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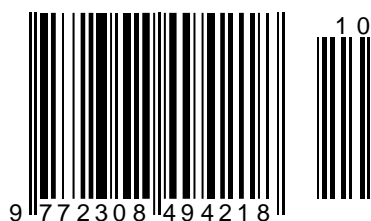
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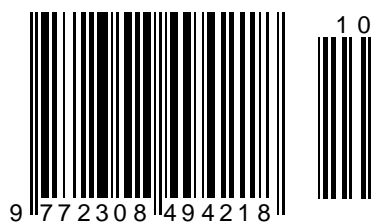
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APPLICATION THE TRANSFORMATION FORMULA AND APPLICATIONS TO ABSOLUTE CONTINUITY

Abstract: Let K be a linear operator from H to H with discrete spectrum and let $\lambda_i, i = 1, 2, \dots$ be the sequence of Eigen-values of K repeated according to their multiplicity. Let \mathcal{X} be a real separable Hilbert space; smooth, \mathcal{X} -valued functionals on (W, H, μ) are functionals of the form

$$a(w) = \sum_1^n \eta_i (\langle h_1, w \rangle, \dots, \langle h_m, w \rangle) x_i$$

with $x_i \in \mathcal{X}$ and $\eta_i \in C_b^\infty(\mathbb{R}^m), h_i \in W^* \subset H$.

Key words: Sard Inequality, Wiener Space, Lebesgue measure, Jacobian determinant, Lagrangian function, Malliavin calculus, Hilbert-Schmidt norm.

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Introduction

The purpose of this paper is to present detailed show of the measurability of the forward images of Borel sets under the perturbation of identity maps, the Sard inequality and some applications of these results. Some of these results are applied in [6] to degree theory on the Wiener space.

We will summarize some definitions and results of stochastic analysis that will be needed in the section. The measurability problem will be discussed is devoted to the Sard inequality. The strategy of the show follows Smale [3]: T is shown to be representable locally as $T = T_S \circ T_G$ where T_G is invertible and T_S is finite dimensional. This is done in Lemma (2.1.8) following the technique of Kusuoka [4]. It is then shown, Lemma (2.1.9), that the Sard inequality for T follows from the application of the finite dimensional Sard inequality to T_S . Devoted to a certain extension of the Sard inequality and the infinite dimensional extension of (2.4) is also given

there. Some applications to the question of absolute continuity are discussed.

II. Preliminaries

Let (W, H, μ) be an abstract Wiener space. We start with a short summary of the notations of the Malliavin calculus. The Carleman- Fredholm determinant of K is defined as:

$$\det_2(I + K) = \prod_{i=1}^{\infty} (1 + \lambda_i) e^{-\lambda_i} \quad (1)$$

and the product is known to converge for Hilbert-Schmidt operators. For $F \in \mathbb{D}_{p,1}^{loc}(H), \nabla F$ is Hilbert-Schmidt and define

$$\Lambda_F(w) = \det_2(I + \nabla F) \exp\left(-\delta F - \frac{1}{2} \|F\|_H^2\right). \quad (2)$$

Theorem (1): Let D and T be as above and let $J(x)$ denote the Jacobian determinant of T at x ;

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also, let E be a measurable subset of D , then $T(E)$ is measurable and

$$\int_{\mathbb{R}^n} 1_{TE}(x) dx \leq \int_{\mathbb{R}^n} I_E(x) |J(x)| dx. \quad (3)$$

In order to represent this result for the case where the Lebesgue measure is replaced with the standard Gaussian measure on \mathbb{R}^n , note that if $\psi(x)$ is measurable and nonnegative, then (3) implies that

$$\begin{aligned} \int_{\mathbb{R}^n} \psi(x) 1_{TE}(x) dx &\leq \\ &\leq \int_{\mathbb{R}^n} \psi(Tx) 1_E(x) |J(x)| dx. \end{aligned} \quad (4)$$

In particular, setting

$$\begin{aligned} \psi(x) &= (2\pi)^{-n/2} \exp(-|x|^2/2) \\ \mu(dx) &= \psi(x) dx \\ Tx &= x + f(x) \end{aligned}$$

and

$$\Lambda(x) = J(x) \exp\left(\langle x, f(x) \rangle - \frac{1}{2} |f(x)|^2\right)$$

Yields

$$\int_{\mathbb{R}^n} 1_{TE}(x) d\mu(x) \leq \int_{\mathbb{R}^n} 1_E(x) |\Lambda(x)| \mu(dx)$$

or

$$\mu(TE) \leq \int_{\mathbb{R}^n} |\Lambda(x)| \mu(dx). \quad (5)$$

An extension of (3) where the condition of T being continuously differentiable is replaced by a weaker assumption is a part of Federer's area theorem for $m = n$, (Theorem 3.2.3 of [1]). Cf., also, Theorem 5.6 of [2].

Lemma (1): Let F_1, F_2, F_3 belong to $\mathbb{D}_{p,1}^{loc}(H)$ and let

$$T_i w = w + F_i(w), i = 1, 2, 3.$$

Assume that:

- (i) $\mu \circ T_2^{-1} \ll \mu$ and
- (ii) $T_3 = T_1 \circ T_2$ (i.e., $F_3 = F_2 + F_1 \circ T_2$).

Then

- (a) $I + \nabla F_3 = [I + (\nabla F_1)(T_2)](I + \nabla F_2)$
- (b) $\Lambda_{F_3} = (\Lambda_{F_1} \circ T_2) \cdot \Lambda_{F_2}$.

The proof is straight forward (cf. Lemma 6.1 of [4] or [7] and uses the fact that for $T(w) = w + u(w)$

$$(\delta F) \circ T = \delta(F \circ T) + \langle F \circ T, u \rangle_H + \text{Trace}((\nabla F)) \circ T \cdot \nabla u.$$

With every measurable subset A of W we associate the random variable $\rho_A(w)$ which plays an

important role in the construction of a class of mollifiers:

Theorem (2): Let $F: W \rightarrow H$ be a measurable map belonging to $\mathbb{D}_{p,1}(H)$ for some $p > 1$. Assume that there exist constants c, d (with $c > 1$) such that for almost every $w \in W$

$$\|\nabla F(w)\| \leq c < 1$$

and

$$\|\nabla F(w)\|_2 \leq d < \infty$$

where $\|\cdot\|$ denotes the operator norm and $\|\cdot\|_2 = \|\cdot\|_{H \otimes H}$ denotes the Hilbert-Schmidt (or $H \otimes H$) norm (in other words, for almost all $w \in W$, $\|F(w+h) - F(w)\|_H \leq c\|h\|_H$ for all $h \in H$ where c is a constant, $c < 1$ and $\nabla F \in L^\infty(\mu, H \otimes H)$).

Then:

(a) Almost surely $w \mapsto T(w) = w + F(w)$ is bijective, the inverse T^{-1} satisfies $T^{-1}w = w + L(w)$ where $\|L(w)\|_H \leq \|F(w)\|_H / (1-c)$ and $\|\nabla L\|_2 \leq d / (1-c)$.

(b) The measures μ and $T^* \mu$ are mutually absolutely continuous.

(c) $E[f] = E[f \circ T \cdot |\Lambda_F|]$ for all bounded and measurable f on W and in particular $E[|\Lambda_F|] = 1$.

Definition (1): Let $u(w)$ be an H -valued random variable

(a) $u(w)$ is said to be an $H - C$ map if, for almost all $w \in W$, $h \mapsto u(w+h)$ is a continuous function of $h \in H$.

(b) $u(w)$ is said to be $H - C^1$ if it is $H - C$ and for almost all $w \in W$, $h \mapsto u(w+h)$ is continuously Frechet differentiable on H .

(c) $u(w)$ is said to be "Locally $H - C^1$ " if there exists an almost surely strictly positive random variable ρ such that $h \mapsto u(w+h)$ is C^1 on the set $\{h \in H : |h| < \rho(w)\}$.

(d) $u(w)$ will be said to be $\eta - H - C^1$, if there exists a non-negative random variable $\eta(w)$ such that $\mu\{\eta(w) > 0\} > 0$ and for all $w \in Q = \{w : \eta(w) > 0\}$, $u(w+h)$ is Frechet differentiable on $\{h \in H, \|h\|_H < \eta(w)\}$.

Theorem (3): Suppose that $u: W \rightarrow H$ is a measurable map. Then for any measurable $A \subset W$, $(I_W + u)(A) = T(A)$ is in the universally completed Borel sigma algebra of W .

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Proof: If $w \in T(A)$, then $w = \theta + u(\theta)$ where $\theta \in A$. Otherwise stated, setting $\theta = w + h$, h satisfies

$$0 = h + u(w + h)$$

and

$$w + h \in A.$$

Let $\Gamma(w)$ be the multifunction taking values in subsets of H :

$$\Gamma(w) = \{h : h + u(w + h) = 0 \text{ and } (w + h) \in A\}.$$

Then

$$T(A) = \{w \in W : \Gamma(w) \neq \emptyset\} = \pi_W(G(\Gamma)),$$

where $G(\Gamma)$ is the graph of $\Gamma : G(\Gamma) = \{(h, w) : h \in \Gamma(w)\}$ and $\pi_W(h, w) = w$.

Since $(w, h) \mapsto w + h$ is measurable, $G(\Gamma)$ is measurable in $W \times H$ hence $\pi_W G(\Gamma)$ is universally measurable (c.f. Theorem 23, p. 75 of [9]).

The following result is the infinite dimensional version of the Sard inequality which implies the Sard lemma.

Theorem (4): Suppose that $u : W \rightarrow H$ is a measurable map in some $\mathbb{D}_{p,1}(H)$ and is $\eta - H - C^1$, i.e. there exists a nonnegative random variable η , with $\mu(Q) = \mu\{n > 0\} > 0$ and the map $h \mapsto u(w + h)$ is continuously Frechet differentiable on the random

open ball $\{h \in H : \|h\|_H < \eta(w)\}$. Then we have, for any $A \in B(W)$,

$$\mu(T(A \cap Q)) \leq \int_{A \cap Q} |\Lambda_u| d\mu.$$

The proof of the theorem will follow from the following two lemmas.

Lemma (2): Under the assumptions of Theorem (6), there exists a countable cover $Q_{m,n}$ of Q and two sequences in $\mathbb{D}_{p,1}(H)$, denoted by $K_{m,n}(w)$ and $S_{m,n}(w)$ such that

$$i. \quad \|\nabla K_{m,n}\|_2 \leq \lambda_{m,n} < 1$$

for almost all $w \in W$, where $\|\cdot\|_2$ denotes the Hilbert - Schmidt norm.

ii. $S_{m,n}(w)$ is finite dimensional on $Q_{m,n}$, i.e. there exists a finite dimensional subspace of H , say $H_{m,n}$, such that $S_{m,n}(w) \in H_{m,n}$ for all $w \in Q_{m,n}$.

$$iii. \quad T = T_{S_{m,n}} \circ T_{K_{m,n}}^{-1}.$$

Proof: Let $(\pi_n; n \in \mathbb{N})$ be a sequence of orthogonal projections of H increasing to I_H . Let α be a fixed positive number (to be specified later), set

$$Q_{m,n} = \left\{ w \in W : \|\nabla u(w + h) - \nabla u(w)\|_2 \leq \alpha, \text{ for all } \|h\|_H \leq \frac{1}{m} \right\} \cap \left\{ w \in W : \left| \pi \frac{1}{n} u(w) \right|_H < \frac{\alpha}{m}, \left\| \pi \frac{1}{n} \nabla u(w) \right\|_2 \leq \alpha, \|\nabla u(w)\|_2 \leq m, \eta(w) > \frac{4}{m} \right\},$$

where $\|\cdot\|_2$ denotes the Hilbert-Schmidt norm. By the $H - C^1$ - property, $(Q_{m,n}; n, m \in \mathbb{N})$ covers Q almost surely (here, if necessary, we add a negligible set to have equality everywhere instead of almost everywhere but we keep the same notation).

$$\left\| \pi \frac{1}{n} u(w + h) \right\|_H \leq \left\| \pi \frac{1}{n} u(w) \right\|_H \leq \int_0^1 \left\| \pi \frac{1}{n} \nabla u(w + th) \right\|_2 \cdot \|h\|_H \cdot dt \leq \frac{\alpha}{m} + \frac{2\alpha}{m} \leq \frac{3\alpha}{m}. \quad (7)$$

Let φ be a smooth function on \mathbb{R} such that $|\varphi(t)| \leq 1$ and $|\varphi'(t)| \leq 2$ for all $t \in \mathbb{R}$, furthermore assume that $\varphi(t) = 1$ on $|t| \leq \frac{1}{2}$ and $\varphi(t) = 0$ on $|t| \geq 2$.

$$\text{Let } \rho(w, q) = \inf \{ \|h\|_H : h \in H, w + h \in q \}$$

Set

$$g(w) = \varphi(m\rho(w, q))$$

Let us denote $Q_{m,n}$ by q . It is easy to see that for $w \in q$ and any $h \in H, \|h\|_H \leq 1/m$

$$\left\| \pi \frac{1}{n} \nabla u(w + h) \right\|_2 \leq 2\alpha \quad (6)$$

and, assuming that $\alpha < 1$,

and

$$G(w) = g(w) \pi \frac{1}{n} u(w).$$

Therefore, if $g(w) \neq 0$, then $m \cdot \rho(w, q) < 1$, hence for some $w_0 \in q$, $\|w - w_0\|_H < 1/m$. Therefore, by (1) and (2), for all $w \in W$,

$$\|G(w)\|_H \leq \frac{3\alpha}{m} \quad (8)$$

and

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$$\|\nabla G(w)\|_2 \leq \left\| \nabla g \otimes \pi \frac{1}{n} u \right\|_2 + \left\| g \cdot \nabla \pi \frac{1}{n} u \right\|_2 \leq 2m \cdot \frac{3\alpha}{m} + 2\alpha = 8\alpha. \quad (9)$$

Setting, now, $\alpha = 0.5 \cdot 10^{-2}$, it follows from Theorem (2) that $T_G = I_W + G$ is a.s. bijective. Let $E = T_G(q)$, then by the result of the previous section, E is measurable and for any w satisfying $\rho(w, E) \leq 1/3m$ there exists some $w_0 \in q$, such that $w - T_G w_0 \in H$ and $\|w - T_G w_0\|_H < \frac{1+\varepsilon}{3m}, \varepsilon > 0$. Therefore, by (a) of Theorem (3) and (9)

$$\begin{aligned} \|T_G^{-1}w - w_0\|_H &\leq \frac{\|w - T_G w_0\|_H}{1-8\alpha} \leq \frac{1}{2m}. \\ \text{Hence, } \rho(T_G^{-1}w, q) &< 1/2m \quad \text{and} \\ \varphi(m \cdot \rho(T_G^{-1}w, q)) &= 1, \quad \text{i.e. } G(w) = \pi_n u(w) \quad \text{and} \\ \text{consequently} & \\ \left(I + \pi \frac{1}{n} u \right) \circ T_G^{-1}w &= w \quad (10) \end{aligned}$$

for any w such that $\rho(w, E) < 1/3m$ and in particular to any $w \in E$. Now set

$$-K(w) = \varphi(8m\rho(w, E))(w - (I + G)^{-1}w) = \varphi(8m\rho(w, E))G((I + G)^{-1}w). \quad (11)$$

Hence by Theorem (3) and (8)

$$\|K(w)\|_H \leq \frac{3\alpha}{m}$$

and

$$\|\nabla K\|_1 \leq 16m\|G(w)\|_H + \|\nabla G \circ (I + G)^{-1}w\|_2 \cdot \left(1 + \|\nabla(I - (I - G)^{-1})\|_2\right) \leq \frac{48m\alpha}{m} + 8\alpha \left(1 + \frac{8\alpha}{1-8\alpha}\right) < 0.3.$$

Setting $I_W + S = T \circ T_K$, i.e.,

$$S(w) = K(w) + u(T_K(w)), \text{ if } \rho(w, E) < 1/8m$$

(in particular, if $w \in E$) then by (10), (11)

$$T_K(w) = T_G^{-1}w \text{ and}$$

$$w = \left(I_W + \pi \frac{1}{n} u \right) T_K(w) = w + K(w) + \pi \frac{1}{n} u(T_K(w)).$$

Therefore

$$S(w) = -\pi \frac{1}{n} u(T_K(w)) \text{ and } S(w) = K(w) + u(T_K(w)) = \left(1 - \pi \frac{1}{n}\right) u(T_K(w)) = \pi_n u(T_K(w)).$$

Consequently, for $\rho(w, E) < 1/8m$, $S(w)$ is in a finite dimensional space.

Setting $K = K_{m,n}$ and $S = S_{m,n}$ completes the proof of the lemma.

Lemma (3): Let A be any measurable subset of W and let $Q_{m,n}$ be as defined in Lemma (2), then

$$\mu(T(A \cap Q_{m,n})) \leq \int_{A \cap Q_{m,n}} |\Lambda_u(w)| \mu(dw).$$

Proof: Let $\tilde{A} = A \cap Q_{m,n}; S = S_{m,n}$ and $K = K_{m,n}$ are as defined in Lemma (2). By Theorem (5), $\tilde{T}\tilde{A}$ is measurable. Set $E = T_G \tilde{A}$, then E is also measurable since T_G satisfies the conditions of Theorem (3). Now, $T_S = T \circ T_K$ on E , therefore by

Lemma (2), $|\Lambda_S(w)| = |\Lambda(T_K(w))| \cdot |\Lambda_K(w)|$ on E . Let $h_i, i=1,2,\dots$ be a C.O.N.B. on H and $\pi_{m,n}$ is the projection on $H_{m,n}$ defined in Lemma (2).

$$\begin{aligned} w &= \{\mathcal{H}_1, \mathcal{H}_2, \dots\} \\ w_a &= \{\mathcal{H}_i, i \leq n\} \\ w_b &= \{\mathcal{H}_i, i \geq n+1\} \\ w &= w_a \oplus w_b, \end{aligned}$$

where $w_a \oplus w_b$ denotes the concatenation of w_a with w_b .

Define $F_a = \sigma\{\mathcal{H}_i, i \leq n\}, F_b = \sigma\{\mathcal{H}_i, i \geq n+1\}$ and μ_a, μ_b the restriction of μ to F_a and F_b respectively. Then

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$$EF(W) = \int_W F(w_a \oplus w_b) \mu_a(dw_a) \cdot \mu_b(dw_b).$$

Note that $\rho(w, A)$ is Lipschitz continuous (cf. property (ii) of $\rho(w, A)$).

Consequently for all $w \in E, K(w+h)$ and $S(w+h)$ are Lipschitz continuous on $(w+h) \in Q_{m,n}$

$$\int_A J_m f(x) dx = \int_{\mathbb{R}^n} \text{Cardinality}(A \cap f^{-1}(y)) dy \geq \int_{\mathbb{R}^n} 1_{f(A)}(y) dy$$

which extends the Sard inequality to Lipschitz functions. Therefore, setting $\pi_n(w_a \oplus w_b) = w_a$

we have

$$E(\mathbb{1}_{T_S E}(w) | F_b) \leq \int_{E \cap \pi_n W} |\Lambda_S(w_a \oplus w_b)| \mu_a(dw_a).$$

Consequently

$$\mu(T_S E) \leq \int_E |\Lambda_S(w)| \mu(dw) = \int_E |\Lambda_u(T_K(w))| \cdot |\Lambda_K(w)| \mu(dw) = \int_W \left[\mathbb{1}_{\tilde{A}}(\cdot) \cdot \Lambda_u(\cdot) \circ (T_K w) \right] \cdot |\Lambda_K(w)| \mu(dw).$$

Applying part (c) of Theorem (4) to T_K yields

$$\mu(T_S E) \leq \int_{\tilde{A}} |\Lambda_u(w)| \cdot \mu(dw),$$

which completes the proof of the lemma, since $T_S E = T\tilde{A}$.

Turning to the proof of Theorem (6), cutting and pasting $Q_{m,n}$ to form a partition of $A \cap Q$ (keeping the same notation),

$$\begin{aligned} \mu(T(A \cap Q_{m,n})) &= \mu(T(\cup Q_{m,n})) \\ &= \mu(\cup TQ_{m,n}) \\ &\leq \sum \mu(T(Q_{m,n})) \\ &\leq \sum_{Q_{m,n}} \int |\Lambda_u| \mu(dw) \\ &= \int_{A \cap Q} |\Lambda_u| \mu(dw), \end{aligned}$$

which completes the proof of the theorem.

III. Application of the Transformation Formula

If in Theorem (4), the set Q has full measure then we have

$$\mu(T(A \cap Q)) \leq \int_A |\Lambda_u| d\mu,$$

we would like to have in this case that

and for any $(w_a \oplus w_b)$ in $E, S(w_a \oplus w_b)$ is Lipschitz continuous in the w_a variables. Now, the area theorem of Federer (cf. [1, p. 243, Theorem 3.2.3]), for a Lipschitz function $f : \mathbb{R}^n \rightarrow \mathbb{R}^n$ yields

$$\mu(T(A)) \leq \int_A |\Lambda_u| d\mu.$$

However, due to adding negligible sets to A in the course of the proof of Lemma (2), this result is not true unless the things are reinterpreted as explained in the following extension of Theorem 5.2 of [8].

Theorem (5): i. Suppose that $u : W \rightarrow H$ is locally in some $\mathbb{D}_{p,1}(H)$ and that it is $\eta - H - C^1$ with $\mu(Q) = \mu\{\eta > 0\} > 0$. Let $T = I_W + u$. For any positive, bounded, measurable functions f and g on W , we have

$$E[f \circ T g \mathbb{1}_Q | \Lambda_u] = E \left[f \sum_{y \in T^{-1}\{w\} \cap Q} g(y) \right],$$

where $\Lambda_u = \det_2(I_H + \nabla u) \exp \left[-\delta u - \frac{1}{2} |u|_H^2 \right]$.

ii. Furthermore, if u is $H - C^1_{loc}$, then there exists a modification of u , denoted by u' (i.e., $\mu\{u = u'\} = 1$), such that the corresponding shift T' satisfies

$$E[f \circ T' g | \Lambda_{u'}] = E \left[f \sum_{y \in T'^{-1}\{w\}} g(y) \right].$$

In particular, we have

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$$\mu(T'(A)) \leq \int_A |\Lambda_{u'}| d\mu,$$

for any $A \in B(W)$.

iii. If moreover $Q+H \subset Q$, then the restriction of T to the set Q satisfies the conclusion of (ii) where T' is replaced by $T|_Q$. In other words we can replace (W, H, μ) by (Q, H, μ) and think of it as an abstract Wiener space on which it holds that

$$\mu(T(A)) \leq \int_A |\Lambda_u| d\mu,$$

for any $A \in B(Q)$, where $B(Q)$ denotes the trace of $B(W)$ on Q .

Proof: From Theorem 5.2 of [8], we have

$$E[f \circ T g 1_Q | \Lambda_u] = E \left[f \sum_{y \in T^{-1}\{w\} \cap M \cap Q} g(y) \right].$$

Therefore, if $g = g'$ almost surely on Q then

$$\sum_{y \in T^{-1}\{w\} \cap Q \cap M} g(y) = \sum_{y \in T^{-1}\{w\} \cap Q \cap M} g'(y)$$

almost surely. Moreover, we have

$$E \left[\sum_{y \in T^{-1}\{w\} \cap M \cap Q} g(y) \right] = E \left[f 1_{(T(M^c \cap Q))^c} \sum_{y \in T^{-1}\{w\} \cap Q} g(y) \right]$$

and the first part of the theorem follows from Theorem (2.1.7). For the second part, it suffices to define $u'(w) = 1_Q(w)u(w)$ and to note that $\mu(Q) = 1$. Since $1_{T'(A)}(w) \leq N'(w, A)$, where $N'(w, A)$ is the cardinal

of the set $T'^{-1}\{w\} \cap A$, which is equal to $N(w, Q \cap A)$ almost surely, we have

$$\begin{aligned} \mu(T'(A)) &\leq E[N'(w, A)] \\ &= E[N(w, A \cap Q)] \\ &\leq E[1_A | \Lambda_u] \\ &= E[1_A | \Lambda_{u'}] \end{aligned}$$

The third claim follows from the fact that $T(Q) \subset Q$ whenever $Q+H \subset Q$ (note that in this case Q^c is a slim set).

Below we give the proof of the inequality (2.4) in the setting of the abstract Wiener space:

Corollary (1): Let u be a $H - C_{loc}^1$. Then there exists $u' = u$ almost surely and $T' = I_w + u'$ satisfies

$$E[\psi 1_{T'(A)}] \leq E[\psi \circ T' 1_A | \Lambda_{u'}],$$

for any $A \in B(W)$ and $\psi \geq 0$ any measurable function on W . If u is $H - C^1$, then we can take $T = T'$ above provided that the triple (W, H, μ) is replaced by (Q, H, μ) .

Proof: Set $u' = 1_Q u$ and let $M = \{w \in W : \det_2(I + \nabla u(w)) \neq 0\}$. From Theorem (5), we have $\mu(T(M^c \cap Q)) = 0$, hence

$$E[\psi 1_{T'(A)}] = E[\psi 1_{T(A \cap M)}]$$

M has a countable partition (M_n) such that on each M_n , $T = I_w + u$ is equal to a bijective transformation, say T_n (cf. [5,10]) such that

$$d(T_n^{-1})^* \mu = |\Lambda_n| d\mu. \text{ Hence}$$

$$\begin{aligned} E[\psi 1_{T(A \cap M)}] &\leq \sum_n E[\psi 1_{T_n(M_n \cap A)}] = \sum_n E[\psi 1_{M_n \cap A} \circ T_n^{-1}] = \\ &= \sum_n E[\psi \circ T_n 1_{M_n \cap A} | \Lambda_n] = \sum_n E[\psi \circ T 1_{M_n \cap A} | \Lambda] = \\ &= E[\psi \circ T | \Lambda_u | 1_A] = E[\psi \circ T' | \Lambda_{u'} | 1_A] \end{aligned}$$

IV. Applications to Absolute Continuity

In the following three propositions we show how the Sard property and the existence of a right inverse yield new results on the absolute continuity of certain measures. The results will be presented under some general assumptions. $(W, B(W), \mu)$

Definition (2): Let $(W, B(W), \mu)$ be any probability space and T a measurable transformation on W . The pair (T, μ) will be said to possess the Sard property with respect to $Q \in B(W)$ if for every $V \in B(W)$

(i) $T(V \cap Q)$ is universally measurable.

(ii) $\mu(T(V \cap Q)) = 0$ whenever $\mu(V \cap Q) = 0$.

Proposition (1): Let (T, μ) possess the Sard property with respect to Q and ν another probability measure on $(W, B(W))$ for which $\nu(Q) > 0$ such that $\nu|_Q$ and μ are mutually singular; then $(T^*(\nu|_Q))$ and μ are mutually singular.

Proof: Let N denote the set $N \subset Q, \mu(N) = 0, \nu(N) = \nu(Q)$, then $\mu(TN) = 0$ and

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$$\begin{aligned} T^*(\nu|_Q)(TN) &\geq \nu(N \cap Q) \\ &= \nu(N) \\ &= \nu(Q), \end{aligned}$$

which completes the proof.

Proposition (2): Assume that (T, μ) possesses the Sard property with respect to Q . Further assume that T has a measurable right inverse (i.e. $TSw = w$ for almost all w) then

$$\mu|_{S^{-1}(Q)} \ll T^*(\mu|_Q)$$

Therefore $\mu|_{S^{-1}(Q)} \ll T^*\mu$.

Proof: $S^*\mu = \nu_1 + \nu_2$ where $\nu_1 \ll \mu$, $\nu_2 \perp \mu$, then $\nu_2|_Q \perp \mu$; hence by Proposition (1),

$$T^*(\nu_2|_Q) \perp \mu.$$

On the other hand

$$T^*(\nu_1|_Q) + T^*(\nu_2|_Q) = T^*(S^*\mu|_Q) = \mu|_{S^{-1}(Q)}.$$

Hence $T^*(\nu_2|_Q) \ll \mu|_{S^{-1}(Q)}$. Consequently $T^*(\nu_2|_Q) = 0$ and $\mu|_{S^{-1}(Q)} = T^*(\nu_1|_Q) \ll T^*(\mu|_Q)$, since $\mu_1 \ll \mu_2$ implies

$$T^*\mu_1 \ll T^*\mu_2.$$

Definition (3): (T, μ) is said to possess the strong Sard property if, for any measurable V, TV is universally measurable and there exists a non-negative a.s. finite random variable Λ such that

$$\mu(TV) \leq \int_V \Lambda d\mu.$$

Proposition (3): Let T possess the strong Sard property, set $M = \{w : \Lambda(\omega) \neq 0\}$. Assume that T possesses a measurable right inverse, then

$$\mu \ll T^*(\mu|_M)$$

and

$$S^*\mu \ll \mu|_M.$$

Proof: Note that, since S is injective, the set $S(A)$ is measurable for any measurable subset A of W . We have

$$\mu(A) = \mu(TSA) \leq \int_{SA} \Lambda d\mu = \int_W 1_{SA} \Lambda d\mu \leq \int 1_A(T\omega) \Lambda d\mu$$

which proves the first part. In order to prove the second part

$$\mu(S^{-1}(A)) \leq \mu(TA) \leq \int_A \Lambda d\mu,$$

hence $S^*\mu \ll \mu|_M$ which completes the proof.

From here on, we shall be working again in the frame of an abstract Wiener space (W, H, μ) .

Proposition (4): Suppose that u is $\eta - H - C^1$ with the corresponding set Q and that there exists a measurable map $S : T(W) \mapsto W$ s. t. $S(T(w)) = w\mu$ - a. s. (i. e., S is a left inverse). Then

$$S^*(\mu|_{T(Q)}) \approx \mu|_{M \cap Q} \text{ where}$$

$$M = \{w : \det_2(I + \nabla u(w)) \neq 0\}.$$

Proof: From the change of variables formula, we have, for any $f \in C_b^+(W)$,

$$E[f \circ S \circ T 1_Q | \Lambda] = E[f \circ S \cdot N(w, Q)] \text{ where}$$

$N(w, Q)$ is the multiplicity of T on Q and note that in this case we have $N(w, Q) = 1_{T(Q)}(w)$. Hence we have

$$E[f \cdot 1_Q | \Lambda] = E[f \circ S \cdot 1_{T(Q)}]$$

and the proof follows.

