction of the users. Park seating design is a key factor for supporting users' activities, social interaction and cultural integration. This can be achieved through different strategies and the application of different design principles and aesthetical measures like placement, order, and pattern. This research investigates the different demographic and perception factors affect the overall user satisfaction of seating aesthetics in Konyaalti Beach Park, Antalya, Turkey. It was found that education is the most important among the demographic factors affecting user satisfaction with park seating while gender and age are not influential. This highlights the need to provide more education on park aesthetics in general and on park seating aesthetics in particular. This also includes raising public awareness about the importance of park aesthetics and park seating aesthetics and their role in improving the quality of our cities.

Keywords: park, seating, aesthetics, satisfaction, education

INTRODUCTION

Urban parks are indispensable tools of liveability, comfort, and competence (Caymaz, 2013). They are considered among the distinguished areas of relaxation and recreation (Luximon et al., 2015). They are becoming more important in our cities with their continuous physical, social and cultural development (Avalone Neto and Munakata, 2021). This is in addition to their contribution to the visual beauty and aesthetic tranquillity of the urban environment (Güngör et al., 2023). With these characteristics, urban parks preserve their unique position in the urban structure of cities (Ling et al., 2023). As such, there is always a need to pay attention to their planning and design including park furniture and especially seating (Saquet and Avalone Neto, 2024). It is also necessary to enhance the aesthetics experience of park furniture and park seating to create pleasure and satisfaction.

PARK SEATING

Importance, categories, design factors

Seating in public parks is one of their main furniture elements (Badeiy et al., 2015, Mumcu and Yilmaz, 2016). Not only does it

enhance park functionality and liveability as an element for rest and socialising, but also is considered for its expressive visual beauty and aesthetics components. It enhances the visual pleasure and aesthetics satisfaction of the users (Amin, 2012). Seating can also be used to convey several cultural, social and political meanings by serving innovative design and placement concepts. 'Benches for Europe' was a project developed jointly by the European Union and the city of Strasbourg, France. It was prepared as a competition for designers from each European Union member state to design a bench to be allocated in the public spaces of Strasbourg around the European Parliament (Association for the promotion of Strasbourg, 2015). Seating is a mirror for the life of people. It reflects their sense of belonging, social structure, and social cohesion. Through the long history of urban development, seating represented distinguished images of interaction between people and the built environment. European cities for example have been very distinguished in the design and placement of public seating in open urban spaces (Madden et al., 2021). The city of New Jersey, USA, recently conducted a survey to explore the public needs related to the downtown development project. The most common need was a place to sit. Designing public places needs attractive seating to be acceptable and satisfactory (Juliana, 2024).

Park seating is the most widely used element that is closely related to the users. The seating is the park's most widely distributed public facility that has the closest contact with users. (Ling et al., 2023) Public open spaces and parks with creative seating design and functionality are more likely to be visited and enjoyed. This poses more challenges for designers to provide more innovative solutions for park seating (Grabiec et al., 2022). Park seating should be placed near pedestrian routes and where it can be easily accessible and should be oriented towards monumental features and distinguished nodes (City of Ballarat, 2013). Park seating can be categorised into primary seating elements like chairs, benches, stools, and secondary seating elements like stairs, steps, and planter walls (Avalone Neto and Munakata, 2021).

The design of park seating has revolutionised the way designers use visual design elements and principles to provide means of rest, relaxation, and gathering for park users. These modern revolutionary designs have at the same time revolutionised the way people use public parks (Furniture Leisure, 2024). The Urban Design Manual of the City of Ballarat (2013) discusses the main factors and principles affecting the visual quality of urban furniture. They include colour, materials, consistency, durability, order, and placement (City of Ballarat, 2013). Ghorab and Caymaz (2014) determined the visual design principles that affect the visual quality and functionality of park seating. They comprise Unity, harmony and interest; Simplicity and complexity; Accentuation; Balanced; Rhythm; and Functionality. Park seating design is a key factor for supporting users' activities, social interaction and cultural integration (Chen et al., 2024). This can be achieved through the application of special design principles like placement, order, and pattern (Luximon et al., 2015).

