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Olexandr V.Hladkyi, Tetiana V.Mirzodaieva

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## The development of recreation science as the main theoretical fundamental of tourism integrations

O.V. Hladkyi, T.V. Mirzodaieva

*Kyiv National University of Trade and Economics, Kyiv, Ukraine,  
e-mail: A.alexander.gladkey@gmail.com*

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**Abstract.** The essence of recreation investigations is disclosed. The definition of recreation term is substantiated. The recreation system definition is proposed. The recreation system components are explored. The different types of recreational structures are highlighted. The different impact of environmental factors on the development of specialized recreation territories are presented. The influence of physical

factors such as therapeutic mud, ozocerite, naphthalane, sand, clay, bischofite, metals, stones and minerals with therapeutic effect, therapeutic factors of fauna and its representatives on natural treatment is disclosed. Different types of natural treatment factors by treatment-physiological activity and pathogenesis are systemized. Types of natural treatment factors such as cryogenic influence, mud, naphthalane, mineral wax, clay, sand, paraffin, balneal factors by mechanism of treatment-therapeutics influence are explored. At once, the different types of natural treatment factors by mechanism of treatment-therapeutics influence as well as types of natural therapeutic factors by methods of physical effects on human organism are investigated. The formalized methods of complex recreation potential of the territory estimation are proposed. The different types of human recreation activities in recreation systems are defined. The different groups of most important social functions of recreation activities are revised. The most common cultural and spiritual needs of recreated person are systemized. The specific features of recreational activities that include recovery and development functions are observed. The main factors that effect on the development of recreational activities such as natural, demographic, socio-economic ones as well as social and psychological factors are investigated. The different factors of recreational system economic-geographical location are researched. The different internal factors of recreational activities development are disclosed. The main practical goal of the recreational activities is substantiated. The main models of recreational system regional development proposed by I.V. Zorin, E.A. Staroselets, B.I. Melnikas, E.S. Oleynikov, A. Pentz, V. S. Preobrazhenskyi etc. are described. The different models of optimal placement of recreational systems at different hierarchical levels are observed. The model for optimal allocation of resources for implementation of the recreational system development projects is substantiated. The programming model for the optimal organization of the recreational system functioning as well as model of recreational value is disclosed. The different principles of the state policy in the recreology sphere and resort development are characterized. The essence of resort and its role in recreation concept development is explored. The division of resorts at recreation-preventive ones, rehabilitation or health improvement as well as at medical for treatment ones is proposed according to their health improvement specifics.

*Keywords: recreation; recreology; recreation fundamentals; factors of recreation; recreation system, tourism investigations.*

## Розвиток рекреаційної науки як головний теоретичний фундамент туристичної інтеграції

О.В. Гладкий, Т.В. Мирзодаева

*Київський національний торгово-економічний університет, Київ, Україна,  
e-mail: Alexander.gladkey@gmail.com*

**Анотація.** Розкрито суть рекреаційних досліджень. Обґрунтовано визначення терміну відпочинку. Запропоновано визначення рекреаційної системи. Розглянуто компоненти системи відпочинку. Виділено різні типи рекреаційних структур. Показано різний вплив факторів навколишнього середовища на розвиток спеціалізованих рекреаційних територій. Розкрито вплив фізичних факторів, таких як терапевтичні грязі, озокерит, нафталан, пісок, глина, бішофіт, метали, камені та мінерали з терапевтичним ефектом, терапевтичні фактори фауни та їх представників на природне лікування. Систематизовано різні типи природних факторів лікування на основі їх лікувально-фізіологічної активності та патогенезу. Досліджуються типи природних факторів лікування, таких як криогенний вплив, грязь, нафталан, мінеральний віск, глина, пісок, парафін, фактори бальнеології за механізмом терапевтичного впливу. Досліджуються різні типи природних факторів лікування за допомогою механізму терапевтичного впливу, а також типи природних лікувальних факторів методами фізичного впливу на організм людини.