Corollary (2): Suppose moreover that u is $H - C_{loc}^1$, then we have

$$S^*(\mu|_{T(Q)}) \approx \mu|_M.$$

We say that a shift $T = I_W + u$ is locally monotone if there exists an increasing sequence (W_n) of measurable subsets of W which covers it almost surely and some $(u_n; n \in \mathbb{N}) \subset \cup_{p>1} \mathbb{D}_{p,1}(H)$ such that $u = u_n$ almost surely on W_n and $\langle (I_H + \nabla u_n(w))h, h \rangle \geq 0$ almost surely for any $h \in H$ (the negligible set may depend on h). For such a shift T (cf., [11]) it is known that

$$E[f \circ T | \Lambda] \leq E[f],$$

for any $f \in C_b^+(W)$.

Proposition (5): Let $u : W \mapsto H$ be $H - C_{loc}^1$ and $T = I_W + u$ be locally monotone. Then T possesses a left inverse S and we have

$$S^*(\mu|_{T(Q)}) \approx \mu|_M.$$

In fact

$$E[f \circ S 1_{T(Q)}] = E[f | \Lambda],$$

for any $f \in C_b(W)$.

Moreover

$$\frac{dT^*(\mu|_M)}{d\mu}(w) = 1_{T(Q)} \frac{1}{|\Lambda_u(Sw)|},$$

μ almost surely.

Proof: Let us show that T possesses a measurable left inverse on Q . In fact, from Theorem (5) and from the monotonicity assumption, we have (c.f. [11]),

$$E[f \circ T \cdot | \Lambda] = E[f \circ N(w, Q)] \leq E[f],$$

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for any $f \in C_b^+(W)$. Hence $0 \leq N(w, Q) \leq 1$. We have $T(Q) = \{w : N(w, Q) = 1\}$ almost surely. Let T_Q be the restriction of T to Q and denote by U the set

$$U = T_Q(Q) \cap \{w : N(w, Q) = 1\}.$$

Define $S : U \rightarrow Q$ as $S(T_Q y) = y$. Note that, if $w = T_Q y = T_Q y'$ then $y = y'$ since $N(w, Q) = 1$, hence S is well-defined on U . If $A \in B(W)$, then

$$S^{-1}(A \cap Q) = \{z \in W : N(z, Q) = 1\} \cap T(A \cap Q),$$

as $T(A \cap Q)$ is in the universal sigma algebra by Theorem (2.1.6), S is measurable with respect to the trace of this sigma algebra on U . To show the equivalence, note that we have

$$E[f \circ T \cdot |\Lambda] = E[f 1_{T(Q)}]$$

for any positive, bounded, measurable function f on W . Using this and the construction of S ,

$$\begin{aligned} E[f 1_U \circ T |\Lambda] &= E[f 1_U \circ T 1_Q |\Lambda] = \\ &= E[f \circ S \circ T 1_U \circ T 1_Q |\Lambda] = \\ &= E[f \circ S 1_U 1_{T(Q)}] = \\ &= E[f \circ S 1_{T(Q)}] \end{aligned}$$

since $U = T(Q)$ almost surely. Moreover

$$\begin{aligned} E[1_U \circ T |\Lambda] &= E[1_U N(w, Q)] = \\ &= E[N(w, Q)] = \\ &= E[|\Lambda|] \end{aligned}$$

and this implies that $1_U \circ T = 1$ almost surely on the set $\{\Lambda \neq 0\}$. Combining this with the above relation, we obtain

$$E[f |\Lambda] = E[f \circ S 1_{T(Q)}]$$

Note that $f \circ S$ is well-defined on the set $T(Q)$ since it is almost surely equal to U . Let us now calculate the Radon-Nikodym density of $T^*(\mu_M)$:

$$\begin{aligned} E[f \circ T 1_M] &= E\left[f \circ T 1_M \frac{|\Lambda|}{|\Lambda|}\right] = \\ &= E\left[f \sum_{y \in T^{-1}\{w\} \cap Q} \frac{1}{|\Lambda(y)|}\right] = \\ &= E\left[f 1_U \sum_{y \in T^{-1}\{w\} \cap Q} \frac{1}{|\Lambda(y)|}\right] = \\ &= E\left[f \frac{1}{|\Lambda(Sw)|} 1_{T(Q) \cap Q}\right] = \\ &= E\left[f \frac{1}{|\Lambda(Sw)|} 1_{T(Q)}\right]. \end{aligned}$$

This completes the proof.

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PRIMARY CONCEPTS OF ENERGY AND ENERGY SOURCES IN PHYSICS

Abstract: The article discusses the possibilities of forming concepts related to primary energy and energy sources in school physics education. The article also explores the possibilities for students to gain an initial understanding of the physical landscape of the universe through fundamental and practical concepts of energy.

Key words: Energy, the source of energy, the physical view of the universe, space, time and matter, the particle, the body, the circulation and storage of energy.

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Introduction

One of the most pressing issues in the world is energy and energy resources. The main reason for this is that scientists predict that the amount of basic raw materials used in energy has been declining rapidly in recent years. Indeed, the earth's oil, gas, coal, peat, and other fuel reserves have evolved over hundreds of millions of years, as a result of the decay and chemical reactions of existing organic matter on Earth, at present, the use of these resources is unprecedented. Therefore, humanity is faced with the urgent problem of life and death, which must be met in order to fully meet the needs of the world's population for energy in the future. One of the effective solutions to this is considered to be the development and promotion of alternative and renewable energy sources.

In the best practices of developed countries, large-scale practical programs are being implemented in the field of renewable energy production and the provision of electricity and heat to the population. It is one of the requirements of the time that the knowledge of these innovations and discoveries be incorporated into the educational process. This will play an important role in the future development of students

in this field. The fundamental laws of energy technology, that is, energy production, the processes of transformation into each other are introduced in a physics course. But what is energy?, how does it appear?, what is the connection between the types of energy?, students understand the full answers to the questions, their perception is much more complex. The purpose of this article is to develop students' skills in using these types of energy sources, some suggestions and recommendations are made and analyzed on the possibilities of delivering scientific materials to students in the process of teaching physics on the need to use these types of energy. In the creation of the energy of the future, the protection of human energy sources, the formation of a culture of rational and economical production will play an important role.

Since the fundamental laws and laws of energy and energy formation processes are studied in physics, the course of physics should include modern knowledge and scientific materials on energy sources. At the same time, it is very difficult for schoolchildren to directly understand and imagine the scientific material on the formation of these types of energy

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sources. Therefore, it is necessary to methodologically and didactically process scientific materials on the physical processes of formation of energy sources and turn them into educational material. Although monographs, textbooks, manuals, and guidelines have been developed by Methodist scholars in the field of physics around the world, but to the science of physics these materials, the scientific ideas of the processes of energy formation in the universe, have not yet been fully reflected.

The Republic of Uzbekistan has also conducted scientific research and pedagogical research in this area. In particular, in pedagogical research conducted by H.O. Jo'rayev at Bukhara State University, research was conducted on the possibility of forming the concept of alternative and renewable energy sources in the physics course of professional colleges [1]. Scientific and pedagogical research conducted by U.B. Abdiev at Termez State University includes scientific research on improving the content of physics based on the teaching of materials on alternative and renewable energy sources at all stages of continuous physics education [2]. In our work, we present some suggestions and recommendations for the formation of specific competencies in the teaching of physics in the field of alternative and renewable energy sources.

It is known that in all sections of the physics course, special attention is paid to the amount of energy in the mechanisms of occurrence of physical phenomena and processes related to the concept of energy. Because the existence of a particle shows that it has energy. However, when it comes to students' energy sources, energy production is not about the energy of each particle, but about a set of particles or the energy that is generated in a system. The essence of the recommendations we offer is that the reader should first pay more attention to the elementary states of energy production. For example, let's look at the processes of energy production in the types of energy

sources in the universe, the fundamental laws of physics. Students should first have the following concepts and ideas:

- Every particle has energy, it consumes energy continuously, it constantly replenishes the energy of the particle, that is, it is repeated;

- An energy system is formed when a set of particles participates in the formation of energy, and as a result of the action of this energy system, the energy of other surrounding energy systems either increases or decreases;

- In renewable energy systems, the energy absorption and energy release of substances occur according to the laws of nature;

- The formation and storage of energy from one species to another is a continuous process based on the interdependence of space, time and matter.

- The change, interaction, and continuous rotation of existing matter and their energies in space also lead to the emergence or disappearance of new worlds.

So, it is important to understand that the content of this information is the result of the influence of energy sources on events and processes that occur in nature.

Indeed, given that the universe itself is made up of space, matter, and time, a perfect understanding of the interactions between energy sources in understanding the events and processes that take place in it will help them form a sufficient imagination. Therefore, in the physics course, it is necessary to form a fundamental idea of energy before explaining to students the laws of energy sources, energy circulation and storage. Only then will the student be able to understand energy sources and their physical laws, and be able to observe independently. Table 1 below provides some recommendations for shaping basic energy concepts in physics education.

Table 1

№	Basic physical concepts, imagination, laws	Summary and meaning	Dependence on events and processes in the universe
1	Energy	Every particle has energy.	The energy of all the particles in the universe is constantly changing. Energy sustains the continuous movement of material beings.
2	Energy conservation	Energy is constantly moving and regenerating in matter, in motion, and in interactions with objects.	Represents the conservation of energy in relation to space, time and matter. Namely, existing matter represents this energy, and this energy is never lost. Energy is stored in every particle in the universe.
3	Energy cycle	It is explained by the transformation of energy from one form to another in the occurrence of events and processes in nature. It is replaced by the conversion	Because of the laws of continuous motion of matter, energy is always transformed from one type to another. During the energy cycle, an event or process takes

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	of energy from one form to another. For example, when potential energy is converted into kinetic energy, the body moves. However, due to the presence of the body, the potential energy has a regenerative property.	place in nature. The duration of these events and processes in the universe is characterized by quantitative values of energy. Remember that a normal battery takes a certain amount of time to fully consume and fully convert to another form of energy.
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It can be seen from the table that when students form initial ideas and then give information about a physical event or process and its laws, students can form clear and sufficient ideas. It is also possible to

develop students' ability to understand the universe and its physical landscapes independently through the concept of energy.

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ABOUT NON-ARCHIMEDIAN FUNCTION DYNAMICAL SYSTEM

Abstract: In this paper we consider the discrete time p -adic dynamic system of the family of rational functions in the form $\frac{1}{x^2+a}$. In order to solve the problem in this study, a number of real non-negative functions were constructed using the properties of the p -adic norm and some substitutions. The following conclusions were drawn about the discrete time dynamics of p -adic rational functions under consideration using their results by studying their dynamics:

This rational function cannot have a unique fixed point, the parameter a has two fixed points at a single value of $a = -\frac{3}{\sqrt[3]{4}}$, and the parameter a has three fixed points at the values of $a \neq -\frac{3}{\sqrt[3]{4}}$ proved to be. The p -adic dynamical system with two fixed points was studied at $p = 2$. Conditions were found for the parameters that attractor and indifferent fixed points. Also, basin of attraction, Siegel disks were found and trajectories were studied.

Key words: p -adic norm, fixed point, attractor fixed point, basin of attraction, indifferent fixed point, Siegel disk, a maximum Siegel disk ($SI((x))$), 2-adic norm, open ball, closed ball, sphere.

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Introduction

In the world many scientific and applied research are reduced to the studies that have focused on discrete-time dynamics of the functions defined in Archimedean or non-Archimedean fields. p -Adic dynamical systems generated by rational functions are effective in informatics, digital analysis and cryptography, psychodynamics and automation theory, genetic coding and population management. In p -adic analysis, rational functions play an important role similar to those of analytical functions in complex analysis. Therefore, the study of the dynamics of rational functions in the field of p -adic numbers is one of the most important tasks in the theory of dynamical systems.

It is known that the analytic functions play important role in complex analysis. In the p -adic analysis the rational functions play a similar role to the analytic functions in complex analysis [1]. Therefore, naturally one arises a question to study the dynamics of these functions in the p -adic analysis.

The study of p -adic dynamical systems arises in Diophantine geometry in the constructions of

canonical heights, used for counting rational points on algebraic vertices over a number field, as in [2].

In [3, 4] p -adic field have arisen in physics in the theory of superstrings, promoting questions about their dynamics. Also some applications of p -adic dynamical systems to some biological, physical systems has been proposed in [5,7,8,3,9].

Moreover p -adic dynamical systems are effective in computer science (straight line programs), in numerical analysis and in simulations (pseudorandom numbers), uniform distribution of sequences, cryptography (stream ciphers, T -functions), combinatorial (Latin squares), automata theory and formal languages, genetics. The monograph [10] contains the corresponding survey (see also [11,12] for the theory and applications of p -adic dynamical systems).

In [7, 9] the behavior of a p -adic dynamical system $f(x) = x^n$ in the fields of p -adic numbers \mathbb{Q}_p and \mathbb{C}_p were studied.

In [6] the properties of the nonlinear p -adic dynamic system $f(x) = x^2 + c$ with a single

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parameter c on the integer p -adic numbers \mathbb{Z}_p are investigated. This dynamic system illustrates possible brain behaviors during remembering.

In [13], dynamical systems defined by the functions $f_q(x) = x^n + q(x)$, where the perturbation $q(x)$ is a polynomial whose coefficients have small p -adic absolute value, was studied.

Preliminaries

p -adic numbers. Let \mathbb{Q} be the field of rational numbers and p is a fixed prime number. The greatest common divisor of the positive integers n and m is denoted by (n, m) . Every rational number $x \neq 0$ can be represented in the form $x = p^{\gamma(x)} \frac{n}{m}$, where $\gamma(x), n \in \mathbb{Z}$, m is a positive integer, $(p, n) = 1, (p, m) = 1$.

The p -adic norm of rational number x is given by

$$|x|_p = \begin{cases} p^{-\gamma(x)}, & \text{for } x \neq 0, \\ 0, & \text{for } x = 0. \end{cases}$$

It has following properties:

- 1) $|x|_p \geq 0$ and $|x|_p = 0$ if and only if $x = 0$.
- 2) $|xy|_p = |x|_p |y|_p$,
- 3) The strong triangle inequality $|x + y|_p \leq \max\{|x|_p, |y|_p\}$,

$$3.1) \text{ if } |x|_p \neq |y|_p \text{ then } |x + y|_p = \max\{|x|_p, |y|_p\}$$

$$3.2) \text{ if } |x|_p = |y|_p \text{ then } |x + y|_p \leq |x|_p,$$

This is a non-Archimedean one.

The completion of \mathbb{Q} with respect to p -adic norm defines the p -adic \mathbb{Q}_p .

The algebraic completion of \mathbb{Q}_p is denoted by \mathbb{C}_p and it is called *complex p -adic numbers*. For any $a \in \mathbb{C}_p$ and $r > 0$ denote

$$\begin{aligned} U_r(a) &= \{x \in \mathbb{C}_p : |x - a|_p < r\}, \\ V_r(a) &= \{x \in \mathbb{C}_p : |x - a|_p \leq r\}, \\ S_r(a) &= \{x \in \mathbb{C}_p : |x - a|_p = r\}. \end{aligned}$$

Dynamical system in \mathbb{C}_p . Recall some known facts concerning dynamical systems (f, U) in \mathbb{C}_p , where $f: U \rightarrow f(x) \in U$ is an analytic function and $U = U_r(a)$ or \mathbb{C}_p .

Now let $f: U \rightarrow U$ be an analytic function. Denote $f^n = \underbrace{f \circ \dots \circ f}_n$.

If $f(x_0) = x_0$ then x_0 is called a fixed point. The set of all fixed points of f is denoted by $Fix(f)$. A fixed point x_0 is called an attractor if there exists a neighborhood $U(x_0)$ of x_0 such that for all points $x \in U(x_0)$ it holds $\lim_{n \rightarrow \infty} f^n(x) = x_0$. If x_0 is an attractor then its basin of attraction is

$$A(x_0) = \{x \in \mathbb{C}_p : f^n(x) \rightarrow x_0, n \rightarrow \infty\}.$$

Let x_0 be a fixed point of a function $f(x)$. Put $\lambda = f'(x_0)$. The point x_0 is attractive if $0 < |\lambda|_p < 1$, indifferent if $|\lambda|_p = 1$.

The ball $U_r(x_0)$ (contained in V) is said to be a Siegel disk if each sphere $S_\rho(x_0), \rho < r$ is an invariant sphere of $f(x)$, i.e. if $x \in S_\rho(x_0)$ then all iterated points $f^n(x) \in S_\rho(x_0)$ for all $n = 1, 2, \dots$. The union of all Siegel disks with the center at x_0 is said to a maximum Siegel disk and denoted by $SI(x_0)$.

Main part

In this paper we considered the function f can be written in the following form:

$$f(x) = \frac{1}{x^2 + a}, \quad a \in \mathbb{C}_p, \quad (1)$$

where $x \neq \hat{x}_{1,2} = \pm\sqrt{-a}$.

It is easy to see that for rational function (1) the equation $f(x) = x$ for fixed points is equivalent to the equation

$$x^3 + ax - 1 = 0. \quad (2)$$

Since \mathbb{C}_p is algebraic closed the equation (2) may have three solution with one of the following relations:

- (i) One solution having multiplicity three;
- (ii) Two solutions, one of which has multiplicity two;
- (iii) Three distinct solutions.

Theorem 1. For (1) rational functions, the following holds:

1. (1) rational function cannot have a unique fixed point.
2. The function (1) has two distinct fixed points if and only if $a = -\frac{3}{\sqrt[3]{4}}$.

Proof. 1. Assume (1) has a unique fixed point, say x_0 . Then the LHS of equation (2) (which is equivalent to $f(x) = x$) can be written as

$$x^3 + ax - 1 = x^3 - 3x_0x^2 + 3x_0^2x - x_0^3.$$

Consequently,

$$\begin{cases} -3x_0 = 0 \\ 3x_0^2 = a \\ x_0^3 = 1 \end{cases}.$$

It is easy to see from the last equations that our assume is incorrect. Hence, (1) function does not have a unique fixed point.

2. Denote by x_1 and x_2 solution of equation (2), x_1 has multiplicity two. Then we have $x^3 + ax - 1 = (x - x_1)^2(x - x_2)$ and $x^3 + ax - 1 = x^3 - (2x_1 + x_2)x^2 + (2x_1x_2 + x_1^2)x - x_1^2x_2$.

Hence,

$$\begin{cases} 2x_1 + x_2 = 0 \\ 2x_1x_2 + x_1^2 = a \\ x_1^2x_2 = 1 \end{cases}.$$

As are result

$$\begin{cases} x_1 = -\frac{1}{\sqrt[3]{2}} \\ x_2 = \sqrt[3]{4} \\ a = -\frac{3}{\sqrt[3]{4}} \end{cases}.$$

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The function has $x_1 = -\frac{1}{\sqrt[3]{2}}$ and $x_2 = \sqrt[3]{4}$ two fixed points at a single value of $a = -\frac{3}{\sqrt[3]{4}}$. Theorem is proved.

Corollary. If $a \neq -\frac{3}{\sqrt[3]{4}}$, then the function (1) has three distinct fixed points.

We know the rational function (1) has two distinct fixed points if and only if $a = -\frac{3}{\sqrt[3]{4}}$. When $a = -\frac{3}{\sqrt[3]{4}}$ it is easy to see that (1) function has two distinct fixed points $x_1 = -\frac{1}{\sqrt[3]{2}}$ and $x_2 = \sqrt[3]{4}$

Let $f: U \rightarrow U$ and $g: V \rightarrow V$ be two maps. f and g are said to be topologically conjugate if there exists a homeomorphism $h: U \rightarrow V$ such that, $h \circ f = h \circ g$. The homeomorphism h is called a topological conjugacy. Mappings that are topologically conjugate are completely equivalent in terms of their dynamics. For example, if f is topologically conjugate to g via h , and x_0 is a fixed point for f , then $h(x_0)$ is fixed point for g . Indeed, $h(x_0) = hf(x_0) = gh(x_0)$.

Let homeomorphism $h: \mathbb{C}_p \rightarrow \mathbb{C}_p$ is defined by $x = h(t) = t + x_1 = t - \frac{1}{\sqrt[3]{2}}$. So $h^{-1}(x) = x + \frac{1}{\sqrt[3]{2}}$. Note that, the function f is topologically conjugate $h^{-1} \circ f \circ h$. We have

$$f(x) = \frac{\frac{1}{\sqrt[3]{2}}x^2 - \sqrt[3]{2}x}{x^2 - \sqrt[3]{4}x - \sqrt[3]{2}} \tag{3}$$

where $x \neq \check{x}_{1,2} = \frac{1 \pm \sqrt{3}}{\sqrt[3]{2}}$.

Thus we study the dynamical system (f, \mathbb{C}_p) with f given by (3). Note that, function (3) has two fixed points $x_1 = 0$ and $x_2 = \frac{3}{\sqrt[3]{2}}$. So we have $f'(x_1) = 1$ and $f'(x_2) = 8$. Thus, the point $x_1 = 0$ is an indifferent point for (3). For any $x \in \mathbb{C}_p$, $x \neq \check{x}_{1,2}$, by simple calculation we get

$$|f(x)|_p = |x|_p \frac{\left| \frac{1}{\sqrt[3]{2}}x - \sqrt[3]{2} \right|_p}{|x - \check{x}_1|_p |x - \check{x}_2|_p} \tag{4}$$

Denote $P = \{x \in \mathbb{C}_p: \exists n \in \mathbb{N} \cup \{0\}, f^n(x) \in \{\check{x}_1, \check{x}_2\}\}$.

Case $p = 2$.

Now let us calculate the 2-adic norm of \check{x}_1 and \check{x}_2 . We know $\sqrt{3} \notin \mathbb{Q}_2$. Consider the quadratic extension of $K = \mathbb{Q}_2(\sqrt{3})$. We can write any element of K in the form $a + b\sqrt{3}$. $N_{K/\mathbb{Q}_2}(a + b\sqrt{3}) = a^2 - 3b^2$.

$$\begin{aligned} |1 + \sqrt{3}|_2 &= \sqrt{|N_{K/\mathbb{Q}_2}(1 + \sqrt{3})|_2} = \sqrt{|1 - 3|_2} \\ &= \frac{1}{\sqrt{2}} \end{aligned}$$

We know $\sqrt[3]{2} \notin \mathbb{Q}_2$. Consider the cubic extension of $K = \mathbb{Q}_2(\sqrt[3]{2})$. We can write any element of K in the form $a + b\sqrt[3]{2} + c\sqrt[3]{4}$.

$$\begin{aligned} N_{K/\mathbb{Q}_2}(a + b\sqrt[3]{2} + c\sqrt[3]{4}) &= a^3 + 4c^3 + 2b^3 - 6abc. \\ |\sqrt[3]{2}|_2 &= \sqrt[3]{|N_{K/\mathbb{Q}_2}(\sqrt[3]{2})|_2} = \sqrt[3]{|2|_2} = \frac{1}{\sqrt[3]{2}} \end{aligned}$$

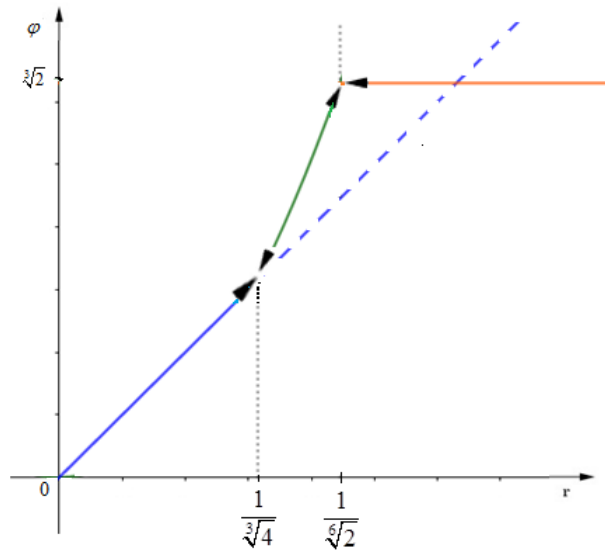
It follows that $|\check{x}_1|_2 = |\check{x}_2|_2 = \frac{1}{\sqrt[6]{2}}$, and for coefficient we get $|\frac{1}{\sqrt[3]{2}}|_2 = \sqrt[3]{2}$. From this relation and equality (4) we can define the function $\varphi: (0, +\infty) \rightarrow (0, +\infty)$ by

$$\varphi(r) = \begin{cases} r, & \text{if } r < \frac{1}{\sqrt[3]{4}}, \\ \tilde{a}, & \text{if } r = \frac{1}{\sqrt[3]{4}}, \\ \sqrt[3]{4}r^2, & \text{if } \frac{1}{\sqrt[3]{4}} < r < \frac{1}{\sqrt[6]{2}}, \\ \tilde{b}, & \text{if } r = \frac{1}{\sqrt[6]{2}}, \\ \sqrt[3]{2}, & \text{if } r > \frac{1}{\sqrt[6]{2}}. \end{cases}$$

where \tilde{a} and \tilde{b} some positive numbers with $\tilde{a} < \frac{1}{\sqrt[3]{4}}$, and $\tilde{b} > \sqrt[3]{2}$. The graph of the function φ is

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Picture 1.

Lemma 1. If $p = 2$ and $x \in S_r(x_1)$, then for the function (3) the following holds

$$|f^n(x)|_2 = \varphi^n(r)$$

By this lemma we see that the real dynamical system compiled from φ^n is directly related to the 2-adic dynamical system $f^n(x)$, $n \geq 1$, $x \in C_2 \setminus P$.

The following lemma gives properties to this real dynamical system.

Lemma 2. The dynamical system generated by $\varphi(r)$ has the following properties:

1. $Fix(\varphi) = \{r: 0 \leq r < \frac{1}{\sqrt[3]{4}}\} \cup \{\frac{1}{\sqrt[3]{4}}: \text{ if } \tilde{\alpha} = \frac{1}{\sqrt[3]{4}}\} \cup \{\sqrt[3]{2}\}$.
2. If $r > \frac{1}{\sqrt[3]{4}}$, then

$$\lim_{n \rightarrow \infty} \varphi^n(r) = \sqrt[3]{2}.$$

3. If $r = \frac{1}{\sqrt[3]{4}}$ and $\tilde{\alpha} < \frac{1}{\sqrt[3]{4}}$, then $\varphi^n(r) = \tilde{\alpha}$ for all $n \geq 1$.

Proof. 1. This is the result of a simple analysis of the equation $\varphi(r) = r$.

2. By definition of $\varphi(r)$, for $r > \frac{1}{\sqrt[3]{4}}$ we have $\varphi(r) = \sqrt[3]{2}$, i.e., the function is constant. For $r = \frac{1}{\sqrt[3]{4}}$ we have $\varphi(\frac{1}{\sqrt[3]{4}}) = \tilde{\alpha} \geq \sqrt[3]{2}$ and thus we get $\varphi(\frac{1}{\sqrt[3]{4}}) > \frac{1}{\sqrt[3]{4}}$. Consequently,

$$\lim_{n \rightarrow \infty} \varphi^n\left(\frac{1}{\sqrt[3]{4}}\right) = \sqrt[3]{2}.$$

Assume now $\frac{1}{\sqrt[3]{4}} < r < \sqrt[3]{2}$ then $\varphi(r) = \sqrt[3]{4}r^2$, $\varphi'(r) = 2\sqrt[3]{4}r > 2$ and

$$\varphi\left(\left(\frac{1}{\sqrt[3]{4}}, \frac{1}{\sqrt[3]{2}}\right)\right) = \left(\frac{1}{\sqrt[3]{4}}, \sqrt[3]{2}\right) \cup \{\tilde{\alpha}\}.$$

Since $\varphi'(r) > 2$ for $r \in \left(\frac{1}{\sqrt[3]{4}}, \frac{1}{\sqrt[3]{2}}\right)$ there exists $n_0 \in \mathbb{N}$ such that $\varphi^{n_0}(r) \in \left(\frac{1}{\sqrt[3]{4}}, \sqrt[3]{2}\right)$. Hence for $n \geq n_0$ we get $\varphi^n(r) > \frac{1}{\sqrt[3]{2}}$ and consequently

$$\lim_{n \rightarrow \infty} \varphi^n(r) = \sqrt[3]{2}.$$

3. If $r = \frac{1}{\sqrt[3]{4}}$ and $\tilde{\alpha} < \frac{1}{\sqrt[3]{4}}$ then $\varphi(r) = \tilde{\alpha} < \frac{1}{\sqrt[3]{4}}$. Moreover, $\tilde{\alpha}$ is a fixed point for the function $\varphi(r)$. Thus for $n \geq 1$ we obtain $\varphi^n(r) = \tilde{\alpha}$.

By Lemma 1 and Lemma 2 we get

Theorem 2. The 2-adic dynamical system generated by function (3) has the following properties:

1. $SI(x_1) = U_{\frac{1}{\sqrt[3]{4}}}(0)$.
2. $x_2 \in S_{\sqrt[3]{2}}(0)$. The fixed point x_2 is attractive and

$$A(x_2) = C_2 \setminus (V_{\frac{1}{\sqrt[3]{4}}}(0) \cup P).$$

3. If $x \in S_{\frac{1}{\sqrt[3]{4}}}(0)$, then there exists $\mu_1 < \frac{1}{\sqrt[3]{4}}$ such that $f^m(x) \in S_{\mu_1}(0)$ for any $m \geq 1$.