Other studies considered other factors like form, material, aesthetics, and functionality (Çakın and Ilal, 2023). Design of park seating provides suitable solutions for both their visual look and functionality among other factors. These factors are not considered solely for visual consideration but to support the functional purpose of the seating and to provide comfort, pleasure and satisfaction for the users (Caymaz, 2013). Among the important design elements that should be considered in this regard are form, texture, and colour that need to be well articulated based on the visual design principles like unity (Ghorab and Caymaz, 2014). Tucci (2023) points out that as park seating is one of the most used elements of parks' furniture, it creates a great opportunity to enhance their quality through a wide variety of tools like design, style, and aesthetics. Likewise, Ling et al. (2023) argue that the major general factors that affect the design and application of park seating include function, aesthetics, and materials. For aesthetics they provided the 3 factors of colour, texture, and style. The Collection of design factors affecting park seating discussed in the review above is presented in Tab. 1.

Tab. 1. Design factors affecting park seating. (Source: Author, 2024)

Urban Design Manual of The City of Ballarat (2013)	(Ghorab and Caymaz, 2014)	(Luximon et al., 2015)	(Çakın and Ilal (2023)	Ling, et al. (2023)
Colour	Form	Placement	Form,	Function,
Materials	Texture	Order	Material,	Aesthetics
Consistency	Colour	Pattern	Aesthetics,	Materials
Durability	Unity		Functionality	
Order	harmony			
Placement	interest			
	Simplicity			
	complexity			
	Accentuation			

Balanced
Rhythm
Functionality

Aesthetics of park seating and user satisfaction

Aesthetics plays an indispensable role in shaping user attitudes towards open space furniture and park seating. This is crucial for design professionals and theoreticians to make park seating aesthetics an important design drive for preserving user satisfaction, pleasure, and comfort (Ghorab and Caymaz, 2014). This will contribute to the creation of healthy, positive, and livable communities. The human factor got little attention in the studies on park seating design and aesthetic quality. The relationship between users and seating still needs to be investigated (Ozkan et al., 2018). It is vital to provide the necessary measures for achieving satisfaction, pleasure and comfort for people. Park seating aesthetics plays an important role as an indispensable part of the visual design of parks. Park seating contributes to enhance the cultural values and social aspiration of the community (Tucci, 2023).

The ignorance of visual quality and aesthetics satisfaction in park seating not only will create unpleasant green space, but this will extend to other parts of the built environment (Guneroglu and Bekar, 2022). At the same time, this negligence will contribute to the creation of deteriorated culture of aesthetics within society (Shixian et al., 2023). Numerous studies have examined the relationship between user satisfaction and design variations of park seating using different methodologies and research tools. Some of the factors that affect the aesthetic design of the physical appearance of urban furniture and are influential on users' satisfaction include symbolism, materials, texture, colour, size, form, natural beauty, and details (Ghorab, Caymaz, 2014).

Perumal and Abdulrahman (2015) conducted a review for the studies which dealt with the influential factors affecting seating design and found that 65% of them pointed to pleasing aesthetics. They conducted a user survey to explore the aesthetics factors that affect the uses satisfaction with park seating design. The survey revealed a number of factors which were divided into three categories: pleasing, beautiful, and exiting (Tab. 2). Another study developed several measures to explore user appreciation of seating design. They include comfort, pleasantness, interest, accessibility, tone, cost, style, friendliness, and similarity (Saquet and Avalone Neto, 2024). On the other hand, Avalone Neto and Munakata (2021) developed a list of the factors influencing the relationship between user perception of seating design in open public spaces and the size of the space. The factors include visual qualities, physical characteristics, and functions. The result of this survey for the aesthetics factors that affect the perception of park seating is presented in Tab. 2.

Tab. 1 and 2 show that the studies of design factors and the aesthetics factors affecting park seating mix between the objective visual factors relating to the physical entity of the seating and the subjective aesthetic qualities related to the subjective perception of the seating. For example, texture, colour, and size which are visual qualities exist in both groups. Similarly, aesthetics itself exists in the first group. For the limitations in scope, time, and resources and for the practicality of user survey, it was not intended to go through the process of differentiating between the factors of the two groups. Instead, the research chose a set of factors related to the visual qualities of the seating depending on the discussions of the research team. The argument is further explained in the research problem section.