Запропоновано формалізовані методи оцінювання комплексного рекреаційного потенціалу території. Визначено різні види рекреаційної діяльності в системах відпочинку. Переглядаються різні групи найважливіших соціальних функцій рекреаційної діяльності. З'ясовано найбільш поширені культурні та духовні потреби відтворення здоров'я людини. Окреслені окремі особливості рекреаційної діяльності, що включають функції відновлення та розвитку. Досліджуються основні чинники, що впливають на розвиток рекреаційних заходів, такі як природні, демографічні, соціально-економічні, соціальні та психологічні. Вивчаються різні чинники економіко-географічного положення рекреаційної системи. Розкриваються різні внутрішні чинники розвитку рекреаційної діяльності. Обґрунтовано основну практичну мету рекреаційної діяльності. Наведено основні моделі регіонального розвитку рекреаційної системи, їх запропонували різні вчені: І. В. Зорін, Е. А. Староселець, Б. І. Мельникас, Е. С. Олійников, А. Пентц, В. С. Преображенський та. Визначено різні моделі оптимального розміщення рекреаційних систем на різних ієрархічних рівнях. Обґрунтовано модель оптимального розподілу ресурсів рекреаційної системи. Розкривається модель програмування оптимальної організації та функціонування рекреаційної системи, а також моделі рекреаційної цінності території. Охарактеризовано різні принципи державної політики в галузі рекреації та розвитку курортів. Досліджено сутність курорту та його роль у розробленні концепції відпочинку. Запропоновано поділ курортів на рекреаційно-профілактичні, реабілітаційні та оздоровчі, а також на лікувально-профілактичні відповідно до особливостей їх методів оздоровлення.

*Ключові слова:* відпочинок; рекреація; основи відпочинку; чинники відпочинку; система відпочинку, дослідження туризму.

***Urgency of the research.*** The article deals with essence and theoretical fundamentals of recreation sciences. Recreation sciences correspond with a field of knowledge about the reasons and direction of tourism activities development as an integral part of human and society life as well as about socio-cultural, economic and ecological mechanisms of such activities and its consequences. Investigation of recreation sciences and its influence off theory and methodology of tourism investigations is actual nowadays.

***Target setting*** Recreation sciences allow making fruitful investigations of tourism development in different destinations and regions. Recreation theory make possible to implement new methodological approaches in tourism sciences using multiple factor's model and recreation system model. These theoretical fundamentals become more urgent in tourism investigations nowadays.

***Actual scientific researches and issues analysis.*** Such well-known scientists as A. Mazaraki, T. Tkachenko, N. Vedmid, M. Boyko, O. Beydik, O. Lubitseva, D. Nikolaenko, V. Stafiychuk, S. Melnichenko has made a significant contribution to the development of the theory and methodology of recreation and tourism sciences investigations.

***Uninvestigated parts of general matters defining.*** The problems of recreation system model as well as model of recreation factors implementation into theory and practice of tourism investigation is still uninvestigated nowadays.

***The research objective.*** We'll try to investigate new ways of recreation science implementation into theory and methodology of tourism investigations.

***The statement of basic materials.*** Recreation sciences investigates the same named systems as an objective and social formations that includes recreation persons, natural systems, technical infrastructure, service sector, production sector, labor as well as settlement system. Therefore, recreational system – is a complex geosystem that combines social, technological and natural systems and plays an important role in human psychological and physiological forces re-

production. There are general properties of recreational system: integrity (coordinated interaction of all subsystems and environment system), universality (ability to every needs satisfaction), hierarchy (different level of formation and development), efficiency optimal proportion of incomes and outlays), specialization (ability to specific needs satisfaction), dynamism (adequate response on external influence), variety (the possibility of dividing the set into subsets), comfort able (level of correspondence with recreation persons' needs), resistance (the ability to resist against external influences) selectivity (multichoice alternative), capacity (the ability of recreation persons' comfort creation without detriment to ourselves) and also control reliability (long-lived functioning).

The "recreation" term is etymologically derived from the latin "recreation" (anew creation, recovery, break to relax in school lessons as well as apartments for students leisure) and French "recreation" (leisure, relax, operations modification that exclude working activities) (Gumenyuk, 2016). A notion of 'recreation' includes: expanded reproduction of physical, intellectual and emotional strengths and decorum by purification, regeneration and creation of the environment (rivers, parks, forests, landscape phenomenon, natural reserve); expanded reproduction of physical, intellectual and emotional strengths and decorum by conserving localities of cultural significance (monuments of architecture, archeological sites) (Queensland Government, 2009); any game or leisure used for restoration of physical and intellectual strengths; the largest and rapidly developing segment of the leisure industry providing active recreation for population on the open air at the weekends or holidays; alteration of the human organism and human populations providing opportunities for active functioning under various conditions and changes of the environment (Vedmid, 2013).