Proof. 1. By Lemma 1 and part 1 of Lemma 2 we see that spheres $S_r(0)$, $r < \frac{1}{\sqrt[3]{4}}$ and $S_{\sqrt[3]{2}}(0)$ are invariant for f . Thus $SI(x_1) = U_{\frac{1}{\sqrt[3]{4}}}(0)$. Consequently,

$$|x_2|_2 = \left|\frac{3}{\sqrt[3]{2}}\right|_2 = \sqrt[3]{2}, \text{ i.e., } x_2 \in S_{\sqrt[3]{2}}(0).$$

2. In this case x_2 will be attractive fixed point, i.e.,

$$|f'(x_2)|_2 = |2\sqrt[3]{2}|_2 = \frac{1}{2\sqrt[3]{2}} < 1.$$

From Lemma 1 and part 2 of Lemma 2 we have

$$\lim_{n \rightarrow \infty} f^n(x) \in S_{\sqrt[3]{2}}(0)$$

$$\text{for all } x \in S_r(0) \setminus P, \quad r > \frac{1}{\sqrt[3]{4}}.$$

Let $x \in S_{\sqrt[3]{2}}(0)$. We have

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$|f(x) - \frac{3}{\sqrt[3]{2}}|_2 = \left| x - \frac{3}{\sqrt[3]{2}} \right|_2 \cdot \frac{|-\sqrt[3]{4}x - \sqrt[3]{2}|_2}{|x^2 - \sqrt[3]{4}x - \sqrt[3]{2}|_2}$
 By $|-\sqrt[3]{4}x - \sqrt[3]{2}|_2 = \frac{1}{2\sqrt[3]{2}}$ and $|x - \check{x}_2|_2 = |x - \check{x}_1|_2 = \left| \frac{\sqrt{3}}{\sqrt[3]{2}} \right|_2 = \sqrt[3]{2}$ we get $|f(x) - \frac{3}{\sqrt[3]{2}}|_2 < |x - \frac{3}{\sqrt[3]{2}}|_2$ for any $x \in S_{\sqrt[3]{2}}(0) \setminus P$. Consequently,

$\lim_{n \rightarrow \infty} f^n(x) = x_2$, for all $x \in S_r(0) \setminus P$, $r > \frac{1}{\sqrt[3]{4}}$
 i.e., $A(x_2) = \mathbb{C}_2 \setminus (V_{\frac{1}{\sqrt[3]{4}}}(0) \cup P)$.

3. If $x \in S_{\frac{1}{\sqrt[3]{4}}}(0)$ then by (4) we have

$$|f(x)|_2 = \frac{1}{\sqrt[3]{4}} \cdot \frac{\left| \frac{1}{\sqrt[3]{2}}x - \sqrt[3]{2} \right|_2}{\left(\frac{1}{\sqrt[3]{2}} \right)^2} < \frac{1}{\sqrt[3]{4}}$$

Thus, there is $\mu_1 < \frac{1}{\sqrt[3]{4}}$ such that $f^m(x) \in S_{\mu_1}(0)$ for any $m \geq 1$ (see part 1 of Lemma 2). Hence if $x \in S_{\frac{1}{\sqrt[3]{4}}}(0)$, then there exists $\mu_1 < \frac{1}{\sqrt[3]{4}}$ such that $f^m(x) \in S_{\mu_1}(0)$ for any $m \geq 1$.

We note that

$$P = \bigcup_{k=0}^{\infty} P_k, \quad P_k = \left\{ x \in \mathbb{C}_2 : f^k(x) \in \{\check{x}_1, \check{x}_2\} \right\}.$$

Theorem 3. 1. $P_k \neq \emptyset$, for any $k = 0, 1, 2, \dots$

2. $P_k \subset S_{r_k}(0)$, where $r_k = \frac{1}{\sqrt[3]{2}} \cdot \left(\frac{1}{\sqrt[3]{2}} \right)^{\frac{2^k-1}{2^k}}$, $k = 0, 1, 2, \dots$

Proof. 1. In case $k = 0$ we have $P_0 = \{\check{x}_1, \check{x}_2\} \neq \emptyset$.

Assume for $k = n$ that $P_n = \left\{ x \in \mathbb{C}_p : f^n(x) \in \{\check{x}_1, \check{x}_2\} \right\} \neq \emptyset$.

Now for $k = n + 1$ to prove $P_{n+1} = \left\{ x \in \mathbb{C}_p : f^{n+1}(x) \in \{\check{x}_1, \check{x}_2\} \right\} \neq \emptyset$ we have to show that the following equation has at least one solution:

$$f^{n+1}(x) = \check{x}_i, \text{ for some } i = 1, 2.$$

By our assumption $P_k \neq \emptyset$, there exists $y \in P_n$ such that $f^n(y) \in \{\check{x}_1, \check{x}_2\}$. Now we show that there exists x such that $f(x) = y$. We note that the equation $f(x) = y$ can be written as

$$\left(\frac{1}{\sqrt[3]{2}} - y \right) x^2 - (\sqrt[3]{2} - \sqrt[3]{4}y)x + \sqrt[3]{2}y = 0. \quad (5)$$

Since $\check{x}_1, \check{x}_2 \in S_{\frac{1}{\sqrt[3]{2}}}(0)$, by the Lemma 1 and the part 1 of Lemma 2 we know that $S_{\sqrt[3]{2}}(0)$ is an

invariant, consequently, $P \cap S_{\sqrt[3]{2}}(0) = \emptyset$. Thus $\frac{1}{\sqrt[3]{2}} \notin P$, hence, $\frac{1}{\sqrt[3]{2}} - y \neq 0$. Since \mathbb{C}_2 is algebraic closed the equation (5) has two solutions, say $x = t_1, t_2$. For $x \in \{t_1, t_2\}$ we get

$$f^{n+1}(x) = f^n(f(x)) = f^n(y) \in \{\check{x}_1, \check{x}_2\}.$$

Hence $P_{n+1} \neq \emptyset$. Therefore, by induction we get $P_k \neq \emptyset$, for any $k = 0, 1, 2, \dots$

2. We know that $|\check{x}_1|_2 = |\check{x}_2|_2 = \frac{1}{\sqrt[3]{2}}$. By (4) and part 2 of Lemma 2 for $x \in S_{\frac{1}{\sqrt[3]{2}}}(0)$, $x \neq \check{x}_{1,2}$ we have

$$\lim_{n \rightarrow \infty} f^n(x) \in S_{\sqrt[3]{2}}(0),$$

i.e., $S_{\frac{1}{\sqrt[3]{2}}}(0) \cap P = \{\check{x}_1, \check{x}_2\} = P_0$. Denoting $r_0 =$

$\frac{1}{\sqrt[3]{2}}$ we write $P_0 \subset S_{r_0}(0)$.

For each $k = 1, 2, 3, \dots$ we want to find some r_k such that the solution x of $f^k(x) = \check{x}_i$, (for some $i = 1, 2$) belongs to $S_{r_k}(0)$, i.e., $x \in S_{r_k}(0)$. By Lemma 1 we should have

$$\psi_{\frac{1}{\sqrt[3]{2}}}^k(r_k) = \frac{1}{\sqrt[3]{2}}$$

Now if we show that the last equation has unique solution r_k for each k , then we get

$$P_k = \left\{ x \in \mathbb{C}_2 : f^k(x) \in \{\check{x}_1, \check{x}_2\} \right\} \subset S_{r_k}(0).$$

By parts 1 and 3 of Lemma 2 we have $\frac{1}{\sqrt[3]{4}} < r_k \leq \frac{1}{\sqrt[3]{2}}$. Moreover, we have $r_0 = \frac{1}{\sqrt[3]{2}}$ and $\frac{1}{\sqrt[3]{4}} < r_k < \frac{1}{\sqrt[3]{2}}$ for each $k = 1, 2, \dots$. For such r_k , by definition of $\psi_{\frac{1}{\sqrt[3]{2}}}(r)$, we have

$$\psi_{\frac{1}{\sqrt[3]{2}}}(r_k) = \sqrt[3]{4}r_k^2.$$

Thus $\psi_{\frac{1}{\sqrt[3]{2}}}^k(r_k) = \frac{1}{\sqrt[3]{2}}$ has the form

$$\psi_{\frac{1}{\sqrt[3]{2}}}^k(r_k) = \frac{\sqrt[3]{2}^{2^k-1}}{\left(\frac{1}{\sqrt[3]{2}} \right)^{2(2^k-1)}} r_k^{2^k} = \frac{1}{\sqrt[3]{2}}$$

consequently,

$$r_k^{2^k} = \left(\frac{1}{\sqrt[3]{2}} \right)^{2^k} \cdot \left[\left(\frac{1}{\sqrt[3]{2}} \right)^{\frac{2^k-1}{2^k}} \right]^{2^k}.$$

Taking 2^k -root we obtain unique positive solution: $r_k = \frac{1}{\sqrt[3]{2}} \cdot \left(\frac{1}{\sqrt[3]{2}} \right)^{\frac{2^k-1}{2^k}}$.

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SEM MODEL ANALYSIS OF AIR CARGO SHIPPING EFFICIENCY IN UZBEKISTAN

Abstract: *Cargoes from Logistics are insured on preferential terms, customs always go through quickly, and the package of papers meets the latest requirements. Reliable fixation of the load in the compartment is dictated by practical considerations. In this article author study current status of the cargo shipment of airways network of Uzbekistan. Main purpose was found out correlation and regression analyses by using causality of selected variables during pandemic period. Results obtained by using Stata 16.0. Out of four variables three were statistically significant by using SEM model. As a conclusion due to restrictions majority sectors, we delayed or completely stopped shipping service.*

Key words: Cargo, shipment, economic effectiveness, SEM model, cost, airlines.

Language: English

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Introduction

The world air cargo market is developing every year, which is explained by the growing number of goods transported. Air transportation remains in demand for numerous reasons: corporate clients receive a guarantee of high-speed delivery, unlimited geography of transportation and minimal risks of theft. The company's clients regularly choose air cargo transportation in Uzbekistan and other international routes. Well organized companies' delivery of goods in accordance with the specified terms and requirements. Due to many years of cooperation with international airlines and agents, a flexible pricing policy and world-class service have been prepared for the company's Clients.

Today, cargo planes deliver every type of product. However, there are products that require special handling. A team of specialists monitors changes in the legal regulation of air transportation both in Uzbekistan and in world traffic. This guarantees the Clients of the transport and logistics provider a safe and prompt delivery, regardless of the characteristics of the cargo. When transporting

dangerous goods, there is a risk of damage to the aircraft or related goods. Majority employees are thoroughly familiar with the norms of such transportation and notify Clients in advance about the specifics of the transportation of goods requiring special handling.

Organization of air transportation from and to Uzbekistan. Air transportation of goods "Tashkent-Europe". International air transportation of goods in Europe (including the Balkans and Scandinavian countries). International air transportation of goods across Uzbekistan and the CIS. Air cargo transportation between Europe and the Caucasus. International air cargo transportation between Europe and Central, Southeast Asia. Air cargo transportation between Europe and China. Air cargo transportation between Europe and the USA [1].

Methods and Materials

Current research held based on quantitative method by using secondary source data from Stat.uz official Statistical Comity of the Republic of Uzbekistan. Data was times series and used various

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tests like Pearson Correlation and Spearman Correlation tests, OLS regression and SEM model was distributed.

Main outcomes and results obtained by using STATA 16.0.

Results

To receive a freight rate, please fill out the following form. Please note that goods from 1 pallet and / or over 500 kg are accepted for transportation.

To transport goods up to 500 kg, use the services of groupage cargo or air delivery. does not transport personal belongings [2].

According to statistics, the probability of getting into a plane crash is thousands of times less than getting into trouble on the track or while the train is moving. The situation is similar with international cargo transportation. Delivery of goods by air is the safest and fastest method of transportation over long distances [3].

Table 1. Summarize of the variables

. sum

Variable	Obs	Mean	Std. Dev.	Min	Max
year	21	2010	6.204837	2000	2020
sent_cargo~n	21	15.33333	9.104413	5.3	30.7
cargo_turn~m	21	122.3571	33.53852	76.7	219
totalcargo~m	21	67.18095	7.267024	54.6	83.8
totalsent_~n	21	942.4095	203.0648	707.6	1366.7
totaltrans~s	11	59762.36	101629.8	10524.4	362717.2

Table 1 indicates general four individual data summary.

Table 2. Description of the variables

Contains data

obs: 21
vars: 6

variable name	storage type	display format	value label	variable label
year	int	%8.0g		
sent_cargo~n	float	%8.0g		Sent_cargothousandtonn
cargo_turnove~m	float	%8.0g		Cargo_turnovermIntonn-km
totalcargo_tu~m	float	%8.0g		Totalcargo_turnoverbln-km
totalsent_car~n	float	%8.0g		Totalsent_cargomIntonn
totaltransport~s	double	%10.0g		Totaltransport_serviceblnuzs

According to the table 2 it is indicated total description of the given variables. So, sent total cargo, cargo turnover, total cargo turns over, total sent cargo

and total transportation goods of the republic of Uzbekistan.

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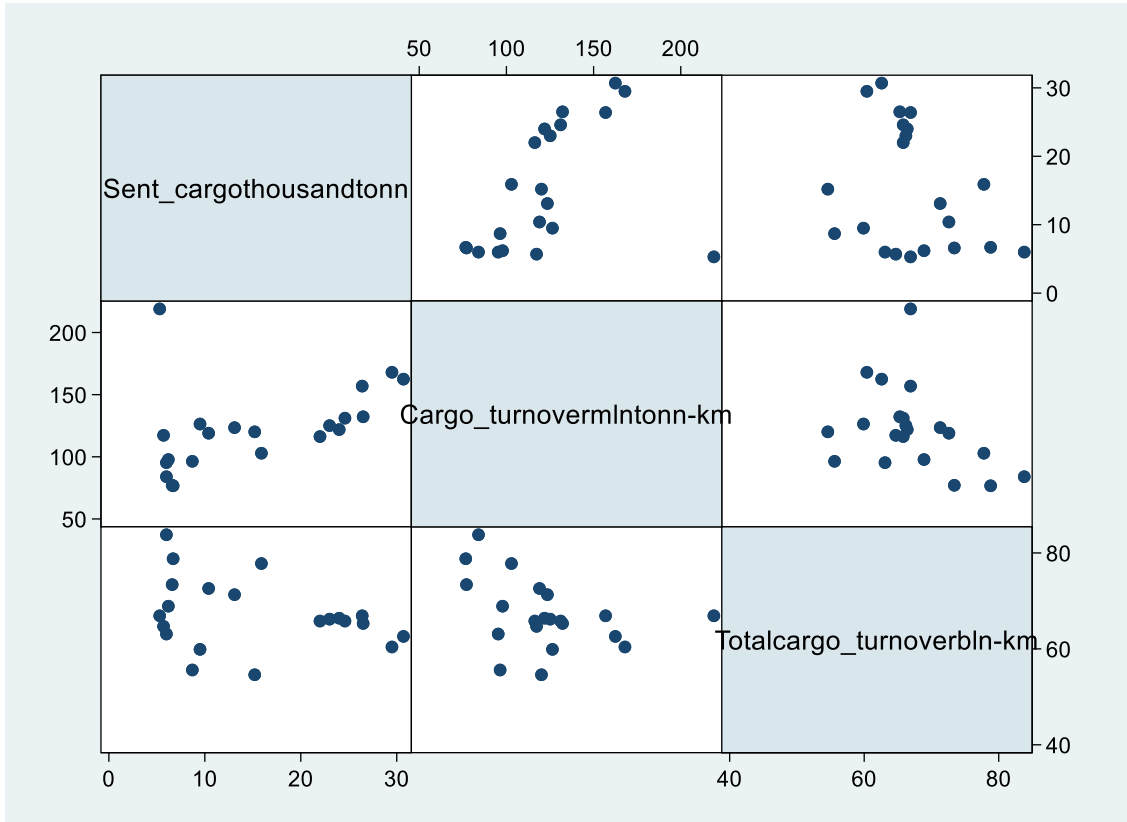


Figure 1. Graph matrix of the independent variables

Figure 1 explains correlation of the selected variables. Majority can be classified that cargo turnover and total sent cargo has a positive relationship.

```
twoway(scatter cargo_turnovermlntonnkm
sent_cargothousandtonn)(lfit cargo_
turnovermlntonnkm sent_cargothousandtonn)
```

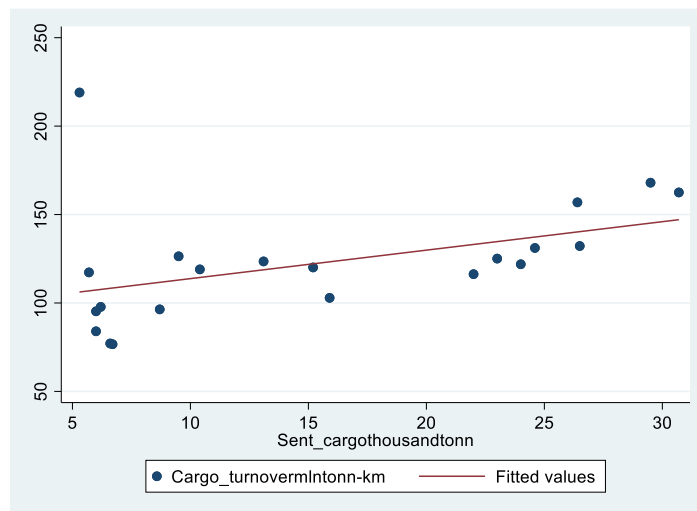


Figure 2. Twoway graph of scatter plot

If we see figure 2 association between sent_cargothousandtonn and cargo_turnovermlntonnkm scatterplot indicates positive relationship regression line. In case of air delivery of cargo by plane, it is additionally possible:

assistance in preparing the documents necessary for sending the cargo, forwarding, storage of cargo in warehouses, packaging and further shipment with a guarantee of safety [4].

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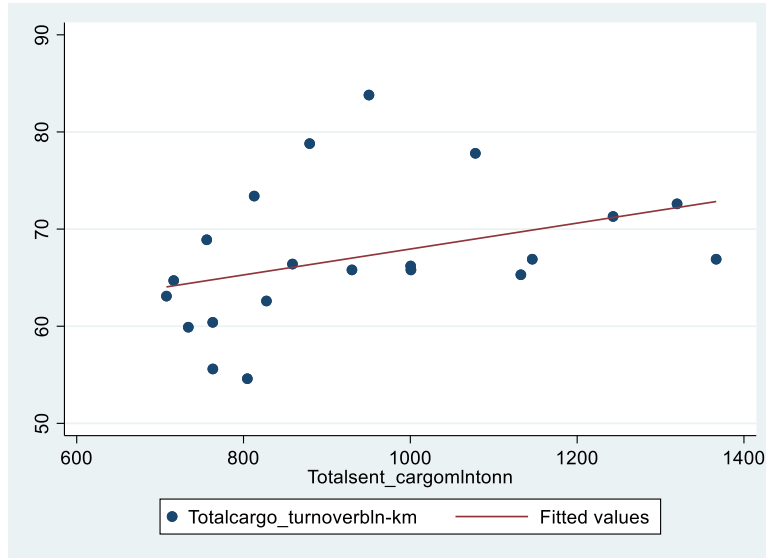


Figure 3. Twoway graph of total cargo turn over (bln/km)

Other case has been recorded total cargo turn over (bln/km) positive causality between variable. Air delivery minimizes any external factors, guaranteeing

the safety of the content and the promptness of order fulfillment.

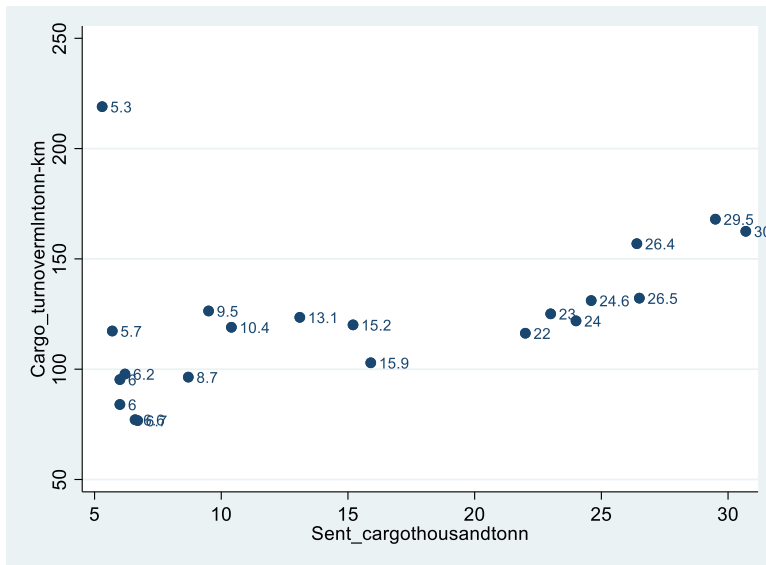


Figure 4. Matrix graph of descriptive statistics

By default, approximately three values are labeled and ticked on the y and x axes. When graphing only a few variables, increasing this often works well. The origin of the scatterplot matrix is unknown, although early written discussions may be found in Hartigan (1975), and Chambers et al. (1983). The scatterplot matrix has also been called the draftman’s

display and pairwise scatterplot. Regardless of the name used, we believe that the first “canned” implementation was by Becker and Chambers. So, Figure 4 states that sent cargo and cargo turn over spread sheet in graph.

Now we tested Pearson Correlation test which indicates at Table 3.

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Table 3. Pearson Correlation test

```
. pwcorr sent_cargothousandtonn cargo_turnovermlntonnkm total
> ltransport_serviceblnuzs,sig
```

	sent_c~n	cargo_~m	totalc~m	totals~n	totalt~s
sent_cargo~n	1.0000				
cargo_turn~m	0.4370 0.0476	1.0000			
totalcargo~m	-0.2996 0.1870	-0.3783 0.0909	1.0000		
totalsent_~n	0.0983 0.6717	0.4330 0.0499	0.3726 0.0962	1.0000	
totaltrans~s	0.0630 0.8541	0.1695 0.6182	0.1717 0.6137	0.2958 0.3772	1.0000

From the table we can see correlation value and it's efficiency.

Table 4. Spearman Correlation test

```
. spearman sent_cargothousandtonn cargo_turnovermlntonnkm total
> transport_serviceblnuzs
(obs=11)
```

	sent_c~n	cargo_~m	totalc~m	totals~n	totalt~s
sent_cargo~n	1.0000				
cargo_turn~m	0.4182	1.0000			
totalcargo~m	-0.7945	-0.3744	1.0000		
totalsent_~n	-0.7091	-0.0364	0.7991	1.0000	
totaltrans~s	-0.5364	-0.0545	0.7854	0.9364	1.0000

The next test was Pearson correlation which provides detailed information output, like p-value as described. After this test we used box plot which shows means

```
graph box cargo_turnovermlntonnkm
graph box sent_cargothousandtonn
```

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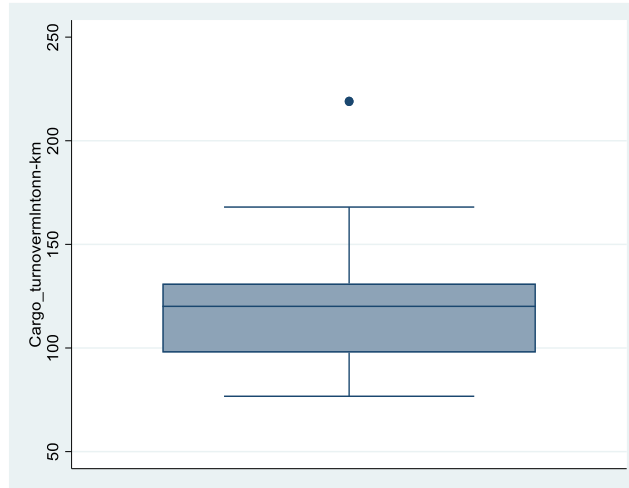


Figure 5. Graph box cargo turnover mln ton/km

75 percent of the given data how well distributed
 ib the graph 5. E can see from the graph that only one
 year value is out of the Q1 and Q3.

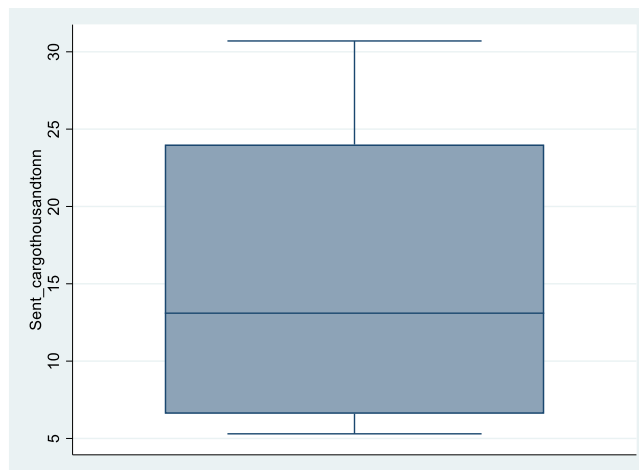


Figure 6. Graph box sent cargo turnover mln ton/km

For about figure 6 indicates other relationship by
 cargo shipment turnover.

Table 5. SK test cargo turnover mln ton/km

. sktest cargo_turnovermlntonnkm

Skewness/Kurtosis tests for Normality						
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint	Prob>chi2
cargo_turn~m	21	0.0242	0.0614	7.45		0.0241

Histogram cargo_turnovermlntonnkm

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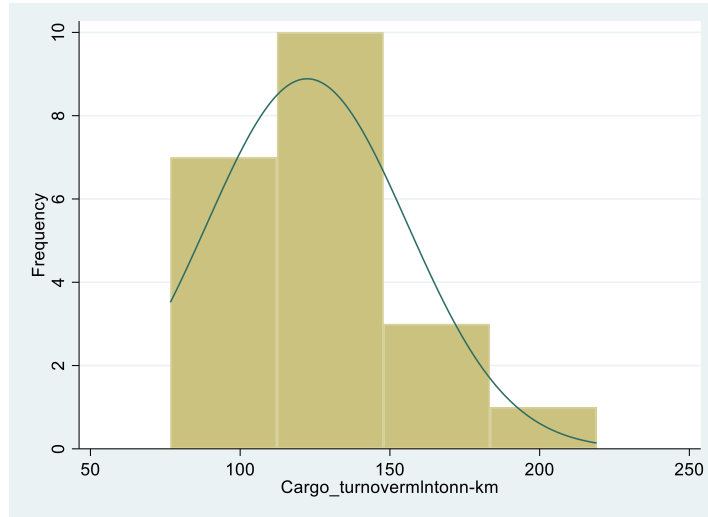


Figure 7. Histogram cargo_turnovermlntonnkm

Histogram as not so good distributed, but it is in significance level.

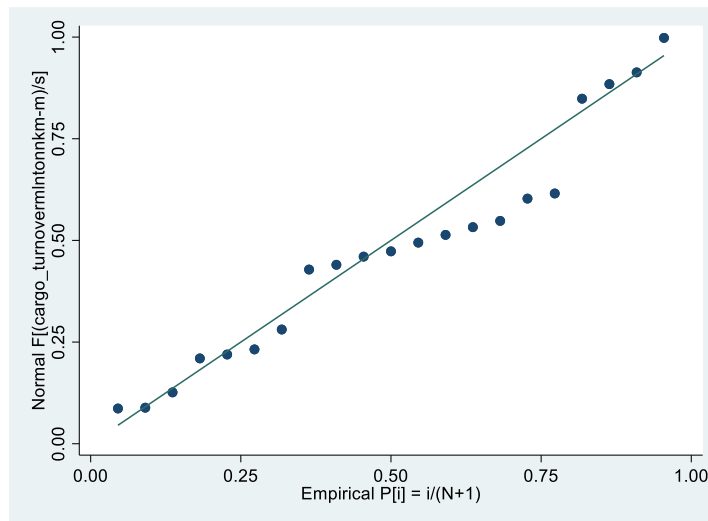


Figure 8. Pnorm cargo_turnovermlntonnkm

To ensure high rates of economic growth in the next five years, \$ 120 billion will be attracted, of which at least \$ 70 billion will be foreign investments.

Projects based on public-private partnerships will attract \$ 14 billion in investments in the transport sector, road construction and other areas [5].

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Table 6. Regression Analysis

```
. reg cargo_turnovermlntonnkm sent_cargothousandtonn totalcargo_turnoverblnkm totalsent_cargomlntonn
> ansport_serviceblnuzs
```

Source	SS	df	MS	Number of obs	=	11
Model	8545.83987	4	2136.45997	F(4, 6)	=	11.43
Residual	1121.06152	6	186.843587	Prob > F	=	0.0057
				R-squared	=	0.8840
				Adj R-squared	=	0.8067
Total	9666.9014	10	966.69014	Root MSE	=	13.669

cargo_turnovermlntonnkm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sent_cargothousandtonn	-3.830986	1.236075	-3.10	0.021	-6.855552	-.8064192
totalcargo_turnoverblnkm	-13.52624	2.120637	-6.38	0.001	-18.71525	-8.337227
totalsent_cargomlntonn	.0584394	.053337	1.10	0.315	-.0720714	.1889503
totaltransport_serviceblnuzs	.0001143	.0000555	2.06	0.085	-.0000215	.0002501
_cons	1054.741	149.164	7.07	0.000	689.7502	1419.732

According to the regression analyses sent cargo and total cargo turnover are negative relationship with cargo turnover in Uzbekistan. In the next five years, the Republic of Uzbekistan plans to increase economic growth by 1.5 times and bring GDP to \$ 100 billion, and the volume of industrial production by 1.4

times [6]. The country's export potential will increase 1.7 times and will reach \$ 30 billion in 2026. In the export structure, the share of raw materials will decrease twice to 23%, and the volume of finished products will increase 2.5 times.

Table 6. Robust Regression Analysis

```
. reg cargo_turnovermlntonnkm sent_cargothousandtonn totalcargo_turnoverblnkm totalsent_cargomlntonn
> ansport_serviceblnuzs, vce(robust)
```

Linear regression	Number of obs	=	11
	F(4, 6)	=	80.53
	Prob > F	=	0.0000
	R-squared	=	0.8840
	Root MSE	=	13.669

cargo_turnovermlntonnkm	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
sent_cargothousandtonn	-3.830986	1.016135	-3.77	0.009	-6.317379	-1.344592
totalcargo_turnoverblnkm	-13.52624	1.000299	-13.52	0.000	-15.97388	-11.07859
totalsent_cargomlntonn	.0584394	.0488262	1.20	0.276	-.0610341	.1779129
totaltransport_serviceblnuzs	.0001143	.000031	3.69	0.010	.0000385	.0001902
_cons	1054.741	65.41017	16.13	0.000	894.6883	1214.794

If we use robust regression analyses, we can obtain new results based on table 6.