Tab. 2. Aesthetic factors influencing user perception of park seating design. (Source: Author, 2024)

(Ghorab And Caymaz, 2014)	Perumal and Abdulrahman (2015)			Avalone and Munakata (2021)	Ling, et al. (2023)	Saquet, and Avalone, 2024)
Symbolism, Materials, Texture, Colour, Size, Form, Natural-Beauty, Details	Pleasing Design Enjoyable Calm Harmony Familiarity Naturalness Appearance	Beautiful Cultural Traditional Image Artistic Unique Colourful Style	Exciting Lifestyle Interesting Creative Sustainable	Visual qualities, physical-characteristics, functions.	Colour, texture style.	Comfort, pleasantness, interest, accessibility, tone, cost, style, friendliness, similarity

RESEARCH DATA AND METHODS

General studies on the satisfaction with park seating aesthetics (further "satisfaction") normally investigate the satisfaction of different types of users in terms of gender, age, and education. They also involve an investigation of the different factors influencing this satisfaction. The research questions that arise here are: 1. Do demographic factors (gender, age, and education) and perception factors (aesthetics knowledge and aesthetics understanding) affect the overall user satisfaction of seating aesthetics? 2. Does the overall user satisfaction with seating aesthetics depend on the individual satisfaction with each aesthetics factor? To help investigating the research questions, hypotheses have been formulated for the answers to the two questions.

For the first question, the null hypothesis assumes that no relationship exists between overall satisfaction and demographic factors and perception factors. The alternative hypothesis assumes that there is a relationship between demographic and perception factors and satisfaction. The null hypothesis for the second question assumes that there is no relationship between the overall satisfaction and the individual satisfaction of each aesthetics factor. The alternative hypothesis assumes that a relationship does exist between overall aesthetics satisfaction and the individual satisfaction with each aesthetics factor. The hypotheses will be tested after conducting the research survey and analysing the results.

This research uses park seating at Konyaalti Beach Park (KBP) in the city of Antalya, Turkey, for investigating user satisfaction with seating aesthetics. The research also aims to understand the different aesthetics factors affecting this satisfaction and the different relationships between them. The research provided a literature review for park seating design and the factors affecting its aesthetics. The factors that will be used in the survey were determined and a discussion of these factors in KBP was introduced. A Likert questionnaire was prepared for the assessment of users' assessment of seating aesthetics in KBP. The survey was conducted on site by students of the Environmental aesthetics course at the department of Architecture, Antalya Bilim University, in Turkey, taught by the author. The questionnaire was explained to the participants and their consent was taken as a part of ethical consideration. The results of the survey were then analysed using the software SPSS version 15.0.

In his study of everyday aesthetics, Mohamed (2022a) outlines the elements, characteristics, processes, and factors of aesthetics experience and shows that its final goal is aesthetics pleasure or satisfaction. The less the aesthetics satisfaction is, the less is the attractiveness of the design space or object. It was also concluded that among the important factors affecting aesthetics

satisfaction are symmetry, proportion, colour, and form (Mohamed, 2022a). Based on this argument and the previous literature review, it has been possible to determine the suitable factors that will be used in the assessment of user perception of seating aesthetics in Konyaalti Beach Park. They include form, colour, material, placement, symmetry, proximity, and proportion. The presentation of these factors in KBP will be discussed followed by the assessment of user perception of these factors using the methodology of the research.

Independent random sampling method is usually used to provide reliable and unbiased results (Leemis, 2020). In this method the selection of everyone is made independently without affecting the selection of another (Robert, 2019). The area of KBP is quite large, about 1,000,000 m² (Antalya Büyükşehir Belediyesi, 2024). This means that its full capacity can reach tens of thousands of people. The research had limitations in the time and ability of the small research team, and the need to conduct the survey on site the same day. A population of 10 thousand people was assumed to be available in the park on the day of the survey. An online statistical calculator for sample size was used to get insight on the suitable sample size for suitable statistical analysis (Calculator.net, 2024). Considering the above limitations, a moderate level of confidence (70%) and margin of error (10%) was assumed. The calculated sample size was 18. It was decided that 20 people will be a reasonable sample and will give higher confidence and a lower margin of error.