Recreation system structure includes: hierarchic structure is typical for a complex recreational system where there is a division of sets of constituent elements into subsets of various levels - subsystems

manifesting integrity, a certain degree of self-regulation, and connected by multi-stage relations of subordination of subsystems of lower levels to subsystems of higher levels and territorial structure is a set of regional links between elements of the system. Territorial structure, for example, includes: layout structure of the resort; territorial structure of tourist flows; territorial organization of recreational activities; territorial organization of tourist services; territorial structure of tourists' demand; territorial structure of the tourist market etc (Mazaraki et al., 2014).

We have different types of recreational structures. One of them is medicinal type – is characterized by the primary function of treatment, which is based on natural factors: mineral waters, mud, climatic conditions. There are: climate therapy, balneotherapy, muds therapy, ozokerite therapy, hydrophatic, phytocuring parts. Health-improving type of recreation structure is characterized by the basic functions of the recreation and development of physical and mental potentials, by prevention of different diseases, by working, everyday nervous and physical exhaustion relieving. This type is divided into bath-coastal and walking parts. Sport type of recreation structure is characterized by the main function of physical development. It's composed of physical training group with coaching mode: sports games and competitions, mountaineering, hunting, fishing (Rechner, 2010). Additional role is belonging to walking, swimming, sun and air baths, excursions. This type is divided into fishing-hunting, emulative

and touristic parts. At last, cognitive type is characterized by the primary function of human mental development with the perception of cultural and natural values (Breslow, Ballard-Barbash, Munoz and Graubard, 2001). This information and impressions are consumed, not only the substance or energy. The leading function in cognitive recreation systems is belonging to cultural-historical and natural-historical tourism. This type is divided into cognitive-cultural and cognitive-natural parts (Derzhavne ahentstvo Ukrayiny z turyzmu ta kurortiv, 2016.).

L.D. Tondiy, L.Ya. Vasilyeva-Linetska estimate different impact of environmental factors on the development of specialized resorts presented in tables 1-4 (Gladkey, 2016). In these investigations the influence of physical factors such as therapeutic mud, ozocerite, naphthalane, sand, clay, bischofite, metals, stones and minerals with therapeutic effect, therapeutic factors of fauna and its representatives on natural treatment is disclosed. Different types of natural treatment factors by treatment-physiological activity and pathogenesis are systemized. Types of natural treatment factors such as cryogenic influence, mud, naphthalane, mineral wax, clay, sand, paraffin, balneal factors by mechanism of treatment-therapeutics influence are explored. At once, the different types of natural treatment factors by mechanism of treatment-therapeutics influence as well as types of natural therapeutic factors by methods of physical effects on human organism are investigated (Gladkey, 2016).

**Table 1.** Types of natural treatment physical factors and treatment methods (by L. D. Tondiy, L. Ya. Vasilyeva-Linetska)

Treatment and physical factors	Treatment methods
Climate and its different components	Climate therapy Aerotherapy Heliotherapy Thalassotherapy Landscape therapy Aromatherapy Phytotherapy Speleotherapy
Waters sweet water mineral water	Water therapy Hydrotherapy Balneotherapy
Therapeutic mud Ozocerite Naphthalane Sand Clay	Mud therapy Ozokerite therapy Naphthalane therapy Psammotherapy Clay treatment
Bischofite	Bischofite therapy
Metals, stones and minerals with therapeutic effect	Metal and mineral therapy
Therapeutic factors of fauna and its representatives	Faunotherapy Apitherapy Kumiss therapy Hirudotherapy

**Table 2.** Types of natural treatment factors by treatment-physiological activity and pathogenesis (by L. D. Tondiy, L. Ya. Vasilyeva-Linetska)