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Table 7. Regression Models with Logarithmic Transformations

```
. reg logcargo_turnovermlntonkm sent_cargothousandtonn totalcargo_turnoverblnkm totalsent_cargomlntonkm
> ltransport_serviceblnuzs
```

Source	SS	df	MS	Number of obs	=	11
Model	.331632208	4	.082908052	F(4, 6)	=	9.42
Residual	.052780764	6	.008796794	Prob > F	=	0.0093
				R-squared	=	0.8627
				Adj R-squared	=	0.7712
Total	.384412972	10	.038441297	Root MSE	=	.09379

logcargo_turnovermlntonkm	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
sent_cargothousandtonn	-.0214889	.0084814	-2.53	0.044	-.0422422	-.0007356
totalcargo_turnoverblnkm	-.0853115	.0145509	-5.86	0.001	-.1209162	-.0497068
totalsent_cargomlntonkm	.0004057	.000366	1.11	0.310	-.0004898	.0013012
totaltransport_serviceblnuzs	7.45e-07	3.81e-07	1.96	0.098	-1.87e-07	1.68e-06
_cons	10.59704	1.023498	10.35	0.000	8.092632	13.10145

According to preliminary estimates, the total volume of cargo transportation in the country will grow 1.4 times, and the volume of international cargo transportation (export, import and transit, excluding pipeline transport) will grow 1.6 times. Sustainable development of the economy and foreign trade, as

well as an increase in the well-being of the population cannot be ensured without the systematic, advanced development of transport, infrastructure and logistics [7]. But if we use natural logarithm our regression can be changed by following outcomes.

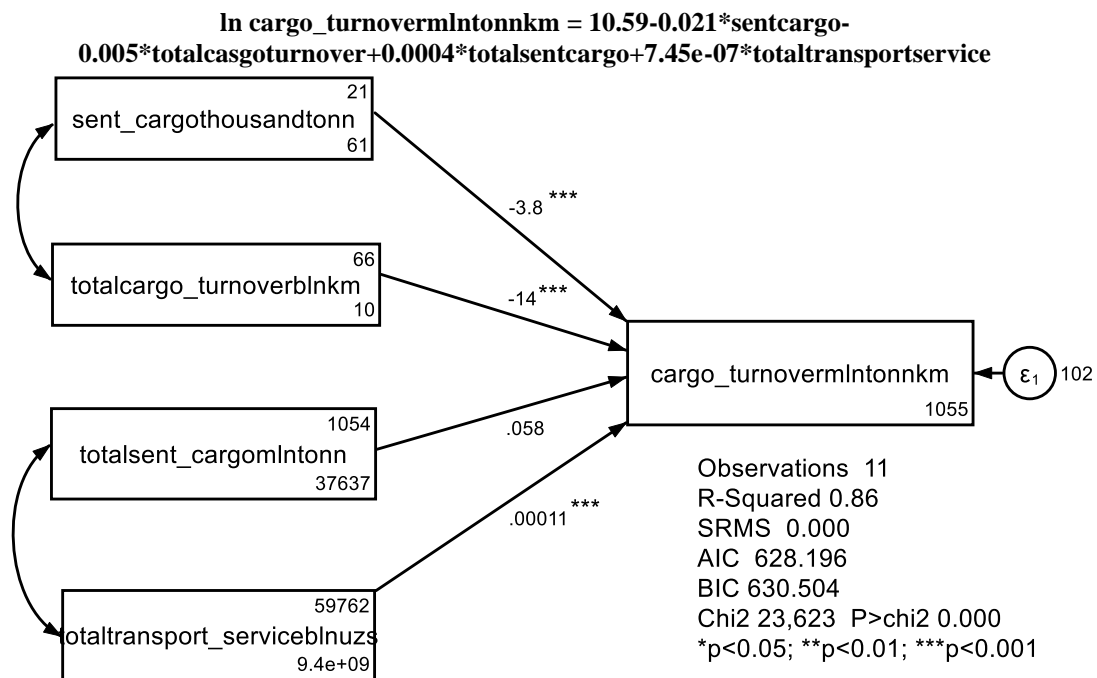


Figure 9. SEM model of the air cargo shipping of Uzbekistan during 21 years

We analyzed on SEM applications in 21 years data. Bayesian SEM, partial least square SEM, hierarchical SEM, and variable/model selection. We identified ten common issues in SEM applications including strength of causal assumption, specification of feedback loops, selection of models and variables, identification of models, methods of estimation,

explanation of latent variables, selection of fit indices, report of results, estimation of sample size, and the fit of model. According to the figure three variables are statistically significant in level of P<0,05% (Figure 9).

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Discussion

This type of cargo transportation is quite specific. It is not suitable for everyone, because it imposes certain restrictions and requires the involvement of additional transport to deliver cargo to the airfield. To understand the intricacies and determine whether it is advisable to use international air transportation of goods in your case, we will consider their features by

As mentioned above, speed and safety are the main advantages of air transport over land or water transport. There are no alternatives and are not foreseen in the foreseeable future.

Air delivery is often used for cargo with atypical parameters, dangerous goods, medicines, expensive perishable goods. But not every oversized item can be placed inside the aircraft fuselage. It is necessary to make accurate calculations, work on the weight distribution, and make special fasteners.

With standard and groupage cargo, the situation is simpler. There are no problems with them, except for the cost of the operation. Delivery of goods by air is cost-effective when it is necessary to transport them as quickly as possible, for goods that are rapidly losing their properties, humanitarian aid, etc.

Conclusion

Finally Uzbekistan has given priority to the development of international transport corridors, digitalization of the logistics chain, including the processes of passing goods and vehicles through border points, reducing physical and non-physical barriers to the movement of international goods, optimizing transport and other costs in the cost of export products, increasing the speed of delivery of goods, improving the country's indicative indicators in the World Bank's Logistics Performance Index. A number of cardinal decisions were made long before the onset of the COVID 19 pandemic, which made it possible to get out of the cargo shipment with minimal losses.

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MULTIDIMENSIONAL TAXONOMY OF A COMPLEX SENTENCE AS A VERBALIZER OF THE MICROCONCEPT «SUBJECTIVE-MODAL ASSESSMENT» IN THE LANGUAGE

Abstract: The article is devoted to the development of a multidimensional taxonomy of a complex sentence, which gives an idea of the cognitive syntax of this sentence, which is relevant for modern linguistics, as one of the really existing types of a complex sentence, functioning as a dynamic syntactic phenomenon studied on a synchronous slice of the language. In this work, an attempt is made to construct a dynamic multidimensional taxonomy of a complex sentence with strict consideration of its existing aspects, while it is determined that complex sentences of a canonically clichéd standard structure are involved in the formation of the text, they are analyzed in different (structural, semantic, communicative-pragmatic, gender-logical, stylistic) levels of abstraction, the ratio of their structural and functional sides, related to communicative cognitive grammar, or rather syntax, is considered.

Key words: complex sentences, subjective-modal assessment, multidimensional taxonomy, cognitive syntax, introductory constructions.

Language: Russian

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МНОГОМЕРНАЯ ТАКСОНОМИЯ СЛОЖНОВВОДНОГО ПРЕДЛОЖЕНИЯ КАК ВЕРБАЛИЗАТОРА МИКРОКОНЦЕПТА «СУБЪЕКТИВНО-МОДАЛЬНАЯ ОЦЕНКА» В ЯЗЫКЕ

Аннотация: Данная статья посвящается разработке многомерной таксономии сложновводного предложения, что дает актуальное для современной лингвистики представление о когнитивном синтаксисе данного предложения как одного из реально существующих типов сложного предложения, функционирующего как динамическое синтаксическое явление, изучаемое на синхронном срезе языка. В данной работе предпринята попытка осуществить построение динамичной многомерной таксономии сложновводного предложения со строгим учетом существующих его аспектов, при этом определяется, что сложновводные предложения канонически клишированной стандартной структуры участвуют в образовании текста, они анализируются на разных (структурных, семантических, коммуникативно-прагматических, гендерологических, стилистических) уровнях абстрагирования, рассматривается соотношение их структурной и функциональной сторон, имеющих отношение к коммуникативной когнитивной грамматике, точнее синтаксиса.

Ключевые слова: сложновводные предложения, субъективно-модальная оценка, многомерная таксономия, когнитивный синтаксис, вводные конструкции.

Введение

При изучении сложновводных предложений (СВП) как одного из инвариантных типов сложного предложения (СП) вообще, наряду с их

структурными особенностями, очень важен и вопрос об изучении их семантики, точнее когнитивной семантики, прагматики, гендерологических и лингвостилистических

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особенностей, поскольку они представляют их многоаспектную природу, непосредственно относящуюся к их лингвокогнитивной, точнее когнитивно-концептуальной и лингвокультурологической сторонам в широком смысле слова. "Реализуя в своей структуре такие важные категории, как предикативность описываемого действия, состояния или события, отношение субъекта и объекта действия, категория лица и так далее, любое предложение, в том числе и СВП, казалось бы отвечает требованию подхода к языковым единицам как к необходимому объединению когнитивно-содержательных и формальных признаков" [12]. При этом необходимо выделить две содержательные стороны: 1) грамматическое (синтаксическое) содержание; 2) когнитивное (смысловое) содержание. Следовательно, при рассмотрении вопроса о семантике СВП необходимо изучать ее: а) "структурно-языковую(формальную) семантику"; б) "коммуникативную семантику" [6, 33], причем первая из них складывается из синтактико-семантических отношений между компонентами, предусмотренных структурной схемой СВП в языках, а вторая - из конкретного когнитивно-смыслового содержания, относящегося к ее денотативному аспекту, не являющемуся языковой действительностью и тем самым направленному на внеязыковую действительность.

Структурно-языковая или "синтаксическая семантика (синтаксическое значение" [5, с.31] СВП предполагает рассмотрение следующих вопросов: определение «синтактико-семантических отношений» между ее компонентами [7, с.61], определение методом компонентного анализа "общей центральной семы" [5, с.310], присущей всей СВП, которая выявляет синтактико-семантические отношения между ее компонентами; установление степени выкристаллизованности синтактико-семантических отношений между компонентами СВП, позволяющее определить "чистые" (выкристаллизованные) и осложненные другими оттенками синтактико-семантические отношения, в данном случае «субъективно-модальные отношения».

Выявление степени чистоты этих отношений и есть объект исследования когнитивной типологии, которая в конечном счете позволяет классифицировать данный тип СВП, выделив ее структурно-семантические разновидности. Затем СВП сопоставляемых языков анализируются по объему своей семантики, установленной компонентным анализом, причем регистрируются семы, носящие универсальный характер в сложной семантической организации СВП различных языков. Здесь также необходимо

выделить семы, которые наряду с общей центральной семой, присущей всему СВП, в одних языках дифференцируются, а в других - нет, в связи с различной субстанциональной характеристикой конкретных языков.

Рассмотрение семантики СВП в сопоставительно-типологическом плане позволяет точнее выявить семантические особенности исследуемых единиц с учетом выражаемых ими добавочных семантических оттенков, дифференцируемых в одних языках и отсутствующих в других, а также установить все семантические разновидности того или иного типа СВП, включая и смешанные типы или синкретичные разновидности в различных языках. Все это приобретает особо важное значение при постановке вопроса о межъязыковом перекодировании информации с одного языка на другой, где выявляется весь арсенал выразительных средств того или иного языка, представленных различными типами и подтипами СВП.

В английском языкознании вопрос о таксономии СВП со структурно-семантической точки зрения привлек внимание таких ученых, как Biber et al1999; Crystal1969; Erman1986; Halliday1985; Huddleston2002; Leech1982; Leech1994;Crystal 2003, 229; Povolná2003; Povolná 2005a; Povolná 2005b; Quirk1972;1973; 1985; Schiffrin1987; 2001;Stenström1984; 1994;1995; Svartvik1980; 1980a;1990;1995. В исследованиях этих ученых много интересного и ценного относительно структурно-семантической и коммуникативно- функциональной организации СВП, в частности, ими осуществлена классификация последних, где заметен разноречивый и подходов к данному вопросу, более того, их таксономия СВП представляется неполной, противоречивой, а порою не приемлемой.

В этом плане определенный интерес представляет следующая классификация СВП, осуществленная группой ученых во главе с Р.Квирком [25, с.1112–1120]:

- 1) СВП типа I believe, you know)
- 2) СВП союзом as (типа as I say, as you know);
- 3) СВП типа «what is more important, what was more upsetting»;
- 4) СВП типа «to be honest, to be fair»;
- 5) СВП «-ing clause» (типа. speaking openly, speaking frankly);
- 6) СВП «-ed clause» (типа stated bluntly).

Как мы видим, здесь выделяются только наиболее частотные типы СВП, а такие их типы как *I gather, I bet, if I may say so, I find, " what else", "if you will, let me see, see, could I ask about that?, let-me-explain, which'(как « which sometimes happens), in so far as', if I refrain from discussing, if you'll forgive the expression, no wonder, more*

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important, thank God, God save us, God forbid, God bless you(us), one wonders, it is asserted, he argues, if you'll forgive the expression, as I had thought, в их таксономии не приводятся, а они реальны и их можно обнаруживать, и мы их обнаружили в ходе анализа эмпирического материала по СВП в английском языке.

Анализируя работы группы ученых во главе с Д.Байбером, М.Музикант отмечает, что «вводные предложения» типичны для устно-разговорного стиля» [21, с.32], что, с нашей точки зрения, не является обоснованным, так как такие СВП встречаются и в других стилях.

Экстраполируя с английского языка на русский и узбекский языки, мы можем выявить определенный изоморфизм в формально-семантических типах СВП, например, в узбекском языкознании Б.Менглиевым отмечены следующие интересные их структурно-семантические свойства: «... Вводные расширители изучаются как вводные слова, вводные словосочетания и вводные предложения. В самом деле все вводные расширители являются номинативными единицами. Хотя некоторые их разновидности имеют характер предложения, их нельзя называть предложениями в полном смысле слова. Например, конструкция "Men sizga aytsam", хотя имеет вид оформленного предложения, на него не возложена функция выражения мнения и передачи информации. В нем, хотя есть форма [Pm], вербализация его соответствующих значений слишком ослаблена. Поэтому если формы [Pm] в нем и соответствующий расширитель будет изменен, его свойство вводности полностью исчезает» [8, с. 208]. Далее ученый отмечает, что «Основными общими и отличительными особенностями вводных расширителей являются следующие: 1) в структуру вводного предложения они не вносят денотативного значения; например, в словах предложения "Men sizga aytsam" такие значения как действие, человек, выполняющий это действие, объект не выражены, в нем есть одно целостное модальное значение «убеждение, убеждать»; 2) вводные расширители разнообразны по грамматическому оформлению, в нем в функции вводного расширителя могут выступать спрягаемые глаголы (типа «aytsam»), и неспрягаемые глаголы (типа «shunday qilib), даже существительные (типа "chamasi") и местоимения (типа « менимча»). Однако они, как было сказано выше, иногда частично, а иногда полностью теряют свое значение, т.е они временно отрываются от своей парадигмы; 3) все вводные расширители объединяются под единое и общее значение « выражение отношения оценки адресанта речи»; 4) позиционное расположение вводных расширителей в предложении не постоянное. Все эти признаки вводных

расширителей показывают, что они составляют своеобразную семантико-синтаксическую группу. Вводные расширители выражают следующие значения в предложении: 1) подчеркивание; 2) субъективное отношение и выражение чувств и эмоций; 3) выражение отношения к стилю изложения; 4) выражение отношения говорящего к мнению, к связям и отношениям между частями текста и внутренним их связям; 5) выражение адресованности мнения; 6) выражение последовательности мнения» [8, с. 208-209].

На наш взгляд, с мнением данного ученого о якобы возможной полной и частичной лишенности вводных конструкций денотативного содержания – смысла, нельзя согласиться, ибо в характеристике какого-либо члена или части предложения вообще, и вводных конструкций, в частности, нельзя исходить из половинчатых решений и соображений, так как семантика – это не доказуемая абстракция, о ней можно лишь гипотетически предполагать и высказать что-нибудь, однако им были установлены немаловажные семантические признаки вводных расширителей, список которых можно продолжать.

Небезынтересны и замечания Б.Уринбаева о вводных конструкциях (кириш конструкциялар) и их значениях. Говоря о трех типах вводных конструкций, выраженных: 1) вводными словами (выраженными существительными, местоимениями, прилагательными, числительными, наречиями, глаголами); 2) вводными словосочетаниями (поссесивными, адъективными, объектными, обстоятельственными, атрибутивными и т.п.); 3) вводными предложениями (выражающими: 1) отношение говорящего к тому, что излагается в основном предложении; а) уверенность или подтверждение; б) сомнение, неуверенность; в) огорчение, очарование, мечта; 2) адресованность мнения кому-либо; 3) очередность, порядок выражаемого мнения; 4) связь первого мнения со следующим; 5) повторяемость, обычность, выражаемого события [10, с. 133- 135].

Оценивая огромную работу, осуществленную вышеуказанными учеными-языковедами по изучению исследуемых конструкций, мы все таки склонны подчеркнуть, что их таксономия СВП, представляет огромный интерес для синтаксистов различных языков.

В русском языкознании также заметен большой интерес ученых к вопросу о классификации вводных конструкций по их структурно-семантической и коммуникативно-прагматической организации. Так, классификация вводных конструкций в рамках категории модальности В.В.Виноградова выглядит следующим образом:

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1) субъективная передача чужой речи и её оценка говорящим;

2) обозначение характера речевой экспрессии или эмоционального тона высказывания;

3) эмоционально-волевое отношение говорящего к предмету сообщения;

4) логическая оценка достоверности утверждения;

5) отношение содержания какого-либо отрезка речи к общей последовательности мыслей в ходе высказывания, обозначение разных видов логического или экспрессивного отношения последующей мысли к предшествующему сообщению;

6) обозначение порядка движения мысли;

7) субъективная внезапность припоминания, присоединения ассоциации;

8) выражение сравнения в составе основных членов предложения;

9) переходные слова и выражения, приближающиеся к междометиям;

10) субъективная оценка меры, числа, степени чего-либо, призыв к собеседнику, стремление обратить его внимание на какой-либо факт, вызвать определённое отношение к сообщению [3, с. 67].

А.А. Реформатский рассматривает модальные вводные слова и предложения в рамках такого грамматического явления, как внесение: «В пределах как простых, так и сложных предложений можно встретить такие элементы, которые грамматически не связаны с окружающим текстом; это могут быть и отдельные лексемы, и словосочетания, и целые предложения. Такое явление называется **внесением**». [9, с. 343]. В качестве примеров модальных вводных слов и предложений он приводит следующие примеры: *Я, де, ситцем торговал; Мы, кажется, опоздали; Он, должно быть, забыл адрес; А он, да простит ему Аллах, все перепутал; Это, по мнению Богородицкого, не относится к подчинению* [9, с. 345].

Личностная оценка содержания высказывания занимает центральное место в теории вводных конструкций Ш. Балли. Исследователь предлагает различать фактическое содержание и модус – оценку фактического содержания говорящим. В этом же направлении рассматривает вводные конструкции Т. В. Шмелева, которая выделяет полупредикативные и предикативные вводные конструкции, а также лексические единицы, не встроены в систему синтаксических связей предложения [11, с. 32–33].

Теоретические исследования как самих вводных конструкций, так и методики обучения им, представляют широкий круг терминологических понятий для обозначения данного явления. При этом одни исследователи

обозначают вводные конструкции термином «парентеза», либо «парентетические слова», акцентируя внимание на их внепредложенческом положении [1, с. 127].

А. Вежицкая ввела в употребление понятие «метатекстовых элементов языка». Так, исследователь в своей работе выделяет группу метатекстовых глаголов, позволяющий выразить не конкретный факт или действие, а прокомментировать основной текст. Затем данный термин распространился на все вводные слова [2].

Как видно, и в русском языкознании, как и в других языкознаниях, доминируют классификации вводных конструкций на семантической основе, что сближает их с отдельными придаточными предложениями типа «как вы знаете», «если я не ошибаюсь», «как уже было сказано».

Как видно из вышеизложенного, эти классификации очень интересны, разнообразны и ценны, но они нуждаются в дополнении, обобщении и соответственно унификацию, так как вопрос о классификации СВП в специальных исследованиях не ставился, следовательно, мы попытаемся, по мере возможности, осуществить многомерную таксономию СВП в трех ключевых языках (английском, узбекском и русском).

При анализе коммуникативных особенностей любой языковой единицы, в том числе и СВП как наиболее специализированного типа синтаксических конструкций с вводным членом (СКВЧ) по вербализации микроконцепта «субъективно-модальная оценка», их системное исследование не может претендовать на полноту, если не будет затронут вопрос о структурно-семантической и коммуникативно-функциональной и прагматической организации и таксономии данных единиц. В сопоставительном типологическом плане целесообразно осуществить многомерную таксономию СВП, исходя из следующих их важных признаков: 1) структурных; 2) семантических (в зависимости от моносемантической, полисемантической и синкретичности СВП); 3) коммуникативно-прагматических (в силу их наделенностью вербализовать отдельные типы речевых актов, вообще, и ассессивных, в частности).

Итак, исходя из сугубо структурных свойств СВП, их можно разделить на:

1. СВП, выраженные односоставными предложениями (предикатными):

в англ.: They may come here, *believe*, any time! (E. Hemingway. Short Stories, 132)

в узб.: Ахир, отахон, *ўйлабқўринг*, бизнинг одобимизга шу тўғри келадими? (А. Қаҳҳор, Ўғри, 99).

Impact Factor:

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OAJI (USA) = 0.350

В русск.: И представь, ни слова мне *не сказала* сегодня, виду не подала (Комсомольская правда, 2019, 3)

II. СВП, выраженные двусоставными предложениями (субъектно-предикатными):

в англ.: This crowd, *you see*, is a chaos, and be careful here! (O. Henry. Short Stories, 75)

в узб.: *Сиз сезганингиздек*, унинг бурни бир оз кўтарилиб қолибди (А.Қаххор. Ўтмишдан эртақлар)

в русск.: Эти люди, *вы знаете*, очень честные, трудолюбивые и добрые (А.Чехов. Дом с Мезонином, 94)

III. СВП, выраженное неопределенно-личным предложением.

в англ.: Well, woman, *as is known*, is a creature of higher order

в узб.: *Айтмадилар-ку*, бўлмаганга бўлишма деб! (Андижоннома, 2018, 3)

Огайни, *кўрсатиб қўйишади ҳали*, сиз ҳамма қилмишларингиз учун тегишли жойларда ҳали жавоб ҳам берасиз!

Ахир, бекорга *айтмадилар-да*, кингир ишининг қийиғи қирк йилда ҳам чиқаверади деб! (Т.Ашуров .Лаганбардор, 168).

в русск.: Ну, женщина, *как известно*, существо высшего порядка.

Так думали о нём, как обычно говорили о нём.

Вы, *может быть*, ещё приедете к нам (А.П. Чехов. Дом с мезонином., 115)

1) Наш сосед, *должно быть*, забыл об этом (А .Чехов. Дом с мезонином, 29).

2) Жизнь, *кажется*, ещё не начиналась (Паустовский).

3) Наши сограждане, *стало быть*, этого недопонимают (Комсомольская правда, 2019, 4).

С семантической точки зрения к числу СВП, характеризующихся *моносемантичностью* в языках, относятся такие типы СВП, которые вербализуют прозрачные, несопряженные с другими типами концептуальных семантик «субъективно-модальные оценки», например:

в англ.: Your words, *look*, are ridiculous (S. Maugham. Cakes and Ale, 187)

в узб.: Қилган хизматларингиз, *бетга айтганинг захри йук*, арзигулик эмас, мактайдиган ҳам эмас (Т.Ашуров. Лаганбардор, 1998, 13)

в русск.: Ты что говоришь, *упаси Боже*, я совсем далек от таких мыслей (Полное собрание сочинений А.П.Чехова в 4-х т.; Т. II, 1948. 237)

Есть в языке и такие отдельные типы СВП, которые характеризуются полисемантичностью и объективируют минимум две взаимосвязанные семантики (или семьи), совмещающая их в целях наиболее адекватной передачи коммуникативно-прагматической установки – интенции адресанта, например:

в англ.: Your friend, *as you see*, is wrong (S. Maugham .Short Stories, 143) (субъективная модальная оценка+ сравнение(компаратив));

в узб.: Отахон, *қўриб турганингиздек*, ҳаётимиз гўзал! (субъективная модальная оценка+ сравнение (компаратив));

в русск.: Батька, *как видно из обстоятельств*, дела очень плохи! (А.Чехов. Дом с мезонином, 176) (субъективно-модальная оценка+ сравнение(компаратив));

Что касается СВП как вербализатора микроконцепта синкретичной «субъективной-модальной оценки», то в таких СВП имеются две или более близкие и смежные семантики, наслаивающиеся на первой, превращая СВП в синкретичную единицу, объективирующую сочетание минимум двух семантик (или сем) одновременно, а именно, например, семантику «субъективной-модальной оценки» и семантику «предположение(суппозитив)», например:

в англ.: The people, *I suppose*, are industrious here (S. Maugham. Short Stories, 112)

в узб.: Чўпоннингмеҳнати, *масаввур қилиб қўринг*, жуда оғир (П.Қодиров. Кора кўзлар. 101)

В русск.: Дети наши *представь себе*, работают, а мы чем занимаемся?

(А.Чехов. Дом с мезонином, 192).

Далее, исходя из коммуникативно-прагматических особенностей СВП, которые, в их тесной связи с тем или иным контекстом, наиболее выпукло отражаются в общении между коммуникантами, и их можно классифицировать в языке на следующие типы:

1) СВП как вербализатор «позитивной субъективно-модальной оценки», при этом семантика, вербализированная ими только позитивная),

в англ.: The problems, *I agree*, are great, but we can solve them (J. London, Short Stories, 123)

в узб.: Сиз, *ҳақсиз*, элу-юртгақўп хизматингиз сингган (А.Қаххор. Синчалак, 127)

в русск.: Наши соседи, *согласен*, люди добрые, но вчерашний инцидент кому нравится? (Андижанская правда, 2019, 4)

2) СВП как вербализатор «негативной субъективно-модальной оценки» (при этом семантика, вербализированная ими только негативная, например,

в англ.: He is, *as you don't appreciate*, doing all rotten things there (Ch. Dickens. Dombey and Son, 175).

в узб.: Буахволни, *қўрмаясизми*, тўғрилаб бўлмади-да (А.Қаххор. Ўғри, 19)

в русск.: Положение в селе, *не думайте*, хорошее, а совсем наоборот (А.Чехов. Дом с мезонином, 83)

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3) СВП как вербализатор «абсолютной субъективно-модальной оценки» (nothing/поопенobodynowhere/never/ ever), при этом семантика, вербализованная ими, по своему охвату абсолютная), например,

англ.: *As everybody knows*, the people are suffering from the torrential rains there (E.Hemingway.Short Stories, 104)

в узб.: Ахмаджон *ҳаммабилади*, тилло одам, обрули, кўли очик

(Андижоннома, 2018, 4).

в русск.: Мать моя, *как все знают*, была доброй,душевной, общительной (А.Чехов.Дом с мезонином, 180)

4) СВП как вербализатор «неабсолютной субъективно-модальной оценки» (при этом концептуальная семантика «субъективно-модальная оценка», вербализованная ими, по своему охвату неабсолютна, при этом есть исключения), например:

в англ.: In this very troublesome case, *as everybody agrees but him*, we should be double careful (J.London. Short Stories, 129)

в узб.: Менимча, илгор мехнаткашларимизнинг *ҳаммасини, мени ҳисобчимизданбошқахаммақуллаб-қувватласа керак*, мукофотга тавсия килсак ёмон бўлмасди(Андижоннома. 2019, 4).

в русск.: Наши дети, *меня тут поддержат все кроме моего вот этого друга*, должны получить все, что им положено!(Андижанская правда, 2017:3).

7) СВП как вербализатор «реальной субъективно-модальной оценки», реализуемой в жизни (при этом концептуальная семантика «субъективно-модальная оценка», вербализованная ими, реальна, правдива и встречается в жизни), например:

в англ.: The women , *it goes without saying*, are indeed nice homemakers

(S.Maugham, Short stories,127)

в узб.: Йигитлар, *ўз-ўзидан маълум*, юртнинг таянчи, кудрати, кўрки

(Т.Ашуров.Лаганбардор, 113)

в русск.: Армия, *само собой разумеется*, оплот мира и спокойствия в стране(Комсомольская правда, 2019б 4)

8) СВП как вербализатор «нереальной субъективно-модальной оценки», не возможной и не реализуемой в жизни» (при этом концептуальная семантика «субъективно-модальная оценка», вербализованная ими, фантастична, нереальна, неправдива и не встречается в жизни), например:

в англ.: Jack says, *as he is always right*, the life is becoming more complicated these days(J.London. The Sea Wolf, 117)

в узб.: Раҳим дангал, *вахоланки унинг билмагани йўқ*, маҳалладаги бу ишлардан хабари йўқ дейсизми?(Андижоннома, 2019, 4)

в русск.: Наш сосед, *а он вообще золотой человек*, слишком занят своими семейными делами(А.Чехов. Дом с мезонином, 159)

Следует также отметить, что среди вербализаторов концептуальной семантики «субъективно-модальная оценка» в подвергнутых исследованию языках нами установлены также их *узуальные и окказиональные* разновидности:

В англ.: The guy there, *I don't care a hooood about them*, are very lazy (S.Maugham. ShortStories, 136)(узуальное).

The workers, *as the leaders don't care a pang about them*, on endless strikes (Daily News, 2020, 6)(окказиональное).

The folk, *don't you argue*, is on strike, why?(Morning Star, 2018, 6) (окказиональное)

в узб.: Аҳоли, *тортишибўтирмайлик-ку*, ситкидилдан мехнат киялпти, тўғрими?(Халк сўзи, 2019,) (окказиональное).

в русск.: Рабочие, *ты здесь ерунду порешь*, очень устали, зарплату еще не получили(Андижанская правда, 2017, 4)(узуальное).

Разрази меня гром, В душе застрял огромный ком(Из песни) (окказиональное).