The research has significant importance in the studying of park seating aesthetics to understand the factors influencing it and the suitable means for its development. The case study of the research which is Konyaalti Beach Park has a large area which can accommodate huge number of users. For practical and economic reasons, the research could not provide enough time, financial, and human resources to cover the whole area of the park nor to use a large sample of the population.

ASSESSMENT OF SEATING AESTHETICS AT KONYAALTI BEACH PARK

Konyaalti Beach Park (KBP)

Konyaalti Beach Park is a long public green space at the Mediterranean coast in the district of Konyaalti, Antalya, Turkey. It is close to the centre of the city and enjoys a wide range of surrounding urban services. It is also one of the largest beach parks in Turkey and spreads across approximately 1 million square metres. It is one of the important nodes of the urban structure of Antalya and its attractive touristic destinations (Fig. 1). It was opened to the public in 2018. The project includes distinguished elements like the Museum Square and Olbia Square in addition to a great collection of dining services and recreation and entertainment points (Özer\Ürger Architects, 2024). The project provides unique activity places and enclosures. The furniture of the park includes a wide variety of designs and styles with creative shapes and new materials suitable for most social, cultural and entertainment activities (Fig. 2).

The seating of KBP came with the same level of the innovative solutions of the park furniture provided by the designers and the creative applications of the seating to provide for the required park functions and human activities. At the same time, seating design expresses simplicity with variety and unity to preserve the overall purpose of the beach park. Types of seating at KBP are illustrated in Tab. 3. Benches are widely used with different forms, colours and materials. Seat benches are also used in addition to plant ledges and seat walls. Social seating is also widely used to encourage socialising and users' interaction. Seating aesthetics in KBP expresses the use of several visual design elements. The intention here is not to provide an exten-

sive discussion of all these factors but rather to concentrate on the factors concluded before as being influential in affecting the user perception of seating aesthetics. Tab. 3 will be used for the analysis of seating aesthetics in KBP.



Fig. 1. Master plan of eastern half of KBP. (Source: Research team, 2024)



Fig. 2. General view of KBP. (Source: Research team, 2024)

Tab. 3. Types of seating at KBP. (Source: Özer\Ürger Architects, 2024 for images No. 8, 9, 10, 11, 12. Others by research team, 2024)



1 - Wood bench with metal support, under canopy



2 - Wood bench along pathway



3 - Wood seat bench on metal frame



4 - Free-form concrete bench



5 - Wood planter, ledges bench



6 - Concrete planter, ledges wall



7 - Concrete steps seating



8 - Wood steps seating



9 - Circular wood bench around palm tree



10 - Social seating of long curved concrete bench



11 - Straight long concrete bench



12 - Straight long wood bench



13 - Placement of free-form concrete bench



14 - Placement of cubic concrete benches



15 - Social seating of cubic concrete benches

Several forms are used like: rectangular (Tab. 3 - No. 1, 2, 3, 11, 12), circular (Tab. 3 - No. 9), and cubic (Tab. 3 - No. 14, 15). Curved forms are used (Tab. 3 - No. 10) and free curvilinear forms (Tab. 3 - No. 4). In all these forms, simple geometries are used with the combination of simple form elements like colour and texture reflecting a more minimal direction in their design philosophy. White and brown colours dominate the general view of KBP seating as it is clear in all sections of Tab. 3. This provides a lighter and more natural look for the park. Wood (Tab. 3 - No. 1, 2, 3, 5, 8, 9, 10, 11, 12), concrete (Tab. 3 - No. 4, 5, 7, 10, 11), and steel (Tab. 3 - No. 1, 3, 9) are the main materials used in seating of KBP. These materials are widely used worldwide and well proved safe and healthy without inflicting any hazard for the users.