Antiinflammatory	
- cryogenic influence	The acute stage of inflammation
- Mud, naphthalane, mineral wax - clay, sand, paraffin - balnealfactors	Subacute and chronic stages of inflammation
Anti-edematous	
- cryogenic influence	
Vasoactive	
- mud, ozokerite - clay, sand, paraffin - variable atmosphere pressure - balneal and hydrologic factors	
Detoxication stimulation	
- peloids - mineral waters	
Antianxiety	
- balneal factors - climate	
Muscle (neuromuscular) relaxant	
- mud, ozokerite - clay, sand, paraffin - cryogenic influence - balneal and hydrologic factors	

**Table 3.** Types of natural treatment factors by mechanism of treatment-therapeutics influence (by L. D. Tondiy, L. Ya. Vasilyeva-Linetska)

Mechanism of sanogenesis	Treatment factors
Restitution and reparation	- mud, ozokerite, naphthalane
Compensation	- peloids - balneologic factors
Immunity	Lower pO <sub>2</sub> Aerosol NCI Aeroions, climate Balneal factors

**Table 4.** Types of natural therapeutic factors by methods of physical effects on human organism (by L. D. Tondiy, L. Ya. Vasilyeva-Linetska)

Classification parameters		Treatment factors
4.1 Zone of Influence	Micro zone of acupuncture points	Mechanical vibrations Metals and stones with therapeutic effect
	Zone of pathological inflammation and reflex-segmental area	Mechanical vibrations Thermofors Cool influence Peloids Bischofite Metals and stones with therapeutic effect
	Total surface of the body	Climate Peloids Waters ultra-violet rays Mechanical vibrations, created by masseur's hands Air space factors
4.2 Influence activity	Subthreshold (low)	Metals and stones with therapeutic effect
	Middle	Mechanical vibrations Artificial air environment Air space factors Climate Peloids for local methods
	High	Peloids for general influence methods Showers of high pressures Balneal factors Treatment massage of general influence methods
4.3 Influence regime	Impulse	Periodical changes of atmospheric pressure
	Unceasing	Waters Peloids Climate

Scientists' allow estimating complex recreation potential of the territory (table 5). It contain such indices as aesthetic quality of the territory, mineral water deposits and forest indices, climate and water area, natural reserves potential, historical and cultural potential, transport accessibilities, sanatorium-and-spa institutions, recreation load potential estimation, etc. Most of them have their own formula for estimation.

We can make any conclusions about historical and cultural estimation using such formula:

$$E_{hc} = K_i / S \tag{1}$$

when  $K_i$  - number of historical and cultural objects,  $S$  - square of the territory ( $km^2$ ).

Estimation of transport accessibilities ( $E_t$ ) is going on using such formula:

$$E_t = L_3 + L_{ab} / S_{terr} \tag{2}$$

when  $L_3$  -railroads length (km);  $L_{ab}$  - autoways length (km);  $S_{terr}$  - square of the territory ( $km^2$ ).

Sanatorium-and-spa institutions estimation ( $E_{ss}$ ) can be done using such formula:

$$E_{ss} = K_c / S_{terr} \cdot 100 \text{ (units}/km^2) \tag{3}$$

when  $K_c$  - number of sanatorium and spa institutions (sanatorium, dispensaries, relaxation houses, etc.).

Estimation of recreational resources efficiency:

$$E\sum (n) = E1 + E2 + E3 + E4 + E5 + E6 + E7, \tag{4}$$

when  $E\sum (n)$  - economic efficiency per 1 year;  $E1$  - productions increase per 1 unit of Gross Domestic Product created by employees as a result of their temporary disability reduction within a year after recovery;  $E2$  - reduction of sick-funds for temporary disability of employees within a year after recovery;  $E3$  - increase of Gross National Product created by employees connected with increasing of labor productivity within a year after recovery;  $E4$  - increase of Gross National Product created by employees connected with increasing of capacity for

work within a year after recovery; E5 -reduction of inpatient treatment funds within a year after recovery; E6 - reduction of out-patients treatment funds within a year after recovery; E7 - Gross National Product growth related with reducing of the number of medical institutions visits during working hours within a year after recovery.

Human has different types of recreation activities in recreation system. According to State Agency of Ukraine for Tourism and Resorts (Prokurorty, 2006.), recreation activities are characterized by functional versatility manifesting in fre-

quent change of recreational activities and a possibility to perform several activities in one territory simultaneously provided that a vacationer experiences positive emotions; possibility to combine its types considering replaceability, interdependence and mutual exclusion of one or another recreational activity (efficiency of the recreational activities is determined by a variety in combining various forms of the recreational activities satisfying more recreational needs for a time unit); cyclicity as a consecutive making a switch of recreational activities in a certain period of time (Beidik, 2011).