Твой друг, *зуб даю* , ничем не лучше меня(Комсомольская правда, 2019б 4) (окказиональное).

Далее СВП можно классифицировать по гендерным (или гендерологическим) признакам, т.е. по признаку маскулинности или фемининности:

1) СВП как вербализатор маскулинной «субъективно-модальной оценки»;

в англ.: What have you done, *damn you, lady*, with the birds outside? (J.London, The Sea Wolf, 175)

в узб.: Сен *ҳаром ўлгур*, қачон ақлинг киради(Т.Ашуров. Лаганбардор, 121)

в русск.: Женщина, *ты навороила так много неприятностей здесь*, чтобы ты сдохла, и пусть тебя накажет сам Всевышний! (Комсомольская правда 12019, 3).

2) СВП как вербализатор фемининной «субъективно-модальной оценки»;

в англ.: Look, *God damn, you man*, we hate you! (E.Hemingway, Short Stories, 192)

в узб.: Эй, *дийдоринг ўчкур*, белбоғинг борми ўзи?(Т.Ашуров.Лаганбардор, 32)

в русск.: Смотри *ты, мерзавец*, будь ты трижды проклят за все свои грехи (Комсомольская правда, 2019, 4).

3) СВП как вербализатор узуальной маскулинной «субъективно-модальной оценки»;

в англ.: My sweetheart, you are, *believe me*, astonishingly beautiful(Daily News, 2017, 7)

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в узб.: Кел, *отанг бўйингдан*, бир кучиб кўйай!(А.Қаҳҳор. Ўтмишдан эртақлар, 123)

в русск.: Ты что говоришь! *Ты, голубушка моя единственная, ненаглядная*, не дай бог , я потеряю тебя, мне точно нежить!(Комсомольская правда .2019, 4)

4) СВП как вербализатор окказиональной маскулинной «субъективно-модальной оценки»;

в англ.: *Aren't you the sweetest little thing*, I just want to dunk her in my coffee.

в узб.: Ха. коматларингдан аканг айлансин, ёнимга кел, бир пас ўтир!(Т.Ашуров.Лаганбардор, 42)

в русск.: Ну, я должен идти *разве ты не милейшая игрушка*, какую я когда-либо встречал, а!

Мы с тобой уже 20 лет прожили вместе, да благословит Бог нас с тобой, чернобровая моя, до конца нашей жизни! (Комсомольская правда, 2020,4)

«Ах, *сердцедедка ты моя, лъвица пензенская*, я глажу ее неопрятные ладони, колючие колени, дышу на пальцы, затягиваю на башмаке развязавшиеся шнурки. (А. Б. Мариенгоф, «Бритый человек»,1997, 124)

5) СВП как вербализатор узуальной фемининной «субъективно-модальной оценки»;

Слушайте, люди, дорогие мои, не дай бог *этому кровопивцу* малейшей свободы, он всех сожрет!(Комсомольская правда, 2019, 4)

6) СВП как вербализатор окказиональной фемининной «субъективно-модальной оценки»;

в англ.: I love you, *my sweetheart, my pretty boy, you're my sunshine, my heat and soul!*

в русск.: Дорогой мой ангел , в день твоего рождения прими мои самые, самые искренние пожелания, и дай бог тебе, *моему красавчику, моему солнышку, моей радости*. крепкого здоровья и долгих лет жизни (Комсомольская правда, 2019, 3) .

Слушайте, люди, дорогие мои, не дай бог *этому шакалу* малейшей свободы, он всех сожрет!

в узб.: Менинг пахлавоним, арслоним, сенга узок умр тилайман, бахтимга омон бўл!

7) СВП как вербализатор гендерно-нейтральной «субъективно-модальной оценки», характерной для речи обоих полов:

в англ.: Dear comrades, God bless you, may God grant you all good health and great success in this field!

в узб.: Қадрли дўстлар, барчангизни худо ярлақасин, Сизларга мустаҳкам соғлиқ ва улкан муваффақиятлар тилайман.

в русск.: Дорогие товарищи, *дай Бог Вам всем крепкого здоровья*, и огромных успехов на этом поприще!

На основе нашего системного анализа СВП как вербализатора микроконцепта «субъективно-модальная оценка» в (английском, русском и узбекском) языках следует отметить, что эти синтаксические единицы наиболее частотно и ситуативно участвуют в вербализации таких типов коммуникативно-прагматических актов речи, которые условно и обобщенно называются нами «*ассессивами*» (*актами оценивания, расценивания, одобрения и т.п.*), служащими аргументирующими средствами и атрибутами авторизации в тексте, равно как самими текстогенерирующими *средствами*, исходя из чего СВП можно классифицировать на следующие коммуникативно- прагматические типы:

1. СВП (типа *I have read, I tell you, I can see т.п.*), вербализующее констатив (*constative – акты заявления, сообщения, декларации*), например:

в англ.: 1) *The soldiers, I have read*, left the battlefield earlier. (E.Hemingway.ForwhomtheBellTolls, 217).

в русск.: Солдаты, *я слышал*, покинули поле боя пораньше .

в узб.: Аскарлар, *мен ўқиб билдим*, жангмайдонини эртақ тарк этибдилар.

2. СВП (типа: *what is the most surprising of all, what is the most astonishing of all*, и т.п.), вербализующее *элатив* (*elative – акт восторга*), например :

в англ.: *The guy is careless, what is the worst of all*, he is reckless! (J.London.Short Stories, 182)

в узб.: Ўйигитэйтиётсиз, бебеғам, *энг ёмони шуки*, у бефарқ, бефаросат.

в русск.: Парень неосторожный, беззаботный, *что хуже всего*, он безрассудный.

3. СВП (типа *I hear, one hears*, и т.п.), вербализующее аудитив (*auditive – акт слушания, восприятия информации на слух*), например:

в англ.: *Our enemies, I hear*, are carefully preparing to attack (A.Sillitoe.Key to the Door, 192).

в узб.: Душманларимиз, *қулогимга чалиняпти*, хужумга пухта тайёрланишяпти.

в русск.: Наши враги, *я слышу*, тшательно готовятся к атаке.

в англ.: *The situation, one hears*, is catastrophic.

в узб.: Вазият, *айтишларига қараганда*, халокатли

4. СВП (типа *I fear, I am afraid* и т.п.), вербализующее аудитив (*auditive – акт слушания, восприятия информации на слух*), например:

в англ.: *The folk, I fear*, is quite illiterate. (E.Hemingway.Short stories, 76)

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в узб.: Бу одамлар, қўрқаман, ўтасаводсиз.
в русск.: Эти люди, я боюсь, совершенно безграмотные.

в англ.: They cannot finish the wok today, I am afraid

в узб.: Улар бу ишни, қўрқаман, тугунтугатаолмайдилар.

в русск.: Они, я боюсь, не могут закончить работу сегодня.

5. СВП(типа *I confess, I recognize, I accept* и т.п.), вербализующее **конфессив (confessive – акт признания)**; например :

в англ.: His deeds are, *I confess*, great for the nation, but he shouldn't think too highly of himself! (P. Abrahams. The Path of Thunder, 195).

в узб.: Унинг халқолдидаги хизматлари, таноламан, катта, лекин у ўзи шунчалик манмансирама слигикерак.

в русск.: Его заслуги, я признаю, огромные. Но он не должен быть слишком высокого мнения о себе

6. СВП(типа *I fear, I'm afraid*, и т.п.), вербализующее **менасив (menasive – акт признаю испугания, испуга)**, например :

в англ.: The folk, I fear, is quite illiterate. (E. Hemingway. Short stories, 76)

в узб.: Баъзи одамлар, қўрқаман, ўтасаводсиз (Адижоннома, 2020, 4).

в русск.: Некоторые люди, я боюсь, совершенно безграмотные.

в англ.: They cannot finish the wok today, I am afraid

в узб.: Улар бу ишни, қўрқаман, тугатаолмайдилар.

в русск.: Они эту работу, боюсь, не смогут закончить.

7. СВП(типа *I take an oath, I swear* и т.п.), вербализующее **комитатив (committative – акт клятвенного заверения)**, например :

в англ.: The killer will be, I take an oath, found and held accountable before the public in the nearest future (E. Hemingway. Short Stories. 69),

в узб.: Қотил, онг ичаман, тез кунларда топилиб, халқ олдида жавоб беради

в русск.: Клянусь, убийца будет найден и привлечен к ответственности перед обществом в самое ближайшее время.

8. СВП(типа *“God bless you, God's blessings to you”* и т.п.), вербализующее **блессив (blessive – акт благословения)**, например:

в англ.: Such calamities, God save us, usully take heavy human tolls (O. Henry. Short Stories, 157).

в узб.: Бундай офатлар, худо асрасин, одатдақўпчиликнинг ёстигини куритади.

в русск.: Такие бедствия, упаси Боже, обычно уносят большие человеческие жизни.

в англ.: What if, God forbid, it wasn't just vandalism? (S. Maugham. Short Stories, 71).

в узб.: Бу бетартиблик, худо қўрсатмасин, вандализмнинг ўзигина бўлмасачи?

в русск.: А что если, упаси Господи, беспредел не ограничится вандализмом?

9. СВП(типа *I curse, I imprecate* и т.п.), вербализующее **импрекатив (imprecative – акт проклинания)**, например :

в англ.: Such criminal acts, sure I curse, are to be radically curbed (Morning Star, 2018, 6).

в узб.: Бундай жиноий ишлар, минг лаънатлар бўлсин, илдизи билан куритилиши керак.

в русск.: Такие преступные действия, я проклинаю, должны быть радикально пресечены.

10. СВП(типа *what's most signified of all, what's most astonishing of all what's very strange, what is very fantastic* и т.п.), вербализующее **амазив (amazive – акт изумления)**, например:

в англ.: That is the best news we have ever had, *what's most signified of all*, we are not moving anywhere (S/Maugham. Short Stories, 183).

в узб.: Бу биз қулоғимиз эшитмаган энг яхши янгилик бўлди, энг мухими, биз ҳеч қаерга қўчмаяпмиз.

в русск.: Это лучшая новость, которая у нас когда-либо была, и что самое главное, мы никуда не движемся.

11. СВП (типа *What is surprising, which is more surprising. what annoys me, what's very surprising, what's very strange* и т.п.), вербализующее **супрайзив (surprive – акты удивления и разочарования)**, например:

в англ.: He didn't inform his parents of his return, what is more surprising, he even didn't phone them before coming home with a friend (P. Abrahams. The Path of Thunser, 29)

в узб.: Уота-она сигаўзининг қайти шиҳакидахабар бермади, ажабланарлиси шуки, у ҳаттоки уйига бир дўсти билан келаётгани ҳақида телефон қилиб ҳам қўймади.

в русск.: Он не осведомил своих родителей о своем возвращении, что более удивительно, он даже не звонил им о его приезде домой со своим другом.

12. СВП (типа *God forbid us, God save us, God bless us all, God knows, If God allows* ит.п.), вербализующее **апеллятив (appeallative – акт обращения к кому-либо)**, например:

в англ.: Such calamities, God save us, usully take heavy human tolls (O. Henry. Short Stories, 157).

в узб.: Бундай офатлар, худо асрасин, одатдақўпчиликнинг ёстигини куритади.

в русск.: Такие бедствия, упаси Боже, обычно уносят большие человеческие жизни.

13. СВП (типа *take, meditate, compare, analyse, understand, guess fancy, imagine, think, suppose, believe, take, look* ит.п.), вербализующее **ассертив (assertive – акт утверждения, убеждения)**, например:

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в англ.: David, believe, is seriously ill (J.London.Short Stories, 201)

в узб.: Давид, ишонавер, жиддий касал.

в русск.: Давид, поверь, серьёзно боленъ.

14. СВП (типа , **could you say, could you answer, could we ask, could you believe** и т.п.), **вербализирующее reproachiv (reproachive – акты упрекания, пронизирования)**, например:

в англ.: John betrayed us, could you say, what we should do further? (O.Henry.Short Stories, 101).

в узб.: Жон бизнинг юзимизни ерга қаратди, айтинг-чи, энди нима қиламиз?

в русск.: Джон предал нас, можете сказать, что мы должны дальше делать?

15. СВП (типа **wouldn't you say?, could I guess?, could I read your mind?** и т.п.), **вербализирующее suggestiv (suggestive – акт предложения, подсказывания)**, например:

в англ.: It is ethically wrong doing such things, wouldn't you say, my friend? (O.Henry.Short Stories, 189).

в узб.: Бундай ишларини қилиш этик жиҳатдан нотўғри, шунга сиз нима дейсиз-а, дўстим?

в русск.: Делать такие вещи этически неправильно, что вы скажете на это, а, друг мой?

She is not at home, could I guess?.

Вот некоторые наиболее частотные, коммуникативно- прагматические типы СВП в языках, вербализующих речевые акты под общим названием “ассессив”, при этом важно сочетание изучения СВП с точки зрения их структурных семантических и прагматических, равно как и их гендерологических особенностей, так как они взаимодополняют друг друга при формулировке как теоретических, так и практических выводов и заключений по общелингвистическому статусу СВП.

Как видно из вышеизложенного, в трех типологически разных языках СВП характеризуются как изоморфными, так и алломорфными свойствами, при этом их изоморфные свойства объясняются общеязыковыми закономерностями развития языков как орудий общения, тогда как их алломорфные признаки указывают на идиоматизм грамматического строя сопоставляемых языков, порою связанных с оригинальным мышлением носителей того или иного языка, своеобразно объективируемым их национальными ресурсами, а это особенно важно в прикладном аспектах их рассмотрения, имеются ввиду лингводидактический и транслатологический аспекты.

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PROGRESSIVE DEVELOPMENT OF CORPORATE LINGUISTICS IN THE WORLD AND UZBEK LINGUISTICS

Abstract: The article puts forward the views on the Corpus, the history of Corpus linguistics, the creation of linguistic corpora.

Key words: Corpus, corpus linguistics, corpus types, problems of creating a national corpus of Uzbek language.

Language: English

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Introduction

Corpus linguistics is an independent branch of computer linguistics that deals with the development of the principles of creating and using linguistic corpus (text corpus) using computer technology. It began to develop as a separate branch of linguistics in the mid-90 years of 20th century. There are specific scientific records about the corpus in science. That is, to understand it as an electronic collection of texts equipped with a scientific apparatus, as well as a reference to corpus linguistics, which is formed under the concept of “text corpus”; Perception is observed in the form of “the volume of linguistic information in electronic form, intended for socio-humanitarian research, with its own structure and layout”, “ontology of speech activity with a complex structure.” As a complex linguistic whole, the corpus not only contains a large amount of information about the content of the speech / linguistic source, but also includes formal methods of presenting this information (such as word indexing, morphological information, etc.). Accordingly, the corpus can also be interpreted as a specially constructed semiotic system.

Literature review

Corpus linguistics emerged in Western Europe and the United States in the late 1960s as a science that deals with the analysis of text corpuscles. As a result of the rapid development of computer and information

and communication technologies in the mid-1980s, corpus projects of various languages and sizes were created. During this period, the results achieved in corpus linguistics began to be widely applied to the language teaching process, and projects on corpus linguistics created in the world's leading higher education institutions became the subject of practice and the day. Through this, the historical, geographical, social variation of the corpus approach and its optimal nature, reflecting its changing forms in the linguistic system, were revealed. This, in turn, made it possible to master the basic principles of corpus-based methods of linguistic analysis.

The development of corpus linguistics is one of the most pressing issues for nations that care about their future destiny. In the first half of the 20th century, it was only possible to build a national corpus by hand. This was time consuming and costly. For this reason, the creation of text corpora would not be approached with such enthusiasm, and its approach would be at the expense of the interest expressed by the majority. As mentioned above, with the development of information and communication technologies, the synchronization and systematization of corpus-related materials has become easier, and costs have been reduced accordingly. The development of corpus linguistics promises unprecedented benefits to society: while it combines many positive aspects of the humanities and technical

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sciences. However, as a science formed in recent years, corpus linguistics is not yet a fully developed, advanced science. For example, a number of scholars interpret and understand corpus linguistics as a branch of traditional linguistics. At the same time, they interpret corpus linguistics as a science with no theoretical basis, but only practical aspects. In their view, the corpus is an optimal way of processing material, a new information resource. Although any branch of linguistics connected with practice can exist as a science with its own subject, method, and theory, the terminological apparatus of corpus linguistics would not have been formed without it.

In fact, the emergence of corpus linguistics is influenced by a rational (based on linguistic intuition that serves to distinguish right and wrong constructions) approach to linguistics in the mid-19th century, followed by an empirical (resource-reserve) approach to communication. The first manifestations of the technology used in the construction of the case today were created in a time when computers were not yet invented - in the 18th - 19th centuries. From the point of view of comparative-historical linguistics, the study of language by researchers in order to translate a large number of texts into the ancestral language is also valued as the roots of corpus linguistics. Another stage in the development of corpus linguistics is sociolinguistic research. After all, as early as the 19th century, scholars began to create a collection of inter-dialectal relations while mapping dialects. Consequently, there is no doubt that the initial principles pertaining to the corpus were applied in this work. Today, however, there are almost no obstacles to the rapid development of corpus linguistics: with the development of the global Internet system, the

issues of size and scope related to the corpus have disappeared on their own. Also, the development of information technology in North and West America, in turn, paved the way for the prospects of British corpus linguistics in the 60s and 80s of the 20th century.

In general, the properties of corpora developed in the 20th century can be illustrated by the following table (Table 1.2). In addition, the Russian National Corpus, inspired by the British National Corpus, includes 163 million. (and 500 million to date) is famous for including words belonging to the historical and modern strata.

This building consists of the following sections:

- 1) main corpus (prose texts of the 18th-21st centuries);
- 2) syntactic corpus (the morphological and syntactic device is given for each sentence);
- 3) newspaper corpus (media articles 1990-2000);
- 4) parallel corpus (translation of the corresponding word from a foreign language into Russian and from Russian into a foreign language);
- 5) corpus of dialectal texts;
- 6) corpus of poetic texts;
- 7) Russian language teaching corpus (based on a simple school curriculum);
- 8) oral speech corpus;
- 9) corpus of multimedia materials (a collection of films of 1930-2000);
- 10) corpus of Russian accent history (texts on accent history).

According to scientists, by the 90s of the 20th century, the number of buildings created exceeded 600. The date of their creation is divided into years as follows (Table 1):

Table 1. Distribution of corporations created around the world by years

1965	10
1966-1970	20
1971-1975	30
1976-1980	80
1981-1985	160
1986-1990	320

It seems that the scientific and practical significance of building corpora, not only nationally, but in general, is enormous. However, when the industry was just beginning to take shape, it was negatively perceived by experts in various fields. In particular, in the 60s and 80s of the 20th century, proponents of the Chomsky approach (rational approach) in linguistics believed that the emergence of right and wrong constructions in language occurs only at the expense of the intuition of language owners. N. Chomsky himself was a fierce enemy of corpus linguistics, describing it as a "non-existent field." In a

teleconference called Corpora-List, N. Chomsky's followers spoke about the irrelevance of corpora. Similarly, Professor Robert Liz described the creation of the corpora at a conference at Brown University in 1962 as a waste of public funds and time. Nevertheless, the amount of funds allocated by the sponsors, the state, to support projects to create the corpora has increased. Scientists have realized that the scope of language materials included in the corpus will also expand the possibilities for the study of linguistic phenomena. After all, any corpora "must be able to meet the qualitative and quantitative

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parameters.” Although the development of corpus linguistics has been for some time, it requires an answer to the question of what the corpus should be, to whom it is intended, and in what areas it can be applied. В.А.Плунгян бунга жавобан “корпус, даставвал, профессионал лингвистлар учун зарур. They need proof of language. This means that linguists must compile and systematize this evidence.” Second, it is extremely useful for programmers. Third, the corpus is a unique helper for teachers of schools, secondary and higher education institutions. It should be noted that in higher education institutions around the world, linguistic corpus are used in the preparation of control questions and lecture texts for students. Many students apply to the corpus independently in the preparation of independent work and projects. In this process, comparing students who

use the corpus with students who do not use it, it can be concluded that a student who uses the corpus effectively learns the laws of language, as well as the features of the foreign language he learns more easily and quickly than a second category student. Also, the linguistic corpus is an effective tool not only in the positive solution of scientific, but also educational and methodological issues. Although scholars still classify corpus linguistics as a field in which the theoretical foundations are not sufficiently formed, it is hoped that in the future researchers will begin to approach the corpus not only as an information resource but also as a field of their own methodological foundations and scientific and theoretical significance. In general, the differences between traditional and corpus linguistics can be seen in the following (Table 2).

Table 2. Mutual differences between traditional and corpus linguistics

Features	Traditional linguistics	Corpus linguistics
Orientation	Language / language research	Speech research
Object of research	Explain speech phenomena through theory	Text corpus
Methods	Qualitative methods	Quantitative methods
Attitude to the text	Abstraction	Clarity

Conclusion

Thus, the essence of the corpus and the purpose of its formation are:

- Be able to present the available information in the form of text;
- The ability to provide as much information as possible depending on the size of the case;
- Ability to repeatedly use the data of the created corpus in solving various problems, etc. To do

this, you need to solve the following tasks facing the corpus.

- To determine the principles that form the basis of the corpus, what should be the standard corpus layout on various linguistic parameters (including semantic, genre, methodological, morphological layout);
- to solve problems related to linguistics and literature with the help of the corpus

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OVERVIEW OF EARLY DIAGNOSIS OF «DIABETES» BASED ON ARTIFICIAL INTELLIGENCE

Abstract: The review presents the possibilities of using artificial intelligence to study the mechanisms of development of diabetes mellitus (DM) and create new technologies for its prevention, monitoring and treatment. In recent years, a huge array of molecular data has been accumulated that reveal the pathogenetic mechanisms of the development of diabetes mellitus and its complications. Intellectual analysis of data and texts of scientific publications (data mining and text mining) opens up new possibilities for processing this information. Analysis of molecular genetic networks makes it possible to identify molecular interactions that are important for the development of diabetes mellitus and its complications, as well as to identify new targeted molecules. Based on the analysis of big data and machine learning, new platforms have been created for the prognosis and screening of diabetes mellitus, diabetic retinopathy, chronic kidney disease, and cardiovascular complications. Machine learning algorithms are used for personalized glucose prediction, closed-loop insulin delivery systems, and decision support systems for lifestyle modification and diabetes treatment.

Key words: diabetes mellitus, artificial intelligence, machine learning, data mining, text mining, gene networks, decision support systems.

Language: English

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Introduction

Artificial intelligence (AI) is the science and technology of creating intelligent systems, i.e. systems capable of performing functions previously peculiar only to humans: including the ability to correctly interpret external data, learn from such data and use the knowledge gained to achieve specific goals and objectives through flexible adaptation. AI and the systems based on it are one of the most

important scientific achievements of the modern era. Even in everyday life, a person is faced with many things related to AI in one way or another: a voice assistant in a mobile device, "smart" watches, computer chess, etc. In recent years, AI has penetrated all spheres of human life, including medicine. Analysis of the Web of Science database showed an increase in the number of publications devoted to the use of AI in biomedical research: since 1995, the

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annual growth has averaged 17%, in the period from 2014 to 2019. - about 45%. AI is most often used in the study of cancer, depression, Alzheimer's disease, heart failure, and diabetes mellitus (DM) [1].

The purpose of this review was to analyze the possibilities and main achievements in studying the pathogenesis of diabetes, improving methods of its prevention, screening and treatment using AI. Sources were searched for the keywords “artificial intelligence” and “diabetes” in the Pubmed / Medline database. Considering the large amount of work on the problem, we mainly present the results of the studies of the last 5 years.

Artificial intelligence: directions and approaches

The emergence of AI is associated with the creation of electronic-mechanical devices, the behavior of which can be programmed using a set of certain rules applied in accordance with the input data and the internal logic of actions. The need for AI systems was due to the appearance in the 40s and 50s. XX century tasks that were difficult or impossible for a person to solve, but which were quite within the power of electronic devices of that time: decoding secret enemy messages, planning military operations, etc. Further development of AI received a theoretical basis in the form of fundamental works by A. Turing, C. Shannon, J. McCarthy, F. Rosenblatt and other researchers, in which the main provisions of the theory of algorithms, machine learning (ML), information theory, artificial neural networks were formulated, programming languages. The elemental base of AI systems was constantly being improved (from vacuum tubes to transistors, then to integrated circuits), making it possible to solve more and more complex problems.

In the course of the development of AI, various directions have been formed, among which several main ones can be noted [2]. Historically, one of the first to emerge was symbolic and logical approaches, in which it is assumed that objects of the real world, data, knowledge can be formalized by some symbols and operations with them, expressed in the language of mathematical logic. Logic programming languages have been developed for specific applications of the logical approach. The agent-oriented approach is based on the concept of an agent as a self-learning system that can perceive environmental signals and influence this environment in order to optimize certain quality indicators. Example-based statistical learning assumes that existing data contains hidden patterns that can be detected and analyzed to make predictions and decisions. In this approach, known as ML or data mining (IAD), the apparatus of the theory of probability and mathematical statistics, optimization methods are widely used.

Depending on the method of setting the target attribute, the following types of ML problems are considered.

1. Supervised learning. It is used when it is required to build a decision rule (predictive model) based on the initial sample, as well as based on the values of the target attribute specified for all of its elements. Depending on the type of the target feature, there are problems of regression analysis, where the predicted feature can take real values, and classification (pattern recognition), where the target feature is some class label belonging to a set of non-numeric nature. In tasks that take into account the time factor, it is necessary to predict the value of the target feature in future moments.

2. Unsupervised learning. In this case, the target attribute is not specified; This group of problems includes cluster analysis, where it is required to split a set of observations into homogeneous groups, and dimensionality reduction problems, in which it is necessary to form a system of features of a lower dimension without losing essential information.

3. Semi-supervised learning. This method is used when training information in the form of a set of values of the target feature is available only for a part of the sample, as a rule, of a relatively small size.

There are several basic approaches to solving problems. The probabilistic approach is based on the idea that the data is obtained in accordance with some probabilistic distribution. The distribution model can be estimated from observations and used to obtain optimal solutions (for example, giving a minimum estimate of the probability of a pattern recognition error). In this approach, Bayesian inference is widely used, based on the calculation of the posterior probabilities of classes using the Bayes formula using known a priori probabilities and a distribution model. In the "naive" Bayesian classifier (Naive Bayes; NB), statistical independence of features is assumed. When studying processes that change in time, the concept of Markov chains is used, in which random transitions of a certain system on a set of discrete states are modeled.

The metric approach is applicable to numerical features and uses an analogy with geometric points representing the original sample in a multidimensional Euclidean space. The predictive decision is made by analyzing the metric properties of the sample, for example, by searching for the closest points in the k-Nearest Neighbors (k-NN) method. The same approach includes linear classifiers based on the search for the optimal dividing hyperplane (Fisher's linear discriminant); Support Vector Machine (SVM), which searches for a maximum width band separating points of different classes, as well as generalizations of this method to the case of a regression analysis problem (Support Vector Regression; SVR) and linearly inseparable classes (SVM using the kernel); linear regression analysis and its generalizations;

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model of logistic regression (Logistic Regression; LR).

The next approach is based on finding logical patterns in the data and using patterns when making decisions. A convenient form of representing patterns is a Decision Tree (DT), which is a visual hierarchical model of the studied dependence. When forming DT, a step-by-step selection of the most important predictors and automatic screening of noise, uninformative features are carried out. The advantage of this approach is that it allows analysis of both numeric and non-numeric attributes.

One of the main learning technologies is Artificial Neural Networks (ANN), in particular, the Multilayer Perceptron, which simulate the functioning of biological neurons when processing signals arriving at them. Recently, deep neural networks have been actively developing, demonstrating significant progress in visual recognition and natural speech processing (Natural Language Processing; NLP) [3]. Various deep ANN architectures are used, such as Deep Convolutional Networks based on linear transformation; deep recurrent networks (Recurrent Neural Networks), used to simulate various sequences, etc.

The collective (ensemble) approach in ML makes it possible to use the advantages of various

algorithms included in the ensemble to increase the predictive power of solutions. There are adaptive ensemble building methods (called boosting) and methods in which base decisions are randomly generated independently of each other (bagging). The methods of boosting decision trees and the random forest (RF) method have proven themselves well, using DTs generated from random subsamples as basic elements.

To find optimal solutions in ML, modern optimization methods are used, such as the Stochastic Gradient Descent method for training neural networks, genetic and evolutionary programming, which allow to effectively solve complex optimization problems when analyzing large data arrays.

Conclusion

The introduction of systems based on artificial intelligence is in line with global trends in modern medicine, including the transition to digital and remote technologies, personalization of treatment, high-precision forecasting and a patient-centered approach. There is an obvious need for further research in this direction, with an assessment of the clinical effectiveness of new technologies and their economic justification.

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FUNCTIONAL AND STYLISTIC FEATURES OF VERBS IN PERSIAN NEWSPAPER TEXTS

Abstract: Currently, one of the actively developing directions in linguistics is language learning in a functional-stylistic aspect. Special attention is paid to the study of the use of language units in different functional styles.

Publicist texts are studied according to the functional approach to linguistic analysis of newspaper texts, investigated based on semantics and form of language units, their function in text formation. In the implementation of this function, the semantics and form of the language unit are transformed into a means of generating newspaper text. Although the analysis of the application of parts of speech and their semantic groups within functional styles is particularly important in iranistics, there are no studies on this subject. The study of the newspaper-publicist style of Persian is the most important direction of modern iranistics

Key words: stylistics, newspaper style, qualitative adjectives, relative adjectives, verbs, text, thematic group, verbs of speech, informative, functional features of verbs.

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ФУНКЦИОНАЛЬНЫЕ И СТИЛИСТИЧЕСКИЕ ОСОБЕННОСТИ ГЛАГОЛОВ В ГАЗЕТНЫХ ТЕКСТАХ ПЕРСИДСКОГО ЯЗЫКА

Аннотация: Язык - одно из сложнейших явлений человеческого общества. Определенные языковые средства и стили, которые мы постоянно используем в общении, образуют систему. В связи с непрерывным развитием языка, изменение целей и задач различных функциональных стилей, стилистическое невообразимое разделение речи как инвариантной догмы. Поэтому теоретически не существует общепризнанных критериев стилистической дифференциации стиля. Однако деление на функциональные стили речи представляло собой не только законное, но и необходимое, если оно сделано с учетом динамики процессов, происходящих в естественном языке и обществе. Предметом исследований является газетно-публицистический стиль речи.