Placement reflects the quality of seating in KBP from two sides, where they are placed and how they are placed. Regarding the first point, it can be said that all seating of KBP is placed to be accessible very easily by the users. It is true that the width of the park is small, but what helps more is the creative placement and the transparent design (Tab. 3 - No. 10, 11, 12, 13, 14, 15). Moreover, many of the seating arrangements provide nice social settings providing enclosures and collections. They attract and encourage users to socialise, get engaged and come closer to each other (Tab. 3 - No. 13, 14, 15). Moreover, placement in social seating reflects the grouping principles for seating in terms of order, unity, repetition, rhythm, and other visual design principles (Tab. 3 - No. 13, 14, 15).

Adding to what already has been mentioned above, symmetry is well manifested in the design of the individual seating since all of them use simple geometrical forms except the free form concrete bench (Tab. 3 - No. 4) and the long curved concrete bench (Tab. 3 - No. 10). The groupings of seating manifest different types of symmetry such as rotational symmetry (Tab. 3 - No. 9), reflexive symmetry (Tab. 3 - No. 10, 14, 15), and translational symmetry (Tab. 3 - No. 13, 14). Proximity and placement are closely related where proximity describes the relationship between the place of the seating and pedestrian movement. From another perspective, it also represents the relationship between the units in social seating (Tab. 3 - No. 11, 12). In both cases,

KBP reflects different levels of proximity that keeps the seating close to the users and the users close to each other in social seating.

Proportion is one of the important principles of visual design in architecture, urban design, and landscape design (Mohamed, 2022b). It is about the relationship between one part of the design and another part or between one part and the whole composition. The simple geometries of the seating forms at KBP reflect good proportions especially between the dimensions of their forms (Tab. 3 - No. 1, 3, 5, 9). Different proportions are used in the social seating areas according to the space, the arrangement order, and the intended activities (Tab. 3 - No. 13, 14, 15).

RESULTS

Descriptive statistics

The software SPSS 15.0 was used for the analysis of the results. The descriptive analysis of the data (Tab. 4) shows that the sample has 11 males and 9 females of different age. Age Mean is 27.4 years with Standard Deviation of 11.399 which indicates a wide range of ages. Participants have varying levels of education (postgraduate degree 3, university degree 6, high school degree 5, intermediate school 1, and primary school 5). The survey shows that the participants have average perceptions of aesthetics and their meaning with high variability. All participants appreciate seating aesthetics. The high mean of 4.65 and relatively low standard deviation of 0.489 suggest that participants consider seating aesthetics to be very important, with relatively consistent opinions. Despite the importance given to aesthetics by the participants, their overall satisfaction with it came moderately low but consistent. This highlights the need for reconsidering seating aesthetics in KBP to achieve higher levels of satisfaction for the users. This came in line with the findings of Veitch et al. (2022) for eight diverse parks located in varying socioeconomic areas of metropolitan Melbourne, Australia and found that aesthetics is an important factor for park users.

Tab. 4. Descriptive analysis of the survey. (Source: Author, 2024)

	Mean	Std. Deviation
Gender	1.60	.503
Education	3.05	1.432
Age	27.40	11.399
Aesthetics knowledge	3.00	1.298
Aesthetics understanding	2.60	1.569
Seating aesthetics knowledge	2.60	1.142
Seating aesthetics importance	4.65	.489
Form	2.55	.826
Colour	2.05	.759
Materials	3.05	.999
Placement	3.35	.875
Symmetry	1.40	.821
Proximity	3.65	.875
Proportion	4.30	.657
Satisfaction with seating aesthetics	2.8500	.35538

Correlations

The research intended to discover the relationships between demographic factors and seating aesthetics satisfaction, and between satisfaction and individual factors of aesthetics. SPSS 15.0 Pearson correlation test was conducted. The significant correlations only are presented in Tab. 5 because of the large area of the complete table. The results highlight the following points: Satisfaction shows strong statistically significant correlations with education ($p = .008$), aesthetics knowledge ($p = .000$), and aesthetics understanding ($p = .000$). This supports the rejection of the first null hypothesis which assumed no relationship between satisfaction and education, aesthetics knowledge, and aesthetics understanding. A similar conclusion was revealed by Ochengo et al. (2018) in their study for park users' characteristics that influence satisfaction in urban parks in Kisumu County, Kenya. They found that the demographic and socio-economic characteristics of park users significantly affected their satisfaction with park aesthetics. Aesthetics satisfaction does not show statistically significant correlation with any of the individual aesthetics design variables. This result supports the second null hypothesis which assumed no correlation between satisfaction and individual aesthetics factors. This indicates that the overall aesthetics image of park seating is more important and influential in affecting the users' satisfaction than the individual visual design elements of the seating.