**Table 5.** Complex estimation of recreation potential of the territory

Index	3	2	1
Estimation of aesthetic quality of the territory, Ea	Picturesque landscapes, high level of exotic and a high degree of uniqueness, contrast	Low level of exotic and a low degree of uniqueness, contrast	Plain, density urbanized territories
Mineral water deposits estimation, Mv	More 1000 m <sup>3</sup> /days/km <sup>2</sup>	100-1000 m <sup>3</sup> /days/km <sup>2</sup>	100 m <sup>3</sup> /days/km <sup>2</sup>
Forest estimation, Ef	60%-40%	15-40%; more 60%	less 15%
Climate estimation, Ec	more than 100 days with >15 °C	80-100 days with >15 C	less 80 days with >15 °C
	More than 110 days with 1 <0 °C	100-110 days with <0 °C	less 100 days with <0 °C
Water area estimation, Ew	a large number of clean water areas suitable for universal using	Suitable for bathing and paddling	Limited usage
Natural reserves estimation, Enr	More that 5% of the territory	3-5%	3%
Historical and cultural potential estimation, Ehc	More than 18 objects/100km <sup>2</sup>	8-18 objects/100 km <sup>2</sup>	Less than 8 objects/100 km <sup>2</sup>
Transport accessibilities estimation, Et	More than 0,42 km/km <sup>2</sup>	0,29-0,42 km/km <sup>2</sup>	Less than 0,29 km/km <sup>2</sup>
Sanatorium-and-spa institutions estimation, Ess	More tan 3 per 100 km <sup>2</sup>	1-3 per 100 km <sup>2</sup>	Less than 1 per 100 km <sup>2</sup>
Recreation load Estimation, Erl	Highlands	undulating ground	Plain, low-lying lands

There are 3 groups of most important social functions of recreation activities. Medico-biological functions of recreation are implemented through sanatorium-and-spa treatment and health improvement and should be considered in the aspects of treatment (health recovery after illness) and health improvement (mitigation of occupational and non-occupational psycho-physiological fatigue) (Mazaraki, A.A., Tkachenko, Melnichenko et al., 2013).

Cultural and spiritual needs are based on the need in knowledge. Recreation has enormous opportunities for their satisfaction facilitating harmonic

development of an individual (Bruce C. Daniels (1995). This is the way of performing social and cultural functions of recreation. Currently one observes a combination of cognitive and developmental functions of recreation, mutually complementing each other. The main economic function of recreation is simple and expanded reproduction of labor; formation of services and ties with other sectors of economy; development of certain areas and expansion of employment; increase in foreign currency to the budget. Specific features of recreational activities include recovery and development functions. The first one (psychophysiology) includes food,

sleep and movement. They serve as a simple recovery of psychophysiological parameters. They differ on 2 parts: 1.) recreation and medicinal functions include specific training system than defined by methods of spa treatment; 2) recreational and treatment functions include walking, swimming, air and sun baths, games, picking mushrooms and berries, hunting, passive recreation (Tkachenko, 2009).

Development functions (mental and intellectual) include: rehabilitation, cognition, communication. They also differ on 2 parts: 1) recreation and sports functions mainly focused on the development of human physical energy; 2). recreational and cognitive functions sessions focused on intellectual development of individuals (Stafiychuk, 2008). There are the main factors that effect on the development of recreational activities. 1. Natural factors: the natural territory of human settlement, geographical location (related to the sea, mountains, forests, deserts etc.). 2) Demographic factors: urbanization; nationality; birth and death rate; sex and age structure; family composition and size; settlement features; 3. Socio-economic factors: level of productive forces development; level of consumer goods production; level of recreation and tourism development; real incomes of the population; prices of goods and services (recreation); level of transport infrastructure development; duration of the vacations; development of advertising and information system on recreational areas and tourist routes; social and professional structure of population; level of culture development; mobility of population; national traditions. 4. Social and psychological factors: communication skills; type of cultural life; the influence of fashion; value orientation of different personalities. 5. Medical and biological factors: health status of population (Kuskov, Golubeva, Odintsova, 2005).