Газетно-публицистический стиль имеет специфические особенности и основная задача материалов этого стиля - донести определённую информацию до определённых позиций; Таким образом достигается желаемый эффект для читателя или слушателя. Содержание газеты и информационных сообщений отличается тем, что здесь речь идет о событиях, доступных для широкого понимания слоев неспециалистов, прямо или косвенно связанных с их жизнью и интересами.

Ключевые слова: стилистика, газетно-публицистический стиль, части речи, глагол, текст, тематическая группа, глаголы речи, информативность, функциональные особенности частей речи.

Введение

В настоящее время одним из активно развивающимся направлением в мировой

лингвистике является изучение языка в функционально-стилистическом аспекте. Особое внимание уделяется исследованию использования

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языковых единиц в различных функциональных стилях.

В мировой лингвистике публицистические тексты изучаются согласно функциональному подходу к лингвистическому анализу газетных текстов, исследуются, исходя из семантики и формы языковых единиц, их функции в формировании текста. В реализации этой функции семантика и форма языковой единицы превращаются в средство, порождающие газетный текст. Несмотря на то, что и в иранистике особую важность обретает анализ применения частей речи и их семантических групп в рамках функциональных стилей, но тем не менее отсутствуют монографические исследования на данную тему. Исследование газетно-публицистического стиля персидского языка является важнейшим направлением современной иранистики.

Степень изученности темы.

В настоящее время возрастает интерес к исследованию языка средств массовой информации, в частности, языка газеты. В узбекском языкознании отмечаются работы С.Мухамедова [1], А.Бобоевой [2], Д.Тешабоевой [3], К.Юсупова [4], А.Абдусаидова [5], И.Тошалиева [6], И.Азимовой [7], Ш.Абдураимовой [8], Б.Йулдошева [9], Я.Маматовой [10], Н.Кодирова [11], в русском языкознании существуют работы Г.Я.Солганика [12], А.Н.Васильевой [13], С.Виноградова [14], М.Володиной [15], В.Г.Костомарова [16], О.Александровой [17], Н.Клушиной [18], М.Н.Кожинной [19], Е.Кубряковой [20], И.Кобозовой [21], И.П.Лисаковой [22], А.Леонтьева [23], В.Конькова [24], К.Билинского [25], Е.Какориной [26].

В иранистике первыми изысканиями по языку прессы Ирана являются исследования английского ученого Э.Брауна. В книге «История печати и литературы Ирана эпохи Машруты» [27] автором приведены подробные сведения о журналистике той эпохи, иранских газетах, изданных в Индии.

Изучению языка прессы Ирана посвящены научные работы Носириддина Парвина, в которых получили освещение история и характерные иранской журналистике особенности [28]. История иранской прессы описана и в работах иранских ученых Джафари Хонако, Масъуда Барзина [29].

Специфические особенности иранской газеты отражены в научных статьях Мухаммада Ризо Исфандияри [30], Захро Абзори [31], Рабобе Мустахги [32], Фарзоне Худобанде [33], Алирезе Бунёди [34] и др.

Следует отметить и значимость исследований таджикских иранистов Муллоева

Шарифа [35], Р.Мехди [36], русских иранистов А.Аббасогли [37], имеющих отношение к теме данного диссертационного исследования.

А.Сухоруковым проведено исследование по использованию в иранских газетах эквивалентов европеизмов и американизмов на примере иранской прессы [38].

О важности дискурса персидского языка отмечается в научной статье Е.Гладковой «Некоторые аспекты общественно-политической лексики современного персидского языка (на материале выступлений М.Ахмадинежада в ООН)». В частности, автором сделаны выводы, что речи М.Ахмадинежада, произнесённые на мировых аренах, «логически сформированы и обоснованы», что увеличивает интерес к изучению политического дискурса [39].

Изучению проблем по данной теме исследования в других языках, к примеру, в таджикском языке, проделаны ряд работ: в кандидатской диссертации Х.Сафарова [40] освещаются лексико-грамматические и стилистические особенности заголовков таджикских газет, в кандидатской работе М.Музофиршоева на примере анализа языка периодической печати исследуется словообразование неологизмов в таджикском языке [41].

В перечисленных выше исследованиях лексических особенностей языка средств массовой информации Ирана, освещены определенные аспекты иранской периодической печати, однако не изучены вкрапления из различных стилей в газетных текстах, не определена роль использованных в них языковых единиц в передаче эмоционально-экспрессивных значений; недостаточно освещены вопросы применения грамматических форм в текстах персидских газет, реализующих множество стилистических значений; не исследованы такие стилистические аспекты газетных текстов, как новизна, актуальность и сжатость информации; не проанализированы специфические особенности газетных текстов на персидском языке; функционально-стилистические особенности частей речи в иранских газетных текстах не были объектом монографических исследований.

В результате проведенных в мире научных исследований, посвященных своеобразным особенностям языка прессы Ирана и сравнительному анализу текстов персидских газет и англоязычных текстов, получен ряд научных результатов, в частности, следующие: установлены риторические особенности газетных текстов на персидском языке (Бакинский институт востоковедения), доказано, что основная часть статей, изданных большими тиражами в Иране, посвящена религиозной тематике (دانشگاه تهران), выявлены социальные факторы, влияющие на

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формирование газетных текстов Ирана (English and Foreign languages University), уточнены лингвистические факторы, формирующие заголовки спортивных газет Ирана (Институт стран Азии и Африки при Московском государственном университете имени М.В.Ломоносова), доказана продуктивность в газетных текстах Ирана неологизмов, заимствованных из арабского языка (دانشگاه علامه طباطبائی), информирование признано основной функцией газеты (Delhi University), проведен сравнительный анализ английских и персидских газет, доказано, что в текстах на обоих языках продуктивны метонимия и метафора (Cambridge University), благодаря проведенному сравнительному анализу английских и персидских текстов на спортивную тематику кроме лингвистических различий выявлены также культурологические особенности (Mississippi University).

В современном мировом языкознании проводятся научные исследования по приоритетным направлениям газетно-публицистического стиля, а именно, освещение газетных дискурсов, установление роли социально-политических факторов в формировании газетных текстов, составление словаря политических терминов в газетных текстах, установление лингвистических и социальных факторов языка средств массовой информации.

Изменение в мире социально-политической ситуации, в свою очередь, усиливает потребность общества в новаторстве. В последнее время с увеличением в жизни значения средств массовой информации, усиливается необходимость в их глубоком изучении. Газетный язык состоит из единиц текста, единицы которых, в свою очередь, являются объектом изучения стилистики.

В настоящее время в иранистике наблюдается большое количество исследований по стилистике [42,43,44], изучение и анализ которых доказывает, что произведения по стилистике, созданные в период до конца XX века, в основном, посвящены литературной стилистике, а именно, стилистике литературных жанров. В конце XX века – начале XXI вв. в иранистике наблюдается новый подход к вопросам стилистики.

В персидском языке «стиль» выражается терминами *سبک*, *سیاق*, *سبک*, *گونه کاربرد*. В иранистике, несмотря на различие в стилистической классификации, в особенности, в значении термина «стиль» имеется и общее, а именно, в ходе анализа установлено наличие между ними общего один и тот же стиль в различных работах называется по-разному, или же можно встретить классификации, где один и тот же стиль относится к нескольким группам. При разграничении стилей

за основу берутся взаимоотношения говорящего и слушающего, их социальная дифференциация, размещение во времени и пространстве.

Публицистический стиль используется в политике и некоторых социальных отраслях, он выполняет функцию оказания информативного и экспрессивного воздействия [45, р.48]. Исходя из того, что в персидском языке публицистический стиль охватывает элементы официального, научного, художественного и устного стилей, его можно включить в ряд самых открытых стилей в системе функциональных стилей.

В публицистическом стиле особое место занимает газетный язык, т.к. газета и публицистика тесно связаны между собой. Каждая публицистическая статья в газете может выражать своеобразные общественные проблемы или же художественно передать различные преобразования в обществе [46, р.20].

В настоящее время в Иране наблюдается особый интерес к газетному языку, о чем свидетельствует ряд исследований, проведенных в данной области [47, 48, 49, 50]. В процессе изучения исследований выявлено, что в газетном языке наблюдается стремление к сжатости, избеганию терминов, правильному подбору стиля изложения и сохранению чистоты персидского языка. Наряду с этим, ученые констатируют важность газеты в воспитании молодежи. В результате анализов установлено, что в персидских газетах основное внимание уделяется передаче точной информации, чистоте языка, воспитательной функции.

Газетные жанры делятся на информационные, аналитические и художественно-публицистические [45, р.266]. Анализ работ по персидскому языкознанию показал, что в нем отсутствует классификация газетных жанров и в ней разграничиваются лишь разновидности газетных текстов. К примеру, Ахмад Гилони в качестве разновидности текстов иранских газет приводят *سرمقاله* «передовая статья», *خبر* «информация», *گزارش خبری یا رپارٹاژ* «репортаж», *بخشهای فرعی* «дополнительные рубрики» (здоровоохранение, экология, семья, наука, книга, выставка, фильм и др.) [51]. Хасан Зулфикоори утверждает, что иранская периодика состоит из 4 моделей – *خبر* *заметка*, *گزارش* *репортаж*, *مصاحبه* *интервью* и *مقاله* *статья* [52].

Тематика иранских газет охватывает рубрики: социально-политические новости, местные новости, Иран и культура, новости в мире, спорт и другие. В целом, тематику рубрик газет Ирана можно разделить на пять групп, а именно: социально-политическая тематика, экономика, спорт, культура и литература. В исследовании в процессе освещения функционально-стилистических особенностей

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частей речи мы обратились к социально-политической, экономической и спортивной рубрикам. Своеобразные особенности газетных текстов в частях речи, в основном, отражены в приведенных выше трех рубриках.

В персидскоязычных газетных текстах участвуют все временные формы, но, учитывая информативную функцию газеты, выявлено, что наиболее продуктивными являются формы глагола в прошедшем времени. В результате широкоплановости газетных текстов наблюдается применение форм настоящего и будущего времени.

Выражение настоящего времени в персидских газетах с помощью словосочетания *در حال ... است* является характерной особенностью газетного стиля, выражение настоящего времени с помощью таких словосочетаний придает тексту официальность и дух высокого стиля. К примеру, *ایران برای اتصال کریدور خاورمیانه به آسیای میانه در حال فعال کردن چهار کریدور مهم منطقه ای است* [Ж.Э.10288:2]

Если в предложении *Иран налаживает четыре важных региональных коридора для соединения Среднего Востока со Средней Азией* сформировать на основе грамматических правил нормативного языка, вместо словосочетания в предложении *ای اتصال کریدور مهم منطقه ای* следовало бы заменить глаголом *فعال کردن*, тогда предложение получилось бы следующим *ایران برای اتصال کریدور خاورمیانه به آسیای میانه فعال میکند*. Однако стиль газетных текстов требует использования таких словосочетаний для выражения настоящего времени.

В газетных текстах глаголы прошедшего времени выражают в основном информативную функцию. Форма глагола прошедшего времени используются в статьях, где приводится информация о политических, военных, общественных событиях в стране, визитах глав государств, природных катаклизмах, культурных мероприятиях, спортивных состязаниях и других. Выражение в газетных текстах значения прошлого времени формами настоящего и будущего времени придают им своеобразную стилистическую окраску. Высокая частотность применения в газетных текстах глагола прошедшего времени тесно связано с его грамматической функцией. В отличие от конкретного прошлого времени, которое информирует лишь о выполнении действия, результативный глагол прошедшего времени не только выражает выполнение действия, но и обращает внимание на отношение к моменту речи. В основном такие глаголы чаще встречаются в лекциях, статьях в форме отчетов.

Употребление форм глаголов определенных наклонений в газетных текстах ограничено, в них глаголы, в основном, используются в

изъявительном наклонении. Употребление в газетных текстах форм глагола в повелительном наклонении не специфично этому стилю, но иногда все же встречаются случаи его употребления. В таких случаях форма повелительного наклонения выполняет функцию привлечения внимания читателей. Наряду с этим, повелительное наклонение в текстах с речью главы государства используются в обращениях к народу, для побуждения их к определенным действиям, усиления внимания.

مدام سعی نکنید خودتان را با دیگران مقایسه کنید و خود را از دیگران برتر بدانید [Э.24382:3]

Не пытайтесь сравнивать себя с другими, не считайте себя лучше других.

В публицистическом стиле часто употребляется форма страдательного залога. Широкое использование в газетных текстах глагола для выражения страдательного залога сложного глагола – одно из характерных сторон этого стиля.

۸۵ میلیارد ریال آن اگر پرداخت شود، دیرکرد پول آن‌ها از سوی بانک بخشوده می‌شود [Ж.Э.10292:12]

Если будет осуществлена оплата в 85 миллиардов риалов, банк простит несвоевременную уплату.

В персидском языке множество глаголов имеют варианты в выше приведенных стилях. В силу того, что газетные тексты охватывают заметки, лекции глав государств и другие, использование в них глаголов высокого стиля считается своеобразной особенностью газетного языка. Своеобразными особенностями характеризуется употребление в персидских газетных текстах глаголов, выражающих официальность. В персидском языке для передачи официозности и экспрессии уважения используются определенные глаголы: вместо *گفتن* глагол *فرمودن*, вместо *رفتن* глагол *بردن*, вместо *تشریف بردن*, вместо *آفریدن* глагол *ساختن*, вместо *تشریف آوردن* глагол *آوردن*. Всегда на месте глагола *کردن* в составе сложных глаголов можно использовать глагол *نمودن*. В таких случаях глагол *نمودن* придает сложному глаголу оттенок высокого стиля. Использование в газетных текстах глагола *نمودن* вместо *کردن*, вместо *گردیدن* глагола *شدن* является характерной особенностью публицистического стиля.

Анализы показали, что в персидских газетных текстах активно употребляются сложные глаголы в форме рамочной конструкции. Применение в газетных текстах сложный глаголов в форме рамочной конструкции проявляется как способ сохранения официальности, придания газетным текстам оттенка высокого стиля. В них используются глаголы *پس‌نگی داشتن*, *تصمیم شروع کردن*, *بسیار نیاز داشتن*, *وارد شدن*, *دعوت شدن*, *آسیب رساندن*, *گرفتن شدن*.

Следует особо отметить, что применение в газетных текстах глаголов по модели *قرار*

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با اشاره به چیزی اظهار داشت ...*намекнув на что-либо, выражает собственное мнение*, با اشاره به چیزی خاطر نشان کرد ...*намекнув на что-либо, напоминает*, چیزی را خواند و گفت, چیزی را بر شمرد و گفت ...*посчитал, что*, چیزی را خواند و تاکید کرد ...*посчитав ...*, *подтвердил*, با تاکید بر اینکه افزود ...*подчеркнув что-либо, добавил*, اظهار امیدواری کرد ...*продолжив мысль, сказал*.

В целом, изучение применения глаголов в газетных текстах способствует выявлению их семантических стилистических возможностей в газетно-публицистическом стиле. В реализации этих возможностей важное значение имеют категории залога, времени, наклонения, спряжения.

Заключение.

Согласно проведенному анализу функциональных и стилистических особенностей частей речи персидского языка в газетных текстах сделаны следующие научно-теоретические выводы:

В персидском языке нет единого мнения в классификации стилей, также как и в употреблении терминов, в частности, «стиль» передается такими терминами, как *سبک*, *سباق*, *گونه*, *گونه کاربردی*.

Передача информации до читателя, их комментирование, оценка событий или явлений является основной функцией газетно-публицистического стиля, в результате чего реализуется информативная и экспрессивная функции. Взаимодействие и общность этих функций в газетных текстах выявляет своеобразные особенности публицистического стиля, используемый не только для передачи информации, но и оказания воздействия на читательскую аудиторию, что способствует отражению яркой эмоционально-экспрессивной стороны.

Стилистические особенности газетных текстов, а именно, новизна, актуальность и краткость информации связаны с информативной функцией, способствующая реализации лексических единиц, которые участвуют в формировании новостей. Воздействующая функция, в первую очередь, обеспечивается лексикой, выражающей пропаганду, агитацию и социально-политическую направленность текстов. Взаимоотношения двух функций на основе условий формирования газетных текстов реализуют сочетание экспрессии и стандарта.

Анализ собранного фактического материала показал, что основными особенностями газетно-

публицистического стиля являются его информативная и агитационная функции, в результате участия множества лексико-грамматических единиц нормативного языка проявляются стилистические особенности последних, реализуется её стилистическая спецификация, которая характеризуется использованием средств художественного, официального и научного стилей.

Установлены следующие особенности газетных текстов персидского языка, а именно:

- в газетных текстах для передачи информации необходимы точность, краткость, логика, полноценность;
- газетным текстам свойственна оперативность, благодаря чему в сравнительно краткие сроки освещаются актуальные темы;
- газетные тексты предназначены широкой публике по сравнению с другими текстами;
- в газетных текстах обращено внимание на высокую степень информативности, экспрессии.

Одной из характерной особенностью иранских газетных текстов является то, что в них высока степень официальности. Активное применение в газетных текстах аффикса множественного числа *آن*, личных местоимений также служат сохранению этой официальности. Официальность в газетных текстах в основном реализуется с помощью официальных форм глаголов, страдательного залога и дистантных глаголов.

Глагол, как часть речи является опорной точкой газетных текстов, такие категории глагола, как грамматические формы прошедшего времени, страдательный залог, официальные формы, рамочные конструкции являются основными средствами, выражающими стилистические особенности газетно-публицистического стиля. В газетных текстах применяются все временные формы глагола, но в силу того, что тексты направлены на освещение подробностей произошедших событий, более активны формы прошедшего времени. В газетно-публицистическом стиле использование форм наклонений глагола значительно ограничено, глаголы, в основном, используются в изъявительном наклонении, а применение повелительного наклонения не свойственно этому стилю. В газетно-публицистическом стиле используются практически все залоговые формы глагола, однако в большей степени активно используются формы страдательного залога.

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RESEARCH OF FIRE RESISTANCE OF TEXTILE FABRICS BASED ON CELLULOSE

Abstract: The article examined the optimal temperature for the synthesis of an eco-friendly fire retardant, product shelf life, physicochemical and mechanical properties, elemental analysis of textile fabrics containing a new type of metal, and fire-resistant properties. In addition, flammable textile materials have been shown to have high heat, and fire resistance properties, and their mass loss has been found to decrease from 97.3% to 21.3%.

Key words: cotton industry, flame retardant, metal, environmentally friendly flame retardant, physicochemical properties, element analysis, oligomer, urea adduct, fire resistance, processed fabric.

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Introduction

At the present time, ec-friendly fire protection products are widely used all over the world. The composition of the compositions included in such fire retardants is varied and includes different ingredients. Such flame retardants are used to protect wood, metal, various cables and textile materials from fire [1; 2].

Cotton is consider the main raw material of the textile industry, and it is widely used in the world as an industrial crop [3; 4]. Although many new fabrics are available today, cotton fabrics are still widely used today owing to their superior properties and benefits due to the following: good moisture absorption and high breathability, soft and comfortable to wear; have excellent thermal insulation; cheap cost, because they are made from natural plants [5; 6]. These advantages

simplify the use of the cotton fabric in various textiles such as underwear and children's clothing, in skin-friendly clothing [7; 8]. However, as raw material cotton fabrics can cause serious harm to people because they are flammable materials, which are why many countries have enacted strict laws, and regulations regarding the fire resistance of cotton fabrics. Numerous studies have been carried out to improve the fire resistance of cotton fabrics [9; 10]. Halogen flame retardants are effective and widely used, but research has shown that halogen flame retardants have good fire-fighting properties, but can cause serious environmental problems, including large amounts of smoke, in the event of a fire, including the production of toxic gases. For this reason, the use of halogens in effective fire protection

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products is currently decreasing [11; 12]. However, textile materials have treated with this category of fire retardants do not have sufficient flexibility and a high degree of rigidity, which complicates the production of special clothing [12].

Experimental part

The safety and fire resistance of cellulose-based textile fabrics is an urgent problem. The research resulted in a new type of environmentally friendly flame retardant containing nitrogen and phosphorus to improve the fire resistance of textile materials. A fire retardant containing metal in the synthesized composition was obtained at a temperature of 170-180° C with a yield of 92%. The physicochemical properties and elemental analysis of metal-containing organic oligomers have been studied.

Experimental tests for fire resistance of the developed composition were carried out in accordance

with GOST R 50810-95, which determines the method for determining the flammability, constant fire resistance of textile materials, as well.

Results and its discussion

In the studies, a fire retardant on the basis of the phosphorus, nitrogen and a metal-containing oligomeric composition, Which the named after TEH-1 brand 20% plus solution containing a basic substance, a metal-containing adduct urea, a crosslinking agent based on urotropine, and ammonia were used for neutralization. To increase the wettability of the treated fabric, surfactants were used.

The physical and chemical properties of an environmentally friendly flame retardant containing nitrogen and phosphorus of a new type are shown in Table 1 below.

Table 1. Physicochemical properties of an environmentally friendly fire retardant containing nitrogen and phosphorus new.

Environmentally friendly flame retardant containing nitrogen and phosphorus of a new type.	State of aggregation	pH	Density g/sm ³ г/см ³	Solvent
	Powder of white	5,5	1,08	Dissolve 10% in a water at 80 °C.

The IR spectrum of these oligomer flame retardants shows that there are absorption lines belonging to the -CH₂ - group corresponding to valence oscillations in the 2850 cm⁻¹ region of the organic matter absorption line, while the absorption lines in the 1340cm⁻¹ area belong to the carbon and hydrogen holding groups. The oscillations of all active groups are manifested in the form of strong narrow lines -CH₂-CO-in the range of 1465 - 1380 cm⁻¹. The IR spectrum confirms the presence of absorption in the 1460-1300cm⁻¹ C=S groups and regions 450-550cm⁻¹, and confirms the presence of C-C groups, and that phosphorus bonds containing organic compounds can be observed in the 1300-1200cm⁻¹

and 1180-1040cm⁻¹ regions. P=O and P-O-C groups. The absorption lines in the 1650 cm⁻¹ region of the IR spectra indicate the presence of free -CONH₂ groups, and the absorption lines in the 3300-3440 cm⁻¹ region indicate the presence of secondary-CONH groups.

Assimilation ranges between 800 and 1600 cm⁻¹ confirm the presence of NH₂ groups. In addition, intensities occur in the IR spectrum involving the bonding of metal-containing compounds between 600-800cm⁻¹ and 1460cm⁻¹.

The surface of a textile fabric treated with a new type of flame retardant was visualized under a scanning microscope and the element was analyzed (Fig. 1).

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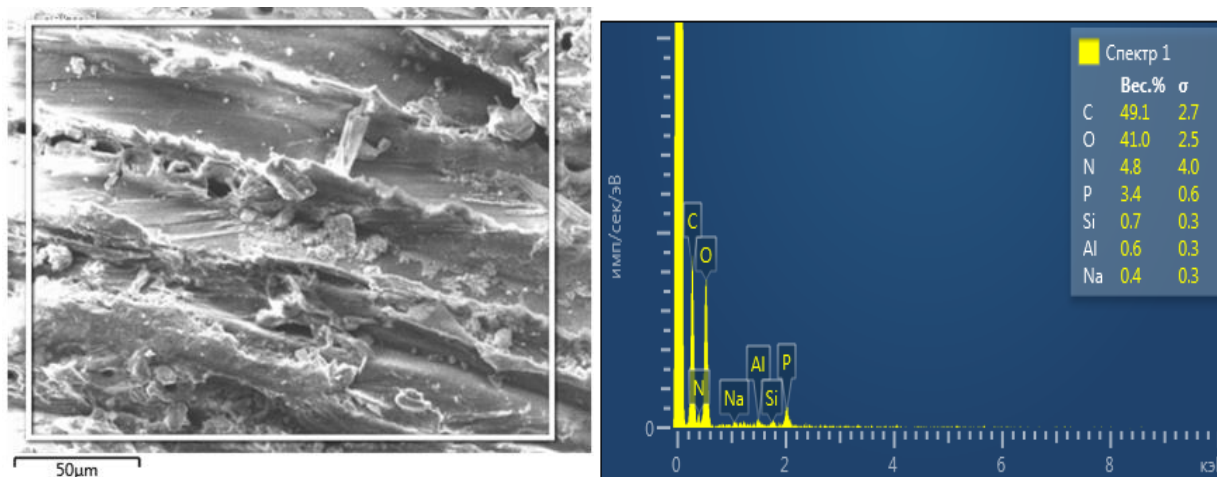


Fig-1. Image of the surface of a fabric treated with a flame retardant

Elemental analysis was performed to determine which elements are present on the surface of the new type of flame retardant textile. When studying the

analysis of an element, nitrogen, phosphorus, metals in carbon, oxygen and the content of fire retardant in cellulose can be seen (Table 2).

Table 2. Result of the elements analysis

Element	Weight .%	Sigma Weight.%
C	49.08	2.73
N	4.83	4.01
O	41.01	2.49
Na	0.41	0.28
Al	0.57	0.29
Si	0.71	0.29
P	3.40	0.57

Experimental tests for fire resistance of the developed composition has been carried out in accordance with GOST. Experiments on the fire resistance, and physical also mechanical properties of

cellulose-on the basis of the textile materials treated with a TEX-1 flame retardant has been carried out. (Table 1)

Table 3. Experimental results and physical and mechanical indicators of tests for fire efficiency (TECH-1)

concentration of fire retardant, g/l	The length of the charred area, mm			Breaking load, N		
	Heat treatment, °C					
	110	130	150	110	130	150
Sample of the initial	220	220	220	202	202	202
TEX-1 brand; 150 g/l	124	136	132	199	200	199
TEX-1 brand; 300 g/l	115	122	118	198	199	198
TEX-1 brand; 400g/l	112	113	110	197	198	198

These are experimental testing processes (Figure 1). apply to all flammable textile materials supplied to the consumer to improve their fire resistance and

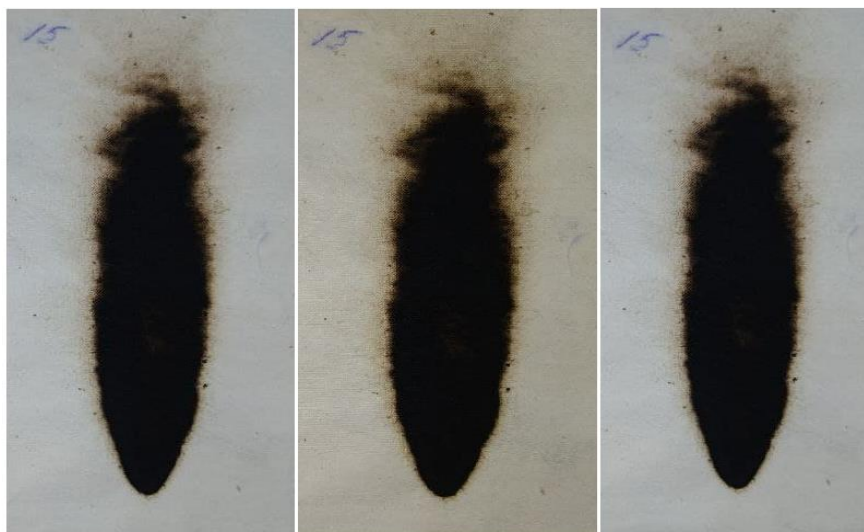
conduct test experiments in accordance with the standards. The samples were also tested for changes in mechanical properties after processing.

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Picture 1. Condition of cellulose-based fire retardant materials after exposure to fire.

The results of the study of the efficiency of using the recommended compositions showed that the length of the coal section decreases with an increase in the concentration of the compositions. Since the absorption of flame retardant chemicals into textiles was relatively difficult, the tensile strength did not change much. Thus, it can be seen that the mechanical properties of the flame retardant fiber are close to each other in all proportions. However, due to the addition of epichlorohydrin to the TEX-1 brand oligomer, it was found that the mechanical and fire retardant properties were higher compared to analogues and others when treated with this fire retardant and heated to 110-150 ° C. Studies have shown that when the antiroll is increased and the average heat treatment temperature is 130-150 ° C, the flammability of the fiber increases as the binding rate increases as a result of the interaction of the composition with the hydroxyl groups of cellulose in the fiber. However, the big difference from analogs is that composites combined in this way are difficult to wash off with water. The main difference from our offered fire-resistant counterparts is that they are more effective at relatively low doses.

In the next stage of the experimental test processes, the formation of coke and mass loss of flammable textile materials treated with TEX-1 brand oligomeric flame retardants were studied. The mechanism of action of fire-fighting chemical compounds is that the release of nitrogen, phosphorus, carbon, and water vapor as a result of the synergistic effect of flame retardants in textile materials prevented combustion by disrupting the oxygen supply if the fire did not reach the desired temperature.

TEX-1 branded oligomeric flame retardants based on local raw materials were processed into textile materials to increase their flammability, and test results showed that their coke formation increased after treatment with different concentrations of flame retardants. This coking process was carried out in experimental experiments on flammable textile materials, and as a result, a mass loss of 58.8-21.3% was studied for textile materials. Test results of environmentally safe flammable oligomeric flame retardants for the production of textile materials have been studied and these results are presented in Table 4.

Table 4. Investigation of coking properties of composites processed into textile materials (TM) with flame retardants

№ Sample	Weight of the up to test,gr	Burning time, sek	Sample, %	Weight of the after test,gr	Loss of weight	
					rp	%
TM	2,43	15	0	0,066	2,364	97,3
TEX-1	1	2,54	5	0,058	0,096	58,8
	2	2,58	10	2,50	0,078	30,5
	3	2,56	15	15	1,89	0,067

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Thus, the following data were obtained by analyzing the test results of environmentally safe oligomeric flame retardants for the production of highly flammable textile materials required for our hot climate republic. According to him, the structure and physicochemical properties of oligomeric flame retardants were analyzed. In addition, flammable textile materials have been shown to have high heat and fire resistance properties, and their mass loss has been found to decrease from 97.3% to 21.3%.