Tab. 5. Significant correlations between satisfaction and seating aesthetics. (Source: Author, 2024)

Satisfaction	Education	Aesthetics knowledge	Aesthetics understanding	Symmetry
Sig. (2-tailed)	.008	.000	.000	.003

Tests

It was concluded before that the correlation between satisfaction and gender was not statistically significant. To find out if this correlation is consistent between males and females, ONE-ANOVA test was conducted, and the results are shown in Tab. 6. The results show that the F-value is 0.217. The p-value (Signifi-

cance) is 0.647, greater than the typical alpha level of 0.05. This explains that there is no significant difference between male and female regarding their satisfaction of seating aesthetics.

Tab. 6. ONE-ANOVA test for satisfaction and gender. (Source: Author, 2024)

	F	Sig.
Between groups	.217	.647

The results of ONE-ANOVA test for the behaviour of seating aesthetics satisfaction between different age groups are shown in Tab. 7. The results show that the F-value is 1.210. The p-value (Significance) is 0.448, which is greater than the typical alpha level of 0.05. This indicates that there is no significant difference between the age groups regarding the seating aesthetics satisfaction.

Tab. 7. ONE-ANOVA test for satisfaction and age. (Source: Author, 2024)

	F	Sig.
Between groups	1.210	.448

The results of ONE-ANOVA test for the behaviour of seating aesthetics satisfaction between different education groups are shown in Tab. 8. The results show that the F-value is 4.585. The p-value (Significance) is 0.013, which is less than 0.05. This indicates that there is a significant difference between the education level groups in terms of satisfaction. Similar results also were achieved by the study of de la Cerda et al. (2018) for the relationship between environmental education and the appreciation of urban parks aesthetics in Nuevo León, Mexico. Similar results were found in the relationship between education and users' satisfaction with aesthetics of green open spaces in Berlin in the study of Koglin and Dávila (2019).

Tab. 8. ONE-ANOVA test for satisfaction and education. (Source: Author, 2024)

	F	Sig.
Between groups	4.585	.013

For further testing of the hypotheses, One-Sample T-Test was conducted for satisfaction using SPSS 15.0. The results are shown in Tab. 9. The Test Value is 0.05, which is the significance level commonly used in hypothesis testing and the statistical significance is therefore assessed at the 0.05 level of confidence. The level of significance (Sig.) or p-value (2-tailed) is 0.000, which indicates that the effect of education on satisfaction is statistically significant. The mean difference is 2.8 which lies between two means of the Lower Confidence Interval of 2.6337 and the Upper Confidence Interval of 2.9663 which proves the strength of the model of the study. These results support the good fit of the model of the study, the power of the One-Sample Test and sample size.

Tab. 9. One-Sample Test for satisfaction. (Source: Author, 2024)

Test Value = 0.05						
	t	df	Sig. (2-tailed)	Mean difference	95% Confidence interval of the difference	
					Lower	Upper
Satisfaction with seating aesthetics	35.235	19	.000	2.80000	2.6337	2.9663

CONCLUSION

There is a need for the study, analysis, and development of park seating aesthetics to support the important role of parks in the life of people. There are many factors influencing park seating aesthetics. This research provides a unique opportunity to show the relationships between some of these factors and between them and park users. Interestingly, the research shows that education is the most significant factor affecting user satisfaction with park seating aesthetics, while gender and age are not influential. This highlights the need to provide more education on park aesthetics in general and on park seating aesthetics in particular. This also includes raising public awareness about the importance of park seating aesthetics and their role in improving the quality of our cities. The analysis proved the significant difference in seating aesthetics satisfaction between education groups and highlights the need to consider the special needs and aspirations in each education level.

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