One of the most important external factors is economic-geographical location. Its includes: 1) location of recreational territory close to recreational flows development based on size, direction and structural (social, age, etc.) parameters; 2) transport and geographical location illustrates the level of communication on the recreation territory as well as the level of transport accessibility; 3) location close to supply bases of consumer products; 4) location close to populated area where additional labor resources are present; 5) location close to other recreational areas that has the same specialization, first of all (Thomas, Yukic, 1970).

There are 4 internal factors of recreational activities development: 1) level of development and territorial structure of the material and technical bases of recreation and tourism connected with serving industries; 2) level of economic development of the territory. It has a double meaning; the high economic development leads to environmental pollution

growth; 3) labor and human resources; 4) settlement system (McLean, Hurd, Rogers, 2005).

The main practical goal of the recreational activities consists in development of the recreation tour program. Using of the recreation model allows simplifying and accelerating specific implementation of the recreational activities considerably. Recreation modeling is a variation modeling of recreation programs and systems that serve them regarding the recreation requirements (Stafiychuk, 2008).

Model for location of the recreational system by I.V. Zorin using the Steiner-Weber method is characterized by minimal time consumption for movement in the recreational subsystem from the identified centers of demand. E.A. Staroselets and B.I. Melnikas proposed a model of optimal placement of the country recreational centers for the population from a large industrial center. In this case, the region is considered as consisting of  $m$  territorial zones in which it is possible to organize recreation for inhabitants of the nearby industrial center. Minimum allowable space for recreation and the maximum area that can be allocated for recreation are known for each zone. Total demand in the areas for short-term and long-term recreation in the region is also known. Using this model we can calculate their qualimetric values of recreation in each of the region (Nikolaenko, 2001).

E.S. Oleynikov proposed models of optimal placement of recreational systems at different hierarchical levels (aggregate reduced expenditures are taken as the efficiency criterion); M. Hill and M. Schechter offer a model for optimal allocation of resources for implementation of the recreational system development projects; A. Pentz used a linear programming model for the optimal organization of the recreational system functioning. R. Meyer used a linear programming model for recreation by introducing the concept of recreational value, characterizing the opportunity and quality of recreation.

We have different principles of the state policy in the recreology sphere and tourism development. They are: legal regulation of conditions and procedures for organizing the resorts activities; providing availability of spa treatments for all citizens, especially for the disabled, war and labor veterans, combatants, people affected by Chernobyl Nuclear Plant accident, children, women of reproductive age suffering from gynecological diseases, tuberculosis patients and patients with injuries and diseases of the spinal cord and spine; taking into account the population demand for specific types of spa services in the development and adoption of the national and local programs for development of the resorts; economical and rational use of natural medicinal resources and provision of their proper pro-

tection; promoting transformation of the spa and resort complex in Ukraine into highly competitive sector of the economy (Stafiyuchuk, 2008).

There are different types of resorts: 1. by treatment factors: climate, balneologic, mud, kumiss therapy and mixed. 2. by functional usage: mainly treatment; treatment, recreation and tourism; mainly leisure, tourism (Parent et al., 2010). According to their health improvement specifics the resorts are divided into: recreation-preventive for health improvement and prevention of diseases in practically health people; rehabilitation or health improvement of people after diseases; medical for treatment of patients with diseases of GIT, respiratory system.

**Conclusions:** Therefore, recreation sciences investigate the basic scientific categories that disclose essence and development principles of recreational systems. There are: recreation, recreational cycles, recreational time, recreational space, recreational classes, recreational resources, resorts etc. The main objectives of the recreation sciences research are called to assess recreational resources and efficiency of their use; determine recreation capacity of the territory and the maximum permissible recreation loads; determine ecological well-being of the environment under research; analyze the socio-cultural environment with its customs and traditions, specifics of economic and households activities together with different objects: nature, cultural heritage, ethnographic objects, arts and crafts, applied and decorative arts centers; technical areas and structures; develop and implement a package of measures aimed to enhance recreational potential of the territory; study domestic and foreign demand for the recreational services; project development and optimization of tourist and recreation industry functioning.

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