By modifying textile materials on the basis of the oligomeric flame retardants, their widespread use as special clothing for firefighters, oil and gas industry, welders, metallurgists and workers of various manufacturing enterprises can lead to environmental and economic efficiency.

Conclusion

From the obtained SEM images, it can be seen that the flame retardant molecules are evenly distributed on the surface of the tissue samples treated with the flame retardant solution. At the same time, samples of fabrics treated with a fire retardant at various temperatures of 110oC, 130oC and 150oC were tested and found to meet the requirements of GOST. In addition, flammable textile materials have been shown to have high heat and fire resistance properties, and their mass loss has been found to decrease from 97.3% to 21.3%. When the fabric is treated with a new type of environmentally friendly fire retardant solution, improvements in fabric properties and flame retardant properties were found.

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JADID DRAMAS IN SOCIOLINGUISTIC INTERPRETATION

Abstract: *In sociolinguistics, the concept of speech in the social adaptation of speech differs from the concept of the direct occurrence of language (lison), which is understood in linguistics, its emergence in material form. That is, in sociolinguistics, the social character of speech is understood not as a specific occurrence of social possibilities, but as a range of generality and specificity that serve as a norm for a particular group. Linguistics uses the notion of norm in this sense in relation to literary language and dialects. The present paper discusses sociolinguistic interpretations of dramas created by Jadids and their essentiality in the society. Examples are taken from the novel "Padarkush" by Mahmudhoja Behbudi who was one of the leading people of his time.*

Key words: Sociolinguistics, speech, linguistics, language, linguistics.

Language: English

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Introduction

Sociolinguistics does not ignore the social environment when studying the relationship of language to society and society's attitude to language. It also analyzes the environment in which communicants live. "The concept of environment includes family, society, time and history, nature. Everything that surrounds a person: life and its equipment, nature, society and state, personality, history, that is, the cultures of different periods and peoples are included in the concept of environment" [1]. Hence, the nature and society in which man lives constitute the environment. As long as a person lives in that environment, it will affect his behavior as well as his communication culture. "Changes in a person are reflected, first of all, in his behavior, including communication. So ecology affects the social environment, and the social environment affects communication behavior" [2, p. 11]. As language develops as a result of the development of society, the social environment has a great influence on language and its form of expression - speech. The nature of the environment in which a person belongs is also evident in his speech. Changes in people's lifestyles, activities, study routines, conditions, and the environment are also reflected in his speech. The question of the influence of the social environment on language is the

focus of sociolinguistic research. Researcher S. Muminov's research work on this issue also noted that the influence of the social environment on communication behavior, that is, the specific differences between the speech of rural and urban residents, is mainly related to the environment. Sociologists and psychologists also point out that the social environment plays a special role in the formation of communicative speech [3, p. 136].

Sociolinguistics does not exclude the social environment, that is, the family, society, time and history, and nature, when studying the relationship of language to society and society to language. It also analyzes the environment in which communicants live. We can also see the influence of language on society in the works of one of our Jadids, Mahmudhoja Behbudi.

The main findings and results

In sociolinguistics, the concept of speech in the social adaptation of speech differs from the concept of the direct occurrence of language (lison), which is understood in linguistics, its emergence in material form. That is, in sociolinguistics, the social character of speech is understood not as a specific occurrence of social possibilities, but as a gap between the general and the specific, which serves as a norm for a

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particular group. Linguistics uses the notion of norm in this sense in relation to literary language and dialects. It is also close to the slang and jargon of linguistics, as they are also the norm for a particular social class [4].

The development and promotion of language and society has also been facilitated by the creative propaganda of our Jadids. For example, in the drama "Padarkush" by Mahmudhoja Behbudi.

Domulla (a teacher or religious person): Your words are good for the modern world, but the glory of the rich and the poor is temporary and until the eyes of the people are opened. However, they are respected by those who work for them, and the mullah is respected by all the people, that is, the knowledge of the mullah is respected. - *Bu so'zlarinig hozirgi zamonaga ma'qul, lekin chilen va boylarni izzatlari vaqtincha va xalqni ko'zi ochilgunchadir. Holbuki, alarni ishi tushganlar izzat qilur, mulloni bo'lsa, barcha xalq izzat qilur, ya'ni mulloni ilmi izzat qilinadur.*

Boy (a rich man). We are respected for our wealth, even for Muslims, Russians and Armenians. - *Bizni ham boyligimiz izzat qilinadur, hatto, musulmonlar nari tursun, o'rus va armanlar-da izzat qilur.*

Domulla. We have put honor aside, if you teach your son, he will write in your notebook, know your prayers and Islam well, and you will be rewarded. - *Izzatni nari qo'yduk, agarda o'g'lingizni o'qutsangiz, daftaringizni yozar, namozingizni va musulmonchiligini yaxshi bilur va ham sizga savob bo'lur.*

Boy. Mirzalik is easy, so I give Khairullo seven sums a month, he works as a mirza during the day and in the evenings as a hotel worker, and even works until he falls asleep and reads a book. - *Mirzalik oson, mana, Xayrulloga oyinda yetti so'm beraman, kunduzlari mirzalik va oqshomlari mehmonxona ishini qilar va hatto, uyqum kelguncha xodimlik qilar, kitob ham o'qub berar.*

Domulla. The Shari'ah Knowledge and the Necessity of Teaching the Rich to Know the Religion - *Shariat ilmi va zaruriyati diniyani bilmoq uchun boyvachchani o'qutmoq, albatta, sizg'a lozimdir.*

Boy. I don't think it's necessary to teach Sharia, because I don't want to make him a mufti or an imam or a muezzin, because my state is enough for him. - *Shariat ilmini o'qitmoqni lozim bilmayman, chunki ani mufti yo imom va muazzin qilmoqchi emasman, azbaski davlatim anga yetar.*

Domulla. What do you say to the religion of necessity? - *Zarurati diniyaga ne dersiz?*

Boy. I know how to pray five times a day. I teach. - *Men o'zim besh vaqt namozni keraklik duolari ila bilurman. O'zim o'rgaturman.*

Domulla. What do you say to letters and literacy? However, an illiterate person is useless. - *Xat*

va savodga ne dersiz? Holbuki, savodi yo'q odam hech nimaga yaramaydur.

Boy. It's weird, because I'm illiterate, and I'm one of the richest people in town, and I know everything. - *Bu fikringiz g'alat, chunki mani savodim yo'q, bovujud, bu shahrimizning katta boylaridandurman va har ishni bilurman.*

Domulla. You used to be rich in some way, but now you don't need to be rich, you just need knowledge to make a living. We see that for twenty or thirty years, all trade has been in the hands of Armenians, Jews and other foreigners, because we have not read it. We see uneducated rich people who ruin their father's wealth and end up humiliated and oppressed, so I suggest you teach your son. - *Siz ilgari zamonda bir navi ila boy bo'lubsiz, ammo endi boy bo'lmoq nari tursun, faqat ro'zg'or o'tkarmoq uchun (ham) ilm kerak. Ko'ramizki, yigirma-o'ttiz yildan beri barcha savdo ishlari armani, yahudiy va boshqa ajnabiylar qo'lig'a o'tdi, muni sababi bizlarning o'qumag'onimizdur. O'qumagan boyvachchalarni ko'ramizki, ota molini barbod etar va oxiri xor va zor bo'lur, binobarin, o'g'lungizni o'qutmoqni sizga taklif qilurman.*

Boy. Oh, domullo! Are you a manga researcher? Son manic, state manic, what about you? You read that you have no bread to eat, so you are advising me. Goodbye! Lock the hotel and fall asleep (Hayrullo gathers the tools and waits). - *Ay, domullo! Siz manga tahqiqchimi? O'g'ul maniki, davlat maniki, sizga nima? O'quganni biri siz, yemoqg'a noningiz yo'q, bu holingiz ila manga nasihat qilursiz. Xayrullo! Mehmonxonani qulfla, uyqum keldi (Xayrullo la'li va asboblarni jamlab, muntazir turar).*

Domulla. (Depending on the people). We need money to study and become mullahs, let go of our wealth, so with this departure we will be disgraced by Allah, the world and the hereafter, it was obligatory for all Muslims, male or female, to study. Where is he? Oh, woe to us! (Depending on height). Rich man, I have commanded you to do what is lawful for me. Inshallah, we will see the case of your son who has a mustache and does not beat the alif, and you will be guilty of not teaching him (domulla nas chekar). (M. Behbudi "Padarkush") - *Odamlarga qarab. O'qumoq va mulla bo'lmoq uchun pul kerak, badavlatlarimizni holi bul, bas, bu ketish ila nauzambilloh, dunyo va oxiratga rasvo bo'lurmiz, o'qumoq barcha musulmonga, erkak va yo xotin bo'lsun, farz edi. U qayda qoldi? Oh, voy bizni holimizga! (Boyga qarab). Boy, man sizga amri ma'ruf etdim va menga shariat bo'yicha lozim bo'lgan ishni bo'ynumdan soqit qildim. Inshoolloh, mo'ylab chiqarib, alifni tayoq demayturgan o'g'lungiz holini ko'ramiz va o'qutmaganingiz uchun gunohkor bo'lursiz (domulla nos chekar). (M.Behbudiy "Padarkush").*

It is known that man lives around them as a product of nature and society. At the same time, they

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are considered to be their highest product, and they reflect, perceive, and think in their brains in the form of things and objects, in the form of events and happenings. The importance of language as a material in this process is incomparable. That is why it is not for nothing that language is a tool of thinking. Thinking with language is an inseparable phenomenon that requires each other. Just as there is no thinking without language, so there is no language without thinking. The fact that language is a means of human thought, a material basis, is still the first step. In the second stage, as a result of thinking, the product of thinking must take place outside the brain, which is the center of thinking. This is the beginning of the second stage of the need for language - it begins to perform a communicative function. In spite of the fact that things and phenomena in nature and society are called differently in different languages, in this process it remains a means of communication, a means of communication, a way of thinking and social interaction in human activity. But as language becomes a means of communication, its natural range of possibilities also expands. Now it becomes a tool of speech, a process of speech [12, p. 247].

This condition can be called the third stage. As the number of stages increases, so does the social potential of the language. That is, with the help of language, which performs a communicative function in human speech, certain information is conveyed to the interlocutor or listener. So, there is a fourth stage in the relationship with language.

The society is inhabited by different classes, different social strata, different ages and genders. As a result, social adaptation occurs in speech. For example: (depending on the people). I wish *domullo* stories weren't enough. Well, as long as you don't put it down, finish it early, and people will tell you to go to sleep and teach your child.

Ziyoli (*an intelligent man*). Now is a new and different time. Just as a nation without knowledge and skills loses its wealth, land, and tools day by day, so does its morals and reputation; even religion will be weak. To do this, we must strive to educate Muslims, even though our religion has made it obligatory for us to teach all kinds of lust from the cradle to the grave. This ruling is the Shari'ah. We Muslims, especially in this day and age, need two classes of scholars: one is a religious scholar; another modern scientist. Religious scholar: imam, khatib, mudarris, teacher, judge, mufti, manages the religious and moral and spiritual affairs of the people qub, then go to Mecca, Medina, Egypt, and Istanbul, and must have completed the ulema religion, or be a perfect mullah (rich mudraydur). Do you understand rich?

Boy (raising his head): Yes, yes, tell me, I'm listening to you.

Ziyoli: In order to become a modern scholar, children must first be educated in Muslim script and literacy, and then learn our religion and the language

of our nation. After his death, he was sent to St. Petersburg and Moscow to teach medicine, law, engineering, justice, science, art, economics, science, wisdom, teaching and other sciences. Russia must be an active partner of the motherland and the state, and enter public office. As long as the country and the nation serve Islam and the state enters the Russian monarchy and benefits the Muslims, and the state becomes a partner of Russia, even the Muslim children who study in this way will be sent to France, America and Istanbul; it should be sent for training. Didn't the Prophet (peace and blessings of Allaah be upon him) say: Ask for knowledge, even in China? (Rich is asleep). This will not happen, except with money, with the generosity of rich people like you, for example, the Muslims of the Caucasus, Orenburg and Kazan, the rich and the zealous spend a lot of money on education and educate their poor children looking), of course you understood my words, Mr. Rich. Grandpa, hey!

Boy. Yeah yeah.

The social adaptation of speech is directly related to methodology, as styles such as artistic, scientific, formal-administrative, journalistic are sectoral norms. Therefore, the social specialization of speech can be analyzed and studied within the framework of the methodology. But there is a difference: the methodology is mainly the study of linguistic means, and in the social specialization of speech, the means of speech are studied in conjunction with paralinguistic, extra-linguistic means, and at this point sociolinguistics intersects with ethnography, custom, and ethics. The social specialization of speech is diverse, and the following types can be distinguished.

Speech specialization according to the social status of the speaker and the listener. This process creates an asymmetrical look of speech. In the speech of a person of high social status, self-centeredness, negligence, and in the speech of a communicator with low social status, the tone of dependence can be felt.

Boy: I know the five daily prayers with the necessary prayers. I teach - *Men o'zim besh vaqt namozni keraklik duolari ila bilurman. O'zim o'rgaturman.*

Domulla: What do you say to letter literacy? However, an illiterate person is useless. - *Xat savodga ne dersiz? Holbuki, savodi yo'q odam hech nimaga yaramaydur.*

Boy: It's weird, because I'm illiterate, and I'm one of the richest people in town, and I know everything. - *Bu fikringiz g'alati, chunki mani savodim yuq, bovujud, bu shaxrimizning katta boylaridandurman va har ishni bilurman.*

Domulla: You used to be rich in some way, but now you don't need to be rich, you just need knowledge to make a living. - *Siz ilgari zamonda bir navi ila boy bo'lubsiz, ammo endi boy bo'lmoq nari tursin, faqat ro'zg'or o'tkarmoq uchun ilm kerak.*

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Domulla. You used to be rich in some way, but now you don't need to be rich, you just need knowledge to make a living. We see that for twenty or thirty years, all trade has been in the hands of Armenians, Jews and other foreigners, because we have not read it. We see uneducated rich people who ruin their father's wealth and end up humiliated and oppressed, so I suggest you teach your son. - *Siz ilgari zamonda bir navi ila boy bo'lubsiz, ammo endi boy bo'lmoq nari tursun, faqat ro'zg'or o'tkarmoq uchun (ham) ilm kerak. Ko'ramizki, yigirma-o'ttiz yildan beri barcha savdo ishlari armani, yahudiy va boshqa ajnabiylar qo'lig'a o'tdi, muni sababi bizlarning o'qumag'onimizdur. O'qumagan boyvachchalarni ko'ramizki, ota molini barbod etar va oxiri xor va zor bo'lur, binobarin, o'g'lungizni o'qutmoqni sizga taklif qilurman.*

Boy. Oh, domullo! Are you a manga researcher? Son manic, state manic, what about you? You read that you have no bread to eat, so you are advising me. Goodbye! Lock the hotel and go to sleep. - *Ay, domullo! Siz manga tahqiqchimi? O'g'ul maniki, davlat maniki, sizga nima? O'quganni biri siz, yemoqg'a noningiz yo'q, bu holingiz ila manga nasihat qilursiz. Xayrullo! Mehmonxonani qulfla, uyqum keldi (Xayrullo la'li va asboblarni jamlab, muntazir turar).* (M.Bexbudiy "Padarkush" drammasi).

Sociolinguistics is the study of the relationship between language and society, as well as aspects of language related to philosophy, social psychology, and ethnography. Sociolinguistics studies the following issues: society and language are interrelated, balanced historical processes and events. As society develops, the social functions of language also improve; the vocabulary of the literary language and dialects expands and grows; the languages of peoples whose living environments are close, whose way of life is similar, and whose economic relations are formed, interact with each other. Languages are affected not only lexically but also grammatically [9]. Research has been done to shed light on the uniqueness of the world's languages, in a sense, and to show how a particular language differs from other languages. The main issue of this research is the interpretation of the relationship between language and society. The study of the social aspects of language is important in illuminating the specific internal structure and potential of language [5]. Different ideas, different theories have emerged. Some groups understood language as a living organism. Some saw it as a constant reality. Such views can be critically analyzed and summarized as follows:

1. Language is not a natural-biological phenomenon.

2. The existence and development of language does not depend on the laws of nature.

3. Language is not related to the nature, race, or descent of people.

4. Only people who are organized as a society have a language as a means of communication. Language is a social phenomenon based on the centuries-old historical and social experience of human society. The development of language and society are inextricably linked. Everything that happens in society is, in a sense, expressed in language. The social nature of language is reflected in its existence in society and in the interests of society. Sociolinguistics is the main field that analyzes the social nature of language. Sociolinguistics uses a number of criteria to illuminate the social nature of language, such as historical, vital, normative, and territorial [6].

First of all, for a language to exist as a reality, it must go through a certain stage of historical development. The emergence of language, its formation as a whole system, its existence as a social phenomenon is associated with its history. The vitality of language is its existence as a means of communication. When a language loses its vitality, it becomes a dead language. For a language to be viable, it needs a society that uses it. There is also the idea that dead languages can be reborn into living languages, and Hebrew is a case in point. This view should be considered relative. Because language has lost its importance as a means of communication, it cannot be artificially restored. The normative criterion in sociolinguistics is the coordination of language according to certain norms. The development of grammar rules is an important factor in standardization. A standardized language is a national-literary language that serves the needs of a particular society and is coordinated according to certain rules.

Conclusion

Territoriality refers to the connection of a language to a particular region. Territoriality is associated with the formation of a nation, ethnic customs, traditions, historical and ethnic unity and a single state system. Differences in nationality, region, historical and ethnic background, and development are the basis for differences between languages. The similarity of ethnicity and ethnicity ensures that the means of communication are the same, regardless of regional differences. For example, in Uzbek and Tajik languages, each language has its own peculiarities. There are phonetic, lexical and grammatical differences between Uzbek and Kyrgyz languages with the same ethnic background. There are also differences between literary languages and dialects in terms of the internal structure of the language [7].

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APPROACH TO THE HISTORY OF ARABIC LEXICOGRAPHY

Abstract: This article below touches upon the topic regarding the development and improvement stages of Arabic lexicography. More specifically, it gives a classification analysis of Arabic dictionaries based on the structure. A few thematic dictionaries, phonetic dictionaries, a dictionary of synonyms, and annotated dictionaries, which have played a vital part in the improvement of Arabic etymology, have been analyzed through concrete examples.

Key words: Arabic lexicography, lexical meaning, dictionary article, thematic classification, alphabetical system, annotated dictionary, key consonants of the word.

Language: English

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Introduction

Lexicography is the study of the art of compiling linguistic dictionaries; the goal is to analyze the lexical structure of literary language, decipher their implications with the assistance of cases, determine the scope of words, and show some grammatical forms. It was the Muslim world - a favorable environment for the emergence and development of lexicography. As a result of the formation of the Arabic literary language as a biblical and cultural language within the medieval Muslim East, and the

rapid development of Arabic writing, there was a need to compile lexicons. The utilize of Arabic as a scientific language, the maintenance of certain measures of written language, as well as the identification of languages, the qualification between written and oral variations of Arabic required the early emergence of Arabic etymology [1; 164]. In the quickly-created Arabic etymology, various dictionaries started to be compiled. Scientists arrange them for the following groups:

- Descriptive dictionaries;
- Explanatory dictionaries;
- Thematic dictionaries;
- Dictionary of synonyms;
- Dictionary of rarely-used words;
- Dictionary of assimilated words;
- Bilingual dictionaries;
- Terminological dictionaries;
- Dictionary of rhymes [1; 165], [2; 91], [3; 13].

The main findings and results

In terms of structure, Arabic dictionaries vary based on the principle of placement of words. They can be classified into three groups. The primary group

incorporates dictionaries on the phonetic principle. In such dictionaries, words are put according to the pronunciation position of the core consonants [4; 13-18] in the following way:

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- 1) throat sounds (ح, خ, ع, ه);
- 2) deep slurred sounds (ق, غ);
- 3) dorsal sounds (ك);
- 4) lip front sounds (ت, ج, د, ر, ز, س, ش, ص, ض, ط, ظ, ل, ن);

- 5) teeth sounds (ث, ذ);
- 6) lip-tooth sounds (ف);
- 7) lip sounds (ب, م, و).

These dictionaries take into consideration the number of consonant letters within the stem. To begin with two, at that point three, at that point four and five consonant words are given. The second group consists of lexicons orchestrated in alphabetical arrange according to the primary root consonant of the word. The third group includes dictionaries orchestrated in alphabetical order according to the last consonant of the word.

As mentioned above, dictionaries are arranged for several types. Of these, descriptive dictionaries are usually dictionaries created within a specific topic. The emergence of Arabic lexicography is associated with the study of the lexicon of the Qur'an. Summarizing the words of the Quraan and creating dictionaries based on them appeared in the first half of the second century AH. They are called "Gharibu-l-Quraan", which means "the vocabulary of the Quraan". In the third century AH, a number of dictionaries were created in this field. But to date, most of these dictionaries have disappeared, and only their names are known. The book "Lugatu-l-Quraan" ("Dictionary for the Quraan") explains the various tribal dialects found in the Quraan, as well as words

borrowed from Persian, Ethiopian, Nabataean and other languages. Later, dictionaries began to be created entitled Gharibu-l-hadith, meaning "The Vocabulary of Hadith". Examples of this are Zamakhshari's dictionaries such as "al-Faiq fi gharibi-l-hadith", and Ibn Asir's "an-Nihaya fi gharibi-l-hadith".

As a result of the development of religious sciences, special dictionaries based on the Quraan and hadiths began to appear. Fayumi's (d. 1368) work, "al-Munir fi gharibi-sh-sharhi-l-kabir", is the first terminological dictionary in the field of jurisprudence. The interest in the lexicon of the Quran and the hadiths increased the focus on the Arabic literary language. This has led to the emergence of other types of dictionaries in Arabic lexicography, covering different layers of literary language. A dictionary of underused and obsolete words was compiled. Among them, Abu Ubayd's (770-837) dictionary "al-Gharibu-l-musnaf" is of special importance. In it, the author collected words that were difficult to understand in ancient Arabic poetry and divided them into themes. They are divided into the following 25 books:

1. "The human body"
2. "Women"
3. "Clothes"
4. "Food"
5. "Diseases"
6. "Houses"
7. "Weeds"
8. "Weapons"
9. "Birds"
10. "Insects"
11. "Dishes"
12. "Mountains"
13. "Trees and plants"
14. "Waters and streams"
15. "Palms"
16. "Clouds and rain"
17. "Seasons and winds"
18. "Forms of word formation"
19. "Forms of verb formation"
20. "Antonyms"
21. "Synonyms"
22. "Camels and their qualities"
23. "Animals"
24. "Predators"
25. "Words"

Each book is classified into internal chapters. The 25 books consist of about 900 chapters. The dictionary gives examples from the poems of many poets in interpreting words. This dictionary had a great influence on the further development of Arabic lexicography. Later thematic dictionaries containing

- "The book about the human body";
- "Book about animals";
- "Book about camels";
- "Book about sheep";
- "A book about plants and trees";
- "A book about rain".

To make it easier to use the dictionary, the scholars re-divided them into internal parts. For example, in the book on the human body, the words

words and phrases relevant to a particular concept were created. Among the authors who have written excellent works in this field are Asmai, Abu Zayd Ansari, Ibn Sikkit, Iskafi, Ibn Sida. As an example, if we look at the dictionaries created by Asmai, they are divided into the following groups:

are divided into the following parts: "Pregnancy", "Birth of a Child", "Human Development", "Human Body", "Functions of Organs", and so on. As can be

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seen from the examples, words in thematic dictionaries are not arranged in a logical sequence. Ibn

Sikkit, in his dictionary “Kitabu-l-tahzibi-l-alfoz”, placed the words on the following topics:

- | | | |
|--------------|-------------|---|
| 1) wealth | 8) month | 15) food |
| 2) poverty | 9) time | 16) weapons |
| 3) courage | 10) water | 17) jewelry |
| 4) cowardice | 11) grief | 18) grief |
| 5) wine | 12) empathy | 19) a list of words that the Arabs drop the Hamza |
| 6) woman | 13) sleep | |
| 7) sun | 14) hunger | |

In later dictionaries, the words were placed in a certain sequence. Iskafi's Mabadiyu-l-lug'a contains words on the following topics:

- | | | |
|------------------|-------------|---------------|
| 1) stars | 6) horses | 11) equipment |
| 2) night and day | 7) camels | 12) camels |
| 3) food | 8) diseases | 13) plants |
| 4) drinks | 9) animals | 14) diseases |
| 5) weapons | 10) birds | |

The most complete and famous work in a definite system is the 17-volume al-Muhassas dictionary of Sida (d. 1066). The book firstly deals with man and his life: clothes, food, sleep, equipment, weapons, then the world of animals and plants, then the social life of man, travel, games. Some grammatical issues are commented at the end of the dictionary. The author used Abu Ubayd's book “al-Gharibu-l-Musnaf” as the main source in compiling the dictionary.

According to Russian lexicographers, annotated dictionaries should be the basis of the dictionary of synonyms [5; 14]. Explanatory dictionaries, as in the example above, became the basis for the emergence of a dictionary of synonyms, antonyms. Examples of a dictionary of synonyms are “Hamadani's Kitabu-l-alfuzi-l-kitabiyya”, which was originally created, and called as “al-Saalibi's Fiqhu-l-lug'a”. The work of Arabic lexicographers was mainly focused on compiling annotated dictionaries. The aim was to gather the entire vocabulary of the Arabic literary

language and interpret its meanings. Explanatory dictionaries define the lexical structure of the language, explain the meanings of words. It is with this feature that they are radically different from translation, that is, bilingual (possibly three or more languages) dictionaries [6; 58].

The first annotated dictionary in Arabic lexicography was the work of Khalil ibn Ahmad (d. 786), “Kitabu-l-ayn” (The Book of Ayn). In order to fully demonstrate the richness of the Arabic literary language, the dictionary contains words that are rare and difficult to understand. Khalil ibn Ahmad was the first to develop the doctrine of the nucleus and its species and to reflect it in his explanatory dictionary. His dictionary “Kitabu-l-ayn” consists of 27 chapters. Each chapter is dedicated to one letter. The author has arranged the 27 chapters according to the phonetic principle, i.e. the pronunciation position of the letters as follows. The alphabet system introduced by Khalil ibn Ahmad in his dictionary had the following order:

ع - ح - خ - ه - غ - ق - ك - ج - ش - ض - ص - س - ز - ط - د - ت - ظ - ذ - ث - ر - ل - ن - ف - ب -

م - و - ا -

As can be seen from the sequence of letters quoted, there is some confusion in the way the letters are pronounced. For example, the letters ر and ن are the back letters of the language [4; 13-18]. But in the sequence of letters above, they are listed as pre-spoken letters.

According to the above-mentioned sequence of letters, the dictionary begins with the chapter “Ba: bu-l-ayn”, which is the name of the book. In each chapter, words are classified in terms of the number of stem consonants, and first two stem consonants, and then three, then four, and five stem consonants are given. Later dictionaries were created under the influence of

this work. These include Az-Hari's (895-981) “at-Tahzib fi-l-lugha”, Sahib ibn Abbad's (938-995) “Kitabu-l-environment fi-l-lugha”, Al-Kali's (901-967) “Kitabu-l-bori' fi-l-lug'a”, we can include the dictionaries of “al-Muhkam fi-l-lug'ati-l-arab by Ibn Sida” (died in 1006). Due to some difficulties in the use of dictionaries created in the method of Khalil ibn Ahmad, these works were not widely distributed and copies were not made from them.

The second method, that is, the dictionary of words in alphabetical order according to their first consonant, includes Ibn Faris's “Kitabu-l-mujmal and Kitabu-l-maqois”. The words interpreted in these

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dictionaries are arranged in alphabetical order according to the first root consonant. Therefore, the dictionary contains 28 books according to the number of letters in the Arabic alphabet. Each book consists of three parts given in the following sequence:

1) words with two consonants at the core (عَب, عَج, عَد, عَف, عَق);

2) words whose core consists of three consonants (عَبث, عِب, عِر, عِس, عِط);

3) words whose core consists of more than three consonants (عَهل, عَرَب, عَرَب, عَسْكَر, عَصْفَر).

The third method - the dictionary method of arranging dictionary articles in alphabetical order, taking into account first the last consonant of words, then the first, then the middle consonant, is created. According to the scheme given in the book "Arabic lexicology" by VM Belkin, the placement of words in the dictionary is as follows [1; 173]:

- in words with a core of three consonants - O^3
 $O^1 O^2$

- in words with a core of four consonants - O^4
 $O^1 O^2 O^3$. (denotes the root consonant of a word)

Dictionaries created in this way have attracted the attention of poets in particular. The reason for this is that such dictionaries have been very helpful in choosing rhymes for them. However, in other fields, such dictionaries have not aroused much interest. The first dictionary created in this way in Arabic lexicography is Jawhari's (d. 1007) work, "Taju-l-lugha and sihahu-l-arabiya. Ibn Manzur's" (1232-1311) "Lisonu-l-arab" and Feruzabadi's (1326-1414)

"al-Qamusu-l-muhit" can also be included in the list of dictionaries compiled in this way.

Conclusion

Given the achievements of traditional Arabic lexicography in collecting and recording the lexicon of the Arabic literary language, linguists classify a number of shortcomings in classical Arabic dictionaries. They accuse the authors of classical dictionaries of not approaching the lexical structure of the language from a historical point of view, arguing that classical dictionaries do not meet the requirements developed by modern lexical theory and practice. They deny the importance of ancient Arabic lexicography by comparing the methods used by medieval lexicographers with modern lexical methods. According to V.M. Belkin, many shortcomings of classical Arabic dictionaries are related to the linguistics of that period [1; 169]. The works of ancient authors in the field of lexicography have not lost their relevance today. Zamakhshari's "Asosu-l-balaga", Ibn Manzur's "Lisonu-l-arab", Feruzabadi's "al-Qamusu-l-muhit" still retains their practical significance.

Indeed, the importance of classical Arabic dictionaries cannot be denied. The reason for this is that it was the dictionaries of the classical period that were the basis for the advancement of modern lexicography. In addition, these dictionaries are an important source in the research of Arabic literary heritage, especially its poetic and prose heritage.

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The Higher military Aviation school the Republic of Uzbekistan
The head of educational department

THE ROLE OF PSYCHOLOGY IN AVIATION SAFETY

Abstract: *In this article, the issue of safety from the perspective of aviation psychology has been examined. We have seen that although flying in large commercial air carriers is quite safe, the situation is not so comforting in general aviation, where the risks of involvement in a fatal aviation accident are somewhat higher than being involved in a fatal motor vehicle accident. Curiously, anecdotal evidence (from the responses of many general aviation pilots when this topic is raised at flight safety seminars) suggests that general aviation pilots are largely unaware of this differential risk and generally believe that they are safer when flying than when driving their cars. Hence, programs to improve safety often receive little more than lip service, since the pilots involved do not really feel that they are at risk.*

Key words: *aviation safety, aviation psychology, fatal, accident, at risk, commercial air carrier, anecdotal evidence, aviation pilot, human factor, aircraft, psychological stability.*

Language: English

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Introduction

To begin, let us examine the incidence of aviation accidents, so that we may understand the extent of the problem. Table 1 shows the numbers of accidents and corresponding accident rates (number of accidents per 100,000 flight hours) for two recent years in the United States. From this table, the differences in accident rates between the large air carriers (very low rates), the smaller carriers, and general aviation are evident. Over that span of operation, the accident rate increases about 30-fold. To put these statistics in a slightly different light, on a per mile basis, flying in an air carrier is about 50 times

safer than driving. However, flying in general aviation is about seven times riskier than driving. These accident rates are typical of the rates found among Western Europe, New Zealand, and Australia. For example, data from the Australian Transport Safety Bureau ¹ show fixed-wing, single-engine general aviation accident rates (accidents/100,000 hours) of 10.26 and 7.42, for 2004 and 2005, respectively. Note that these rates are somewhat inflated, relative to the United States, since they do not include multiengine operations normally used in corporate aviation, traditionally one of the safest aviation settings.

¹ ATSB. 2007. Australian Transport Safety Bureau—Data and Statistics. Retrieved on June 7, 2007 from: <http://www.atsb.gov.au/aviation/statistics.aspx>

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Table 1.

Incidence of Accidents in the United States

	2009		2010	
	Number	Rate ^a	Number	Rate ^a
Large air carriers	30	0.17	30	0.16
Commuter	2	0.69	6	1.90
Air taxi	47	1.60	32	1.05
General aviation	1480	7.20	1436	6.87

Source: Federal Aviation Administration (FAA). 2012. *Administrator's Handbook*. Washington, DC: Author.

^a Rate is given as accidents per 100,000 flight hours.

This brings up an important point that must be made regarding safety statistics. It is very important to note the basis on which the statistics are calculated. For example, in Table 1, the rates are given in terms of numbers of accidents per 100,000 flight hours. This is a commonly used denominator, but by no means the only one that is reported. Our comparison of accident risk in driving and aviation cited above used accidents per mile traveled. Some statistics are in terms of numbers of departures (typically, accidents per one million departures). It is important for the reader to make note of these denominators so that comparisons are always made between statistics using the same denominator. In addition, as in our comparison between the statistics from the United States and Australia, it is important to know exactly what has been included in the calculations. In this case, exclusion of the very safe, multiengine corporate operations could lead to the conclusion that general aviation is safer in the United States than in Australia – a conclusion that is not warranted by the data provided. Accident statistics can also be misleading, or at least confusing, when they fail to account for differences in the population from which samples (the people involved in accidents) are drawn. For example, in a recent edition of the Nall Report produced by the Aircraft Owners and Pilots Association², it is reported that holders of a private pilot certificate were involved in 43% of noncommercial fixed-wing general aviation accidents during 2012, while commercial pilots were involved in 29% of the accidents. One might conclude from those data that commercial pilots were considerably safer than private pilots. However, an examination of the data from the FAA³ shows that private pilots constitute 43% of the pilot population,

and commercial pilots make up 26%—approximately the same proportions as were reported to be involved in accidents. If there were no difference in accident propensity between private and commercial pilots, then we would expect to see exactly the results reported in the Nall Report. So, encouraging private pilots to obtain a commercial certificate would not, in all likelihood, prove to be an effective way to improve general aviation safety.

Before we begin to talk about the causes of accidents, we need to make clear what we mean by a cause. Step away from the flight line for a moment and into the chemistry laboratory. If we were to put a few drops of a solution containing silver nitrate (AgCl) into another solution that contains sodium chloride (NaCl), common table salt, we would observe the formation of some white particles (silver chloride, AgCl) that would sink to the bottom of our test tube. This simple test for the presence of chlorine in water by the addition of aqueous silver nitrate is, in fact, one of the most famous reactions in chemistry and is among the first learned by all budding chemists. The point to be made here is that this reaction, and the formation of the precipitate, will happen every single time that we mix solutions of silver nitrate and sodium chloride. Nor will the precipitate form, unless we add the silver nitrate. The addition of the silver nitrate to the sodium chloride solution is a necessary and sufficient condition for the formation of the precipitate. We may truly say that one causes the other. Now step back outside the laboratory and consider what happens in the real world. For example, let us imagine that you are driving to work one morning and the traffic is very heavy, so that you are following closely behind the vehicle ahead of you.

² AOPA (Aircraft Owners and Pilots Association). 2015. *The Nall Report*. Frederick, MD: Author.

³ Federal Aviation Administration (FAA). 2012. *Administrator's fact book*. Retrieved from March 1, 2016 from:

http://www.faa.gov/about/office_org/headquarters_offices/aba/admin_factbook/

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Occasionally, the vehicle you are following will brake sharply, so that you have to react quickly and apply your brakes to keep from hitting it. This happens dozens, perhaps hundreds, of times during your trip and you are always successful in avoiding an accident. During the same trip, you listen to music on the radio and occasionally change the station by glancing at the radio and pressing the buttons to make your selection. You may do this several times during the course of the trip, also without incident. There may even be occasions when, as you are changing stations on the radio, the vehicle ahead of you brakes, and you glance up just in time to notice their brakes and slow down. Fortunately, you are a careful driver and usually maintain an adequate spacing between you and the vehicle you are following, so that you are always able to react in time, even if you were temporarily distracted by the radio. You may do this every day for years, without incident. However, on one particular morning you are delayed leaving the house, so that you did not get your usual cup of coffee, and are feeling a little sleepy. You are also feeling a bit rushed, since you need to be at the office at your usual time, and you have gotten a late start. Perhaps, this has led you to follow the vehicle ahead of you a little more closely than usual, and now, as you are reaching over to change the radio, the driver ahead of you brakes more sharply than usual, you do not notice the vehicle's brake lights quite soon enough, or react quickly enough, to slow your vehicle. An accident occurs. But, what was the cause of the accident? From the official standpoint (the one that will go on the police report), you were the cause, and this is yet another example of human error. However, that is not a very satisfying explanation. It is not satisfying because it describes as an error, actions you have taken on almost every trip for many years. Surely, there have been many days on which you left the house late and hurried to make up time. Surely, there have been days when you felt a little sleepy when driving to work. Likewise, you have handled heavy traffic and changing radio stations innumerable times previously. All of these actions and conditions have existed previously and we have not called them errors and the causes of an accident, because until this particular day no accident had occurred. None of these conditions and events is necessary and sufficient for an accident to occur. However, each of them, in their own small way, increased the likelihood of an accident.

Therefore, we suggest that the best way to understand the causes of accidents is to view them as events and conditions that increase the likelihood of an adverse event (an accident) occurring. None of the usual list of causes –following too close, inattention,

sleepy driver, distraction – will cause an accident to occur each and every time they are present. However, they will each independently increase the likelihood of an accident. Moreover, their joint presence may increase the likelihood far more than the simple sum of their independent effects. For example, following too closely in traffic and driving while drowsy both increase the risk of an accident, let us say by 10% each. However, following too closely in traffic while drowsy might increase the risk of an accident by 40%, not the 20% obtained by simply summing their independent contributions. So, the combination of these two conditions is far more dangerous than either by itself. Causes are best understood not as being determinants of accidents, but as being facilitators of accidents. They increase the probability that an accident occurs, but they do not demand that it occurs. This argument implies that accidents generally have multiple facilitating components (causes). Most authors, at least in recent years, acknowledge in the introduction to their research that there is no single cause for accidents, and then proceed to ignore that statement in the conduct and interpretation of their research. Arguably, the present authors could be included in that indictment. However, to atone for those past literary indiscretions, let us now reiterate that point. There are no single causes for accidents. Usually, the “cause” is simply the last thing that happened before the crash. Only a few years ago, an Airbus landed in the Hudson River after both engines failed at 3200 feet while taking-off from LaGuardia Airport. The newspapers report that the cause of the crash was the ingestion of a flock of geese. However, they also report that the captain of the flight was an experienced glider pilot, with an exceptional interest in safety. Clearly, multiple causes are at work here – the flock of geese may have caused the engines to quit, but the experience and skill of the captain may have been the cause of the relatively benign water landing resulting in no fatalities. In exploring causes and effect relationships, we may move away from the final cause to whatever extent results in a comprehensive understanding of the event. For example, we might ask what caused the geese to be in the flight path of the aircraft. Did placing a major airport along a river in the flyway for migratory waterfowl play some part? We might also ask what part the pilot's gliding experiences played in the outcome. Did they “cause” a catastrophic event to become an exciting, but injury-free event? When we take a more situated view, we recognize that there are no “isolated” events. Everything happens in a context. The need to view accidents in context is best articulated by Dekker⁴, who noted that “Human actions and assessments can be described meaningfully only in reference to the

⁴ Dekker, S.W.A. 2001. The disembodiment of data in the analysis of human factors accidents. Human Factors and Aerospace Safety 1: 39–57.

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world in which they are made.” In a subsequent paper⁵, he argued cogently for the abandonment of the construction of causes as the explanations for accidents, but rather for the deepening of our insights into the patterns of failure and the mechanisms by which failure occurs. To borrow yet another quote from Dekker, “The point in learning about human error is not to find out where people went wrong. It is to find out why their assessments and actions made sense to them at the time, given how their situation looked from the inside”⁶. This general world view of accident causes is also evident in the work of Leveson and Dismukes et al. Leveson⁷ criticizes the event chain analysis model of accidents and argues for a more systems approach. He cites Rasmussen⁸, who argued that “an explanation of the accident in terms of events, acts, and errors is not very useful for design of improved systems.” Dismukes et al.⁹ also advocate a view of accidents in terms of multicausality and the need to understand the deep structure underlying accidents. Dismukes et al. note two fallacies about human error that pervade accident analysis:

- Myth: Experts who make errors performing a familiar task reveal lack of skill, vigilance, or conscientiousness.
- Fact: Skill, vigilance, and conscientiousness are essential but not sufficient to prevent error.
- Myth: If experts can normally perform a task without difficulty, they should always be able to perform that task correctly.
- Fact: Experts periodically make errors as a consequence of subtle variations in task demands, information available, and cognitive processing¹⁰.

Each accident occurs because of a complex web of interacting circumstances, including environmental conditions, pilot attributes, aircraft capabilities, and support system (e.g., air traffic control, weather briefer) weaknesses. A complete explanation of how those elements interact to produce an accident is far beyond our current science. Science does not, at this time, allow us to predict with anything approaching certainty that under a well-specified set of circumstances an accident will occur; this is definitely not the chemistry laboratory.

To begin with, we do not know the set of circumstances that should be specified. Nor do we know the values to assign to the various elements so that they combine properly. Despite this abundant

ignorance, we are able to make some statements regarding probabilities. That is, we are able to say with some confidence that accidents are more likely to occur under some circumstances than under other circumstances. The identification of these circumstances, and the establishment of the degree of confidence with which we may assert our beliefs, is the topic to be considered next.

Many efforts have been conducted to identify the causes for aircraft accidents over the years. Although they suffer from the implicit assumption of single causes, which we have dismissed as naive, they nevertheless can make a contribution to our understanding of accident causality by identifying some of the circumstances and attributes associated with accidents. In recognition of the importance of decision-making to accident involvement, the FAA, in cooperation with a coalition of aviation industry organizations, formed a Joint Safety Analysis Team (JSAT) to examine general aviation aeronautical decision-making (ADM), and to develop a program to improve ADM so as to reduce the number of accidents attributable to poor decision-making. The JSAT, in turn, chartered an international panel of human factors experts to address the technical issues of how poor decision-making contributed to accidents, and what might be done to improve aviation safety. That panel’s recommendations, listing over 100 specific items, were adopted without change by the JSAT and provided to the FAA as part of its final report¹¹. Reflecting a pragmatic approach to applying the current knowledge of accident causality among general aviation pilots, the panel’s recommendations covered a wide range of possible interventions. Some examples include:

- Create and disseminate to pilots a weather hazard index which incorporates the weather risks into a single graphic or number.
- Reorganize weather briefings so as to present information related to potentially hazardous conditions as the first and last items given to the pilot.
- Increase the use of scenario-based questions in the written examination.
- Include training for Certified Flight Instructors (CFIs) on risk assessment and management in instructional operations.

⁵Dekker, S.W.A. 2002. The Re-invention of Human Error. Technical Report 2002-01. Ljungbyhed, Sweden: Lund University School of Aviation.

⁶ Dekker, S.W.A. 2002. The Re-invention of Human Error. Technical Report 2002-01. Ljungbyhed, Sweden: Lund University School of Aviation.-P. 7.

⁷ Leveson, N. 2004. A new accident model for engineering safer systems. *Safety Science* 42: 237-270.

⁸ Rasmussen, J. 1997. Risk management in a dynamic society: A modelling problem. *Safety Science* 27: 183-213.

⁹ Dismukes, K., Berman, B., and Loukopoulos, L. 2006. Rethinking pilot error and the causes of airline accidents. The CRM/HF Conference, Denver, CO, April 16-17, 2006. -P.11.

¹⁰ Dismukes, K., Berman, B., and Loukopoulos, L. 2006. Rethinking pilot error and the causes of airline accidents. The CRM/HF Conference, Denver, CO, April 16-17, 2006.

¹¹ Joint Safety Analysis Team. 2002. General Aviation Aeronautical Decision-making. Unpublished Report. Washington, DC: General Aviation Coalition.

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- Produce a Personal Minimums Checklist training program expressly for use by CFIs in setting their instructional practices.
- Establish a separate weather briefing and counseling line for low-time pilots.
- Require pilot heat to be applied automatically, whenever the aircraft is in flight.
- Develop displays that depict critical operational variables in lieu of raw, unprocessed data (e.g., have fuel indicators that show remaining range or endurance, as well as remaining gallons of fuel).
- Develop and disseminate training which explicitly addresses the issues involved in crash survivability; including crash technique, minimizing vertical loads, and planning for crashes (water, cell phone, matches, etc.) even on flights over hospitable terrain.
- Develop role-playing simulations in which pilots can observe modeled methods of resisting social pressures and can then practice those methods.

Regrettably, these interventions have not yet been implemented, even though they were accepted by both industry and government regulators. This is a reflection, perhaps, of the difficulty of making even well-regarded changes in an established bureaucracy and cost-conscious industry. Clearly, it is not enough

for researchers to find better ways to keep pilots safe. They must also find ways to get their discoveries implemented – arguably, the more difficult of the two tasks. Nevertheless, some progress is being made in training pilots to be more safety conscious.

In 2006, the AOPA Air Safety Foundation (ASF) began sending a free DVD on decision-making to all newly rated private and instrument pilots. The scenarios contained on the DVD focus on VFR into instrument conditions and IFR decision-making – two areas that the ASF has found to be particularly troublesome¹².

The advanced technology formerly found only in air carriers and executive jets is now working its way into the general aviation fleet. This technology will make some tasks easier (e.g., navigation), but it will present its own set of unique problems, and will still require pilots to make reasoned judgments about when, where, how, and if they should undertake a flight. The influence of pilots' personality and their skill at acquiring and using information will still be great, even in the aircraft of tomorrow. Safety requires a proactive approach to assessing and managing all the elements that influence the outcome of a flight, including the most important element, the human at the controls.

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ALISHER NAVOI AND DAVLATSHAH SAMARKANDI

Abstract: The article deals with the book “Tazkirat ush-Shuaro” by Amir Davlatshah Samarkandi and the issue of recognition and appreciation of the author of the work, Alisher Navoi, and in the tazkira the analysis and interpretation of the idea dedicated to the great Timurid Renaissance genius artist Amir Alisher Navoi.

Key words: Timurids Renaissance, literary source, tazkira, fiqra, poet, author's personality, word, skill, image, tazkira-recollection.

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Introduction

It would be expedient to study the sources of the Alisher Navoi period by classifying them into historical and literary sources. Alisher Navoi's “Risola” (1485) and Abdurahmon Jami's “Bahoriston” (1487) are studied as separate studies from the literary sources that mention the name of Alisher Navoi and his creative activity, high role in the cultural uplift, samples of lyrical poems [1, pp. 257–263; 2, pp. 60-65].

According to our study, the first historical work in which Alisher Navoi's great name is mentioned is the magnificent Matlai Sadayn and Majmai Bahrain by the classic historian of the Timurid Renaissance, Abdurazzaq Samarkandi. The events of the book “Eight hundred and seventy-four (1469–1470). The description of the important events described in the chapter “The situation in the country of Khorasan” of the “Remembrance of the death of the mother of Mirzo Sultan Hussein” contains the following message about the name of Alisher Navoi: “At the same time, with the sincerity and specialization, as well as the high level of will and attention, the correctness of the verse “No one has the fame and status of this Turab” came to study the condition of the citizens of Amir Nizamiddin Alisher Herat, as if it were dedicated to him. The sign he brought to calm the people was read on the pulpit on Friday...” [3, p. 655]. In general, the content of the report focuses on the important political movement associated with the

stability of the rule of Alisher Navoi Sultan Hussein Boykaro, that is, the events of 1469. Scholars such as O.Sharafiddinov, S.Ayniy, P.Shamsiev, V.Zohidov, H.Sulaymon, N.Mallaev, I. Sultan, B.Ahmedov, A. Kayumov, A.Hayitmetov, S.Ganieva, I.Haqqulov, M. Muhiddinov, Sh.Sirojiddinov, D. Salohiy, Q.Ergashev, E.Ochilov and B. Rajabova in their research on the period of Alisher Navoi emphasized the abundance of historical and literary sources. In particular, B. Akhmedov included in his book “In the memory of Navoi's contemporaries” translated from more than a dozen valuable literary and historical sources mentioning the honorary name of Alisher Navoi. It has also provided these texts with the necessary explanations to make it easier for the reader.

The main findings and results

In this article, we will focus on the figure of Amir Temurshah Samarkandi, a prominent representative of the Timurid Renaissance, dedicated to Alisher Navoi in the introductory part of the tazkirat “Tazkirat ush-Shuaro” (The work consists of an introduction, seven chapters, and an introduction - B.R.). In fact, in the cultural environment of Herat and Samarkand, Amir Davlatshah Samarkand is one of the penmen recognized by Alisher Navoi. In this commentary one can also see the traditions of Samarkand and Herat style. The reason is that Navoi gave detailed information about his personality, activities and mazkurtazkira in the preface to his tazkira “Majlis un-

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Nafois”, and again began the meeting of this tazkira “I am in the dhikr of the nobles of Khorasan and some of the land, and the nobles of that tribe; the health of the tab and the direction of the mind will be the cause of those, but they will not continue” with his honorary name and finished it with a special opinion. He called the finished tazkira “Tazkirat ush-Shuaro” and “Majma ush-Shuaro”.

It is known that Nuriddin Muhammad Afiy's (1172 - 1233) tazkira “Lubob ul-Albob” was as popular in Persian literature as “Majolis un-Nafois” in Uzbek (Turkish) literature.

Amir Davlatshah Samarkandi wrote “Tazkirat ush-Shuaro” in Persian in 1485. The book contains valuable information about more than 150 writers and poets who lived and worked in the X-XV centuries (The work begins with a figure dedicated to the great poet Rudaki - B.R), historical or poetic plates of educational and pedagogical significance are also described, with the knowledge of important historical events of the period in which they lived, the names of rulers who paid attention to literature and art, science, and the people of the pen.

Alisher Navoi praised his hard work and valuable information: “... Amir Davlatshohkim, among the noble lords of the Khorasan dynasty, enjoyed the ornaments of grace and wisdom, was crowned with poverty and contentment, and wrote a book on the horse of Sultan Sahibkiran called “Tazkirat ush-Shuaro”. There is another mountain of rasoil and kutub in this chapter. But the name of the master of eloquence and eloquence, which preceded all, is this, and his adjective is mastur ...” [4, p. 8]. So, if we pay attention to the information written by Alisher Navoi, first of all, this tazkira was written with the advice, guidance and help of Navoi. Second, it was written in honor of Sultan Hussein Boykaro, the ruler of his time. Thirdly, he mentioned the creators known as “Malik ul-Kalam” and “Malik ul-Shuaro”, who lived and worked from ancient times to their own time. Third, examples of the character of the Shahs are depicted as an example of the name or creativity of their famous works. Fourthly, the author has written very important information about his famous contemporaries Nuriddin Abdurahmon Jami, Nizamiddin Alisher Navoi, Khoja Afzaliddin Muhammad Amir Ahmad Suhaili, Haji Shahobiddin Abdullo Marvorid, and Khoja Osafi.

Alisher Navoi spoke in detail about the personality, genealogy, talent, maturity, death and memory of this author in the fifth session of the Majlis un-nafois in a column entitled “Amir Davlatshah”. For example: “Amir Davlatshah is the son of Firuzshahbek's cousin Amir Alouddavla Isfaraini. Firuzshohbek's majesty and greatness are clearer to the people of the world; there is no need to describe him. Amir Alouddawla was a mountain man. But his temper flared and he was lost. And yet Amir Davlatshah is a handsome and dervish and a young

man of many potentials. Obo and his forefathers were historically great and noble, and he was content with poverty and poverty, and lived with the economy of grace and perfection. In this context, it is a short bit, I have classified it as “Majma ush-Shuaro”, and if anyone reads it, it will reveal the talent and perfection of his musannif. But I recently received a message that the fan world has passed away. By the way, thank God.

This proverb is:

*Zihi az oftobi orazat chashmi jahon Ravshan,
Zi chashmi ravshane karda dilamro xonumon
Ravshan* [4, p. 143].

“How bright the eyes of the world are from the sun of your face! This bright eye also filled the house of my heart with light”.

Navoi is the father of Amir Davlatshah Sasarkandi, the family environment in which he grew up, his profession, and his retirement from military service at the age of fifty. , fiction, reading valuable, interesting information about the word from each other, and concluded that this tazkira was skillfully completed.

Amir Davlatshah wrote a special poem “Nizamiddin Alisher Navoi” [5, pp. 188-197] in honor of the great poet. We begin with the following valuable information about the great poet, who began his thought with the words:

1. The author emphasizes that the honorary name of Alisher Navoi is a blessing for the tazkira in an uplifting spirit, with aesthetic pleasure.

2. It is said with pride that the great Amir Alisher's generosity and generosity spread beyond the Khorasan state, which was ruled by the Timurid state in the Jubilee period, that is, it spread all over the world.

3. Information about the great father of the famous and high-ranking emir and important information about his father as a statesman during the reign of Sultan Abul-Qasim Babur was close to the Sultan in the administration of the country of Khorasan and his diligent work for his blessed son. The fact that the author pays special attention to Alisher Navoi's father Giyosiddin Bahodir is also a golden letter for us, because Navoi's father's actions related to the upbringing and education of his son are almost not found in other sources. We think that in one of the conversations, Alisher Navoi himself excitedly told the author about his father. It is known that the great poet in his work “Munshoat” honors fathers as “Razzaq ul-Kayyum”, and in all his works, the image of fathers of a positive character, which is associated with the radiant image of his father, can be read.

4. In the time of the enlightened Timurid ruler Sultan Abulkasim Babur, Alisher Navoi spoke with enthusiasm about his zeal for virtue and his high ability to write eloquent poems, his poetic dewans that benefited literary gatherings.

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5. His spiritual courage to write in two languages skillfully in his youth and later to raise the official status of the Uzbek language; that is, in Uzbek (Turkish) he is known as a master of science, and in Persian as a master of virtue, and the author quotes a mulamma poem about it: “Kamina has a mulammah verse recited by the author in this Amir's hymn, some of which is in Turkish and some in Persian. Because the dhikr of the Sukhanvars was mentioned in this tazkirah, and he did not have the strength to include himself in the list of honored people. (Therefore) this great emir sang the hymn” (194–196).

6. The author has a special honor in the play as Sultan Abulqasim Babur as a coach and a secular king who cared for talented young people described his attention to Alisher Navoi as follows: “He always praised the great emir for his kindness and intelligence. Sometimes he would read poems in Turkish or Persian written by the great emir and marvel at the power of his nature and the sweetness of his words. He benefited from his blessings and was a good help” (189).

7. The author also mentions that Alisher Navoi was a great man, a strong social figure, a just statesman and politician in his time in his house in Herat, known as “Unsiya” – “Citizens' Appeal”; tried to dwell in detail on the fact that he had built many buildings of a social character at his own expense, his various relations with the people, with the nation, with Sultan Hussein Boykaro, with the real and movable property of the genius poet, with the perfection of his financial worship, with his unparalleled level of mentorship and resilience. To give an example from the figure, the story of the provision of drinking water to the people of the holy city of Mashhad seems to be addressed to the great Navoi, the saying of our wise people: That is: “(Again) By the grace of God, the water of Chashmai Gil above the Tus province, from

the famous springs of Khorasan, which has opened the world, has been brought to the holy city of Mashhad by the efforts of those whom He has chosen as representatives. He saved the people of Mashhad from the scourge of drought. It is such a gift that the kings and nobles of the world are powerless to do so. The length of this ditch is about twelve miles, and all the places are uneven. This bounty of the (Great Amir) exceeded all the bountiful bounties. Because of this ditch, the holy city of Mashhad, God willing, will bring the jealousy of paradise, the zeal of the Chin nigorkhana. We cannot describe all the buildings built with the charity of this great emir, because (they) are more than counting and counting” (184).

8. From the information in the figure, we also know the mulamma poem written by Amir Davlatshah himself dedicated to Navoi. This is because he also gave examples of Navoi's work in the form of ghazals and verses, and also quoted a poem that he skillfully wrote to prove his knowledge, which further increased the value of the figure.

According to our readings, this readable opinion of Amir Davlatshah about Navoi in a sense served as a basis for the opinion or information about Navoi written in the books of Fakhri Hiravi, Babur, Mirzo Haydar, Hasankhoja Nisari, Mutribi Samarkand.

Conclusion

The conclusion is that the study of the literary and historical sources of the Alisher Navoi period, first of all, clarifies the places associated with the life and work of Navoi. Secondly, the study of specific figures dedicated to the great Navoi in books such as “Tazkirat ush-Shuaro” to some extent contributes to the development of Navoi studies. Thirdly, we are also aware of the life and work of some of Navoi's contemporaries in the above-mentioned sources.

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METHODOLOGICAL BASES OF INTRODUCTION OF CREDIT MODULE SYSTEM IN HIGHER EDUCATION INSTITUTIONS

Abstract: The formation of knowledge and science is directly related to the education system. The effectiveness of the education system is directly ensured by the level of teachers, student needs, the content of textbooks and the infrastructure for the formation of independent education.

Key words: education system, credit, module, institution, credit system, concept, bologna declaration.

Language: English

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Introduction

On October 8, 2019, the President of the Republic of Uzbekistan Shavkat Mirziyoyev signed the Decree "On approval of the Concept of development of the higher education system of the Republic of Uzbekistan until 2030." This important policy document states that "at least 10 higher education institutions in the country should be included in the list of the top 1,000 higher education institutions in the ranking of internationally recognized organizations (Quacquarelli Symonds World University Rankings, Times Nigher Education or Academic Ranking of World Universities) and study in higher education institutions. gradual transition of the process to a credit-module system"[1]

It was also noted that by 2030, 85% of all higher education institutions (HEIs) in the country, including 33 higher education institutions in the 2020/2021 academic year, will be transferred to the credit-module system.[2]

The credit-module system is a process of organizing education, a model of assessment based on a set of modular technologies of teaching and credit measurement. Carrying it as a whole is a multifaceted and complex systemic process. The credit-module principle focuses on two main issues: ensuring the

independent work of students; assessment of students' knowledge on the basis of ratings.[3]

The main tasks of the credit-module system are:

- modular organization of educational processes;
- Determining the value of one subject, course (credit);
- Assessment of students' knowledge on the basis of rating scores;
- allowing students to create their own curricula individually;
- increase the share of independent learning in the educational process;
- The convenience of educational programs and the possibility of change depending on the demand for specialists in the labor market.

The above is not only to teach on the basis of innovative educational technologies, but also to teach students to study independently, to take a new approach to education, to acquire the necessary and in-depth theoretical knowledge and practical skills based on the demands of the labor market. In short, this system is focused on the professional development and maturity of the student. It is aimed at ensuring the lifelong learning of the scientist and the formation of human capital that can meet the requirements of the

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labor market and modernity. Let us briefly consider the essence of the concepts of module and credit.

A module is a part of a curriculum that covers several subjects and courses. It is a set of disciplines (courses) aimed at developing students' knowledge and skills, analytical and logical observation. The teacher organizes the learning process, gives live, video and audio lectures, coordinates and monitors the student's activities. The student will study the topic independently and complete the assignments.

According to foreign experience, the educational process in the credit-module system consists of 2-4 modules per semester. It requires not only information, but also the ability to process it and put it into practice.

Module-based curricula are developed on a case-by-case basis and include:

- full disclosure of learning objectives and tasks;
- Requirements for the qualifications of the student to be acquired at the beginning and end of the subject (course);

- A summary (syllabus) of each subject included in the module, ie topics of lectures, plans of seminars and practical classes, assignments for the assessment of independent learning;

- Summary of teaching: methods and tools of teaching; methods and forms of knowledge assessment.

In a modular education system, a rating system is used to assess students' knowledge, skills and abilities. It assesses all of a student's learning activities, including in-class and out-of-classroom learning.

Credit is a unit of study load (time) spent by a student to study and master a subject in a particular field of study or program (course). –Credit is a minimum amount of time set by a student's normative document, usually one week, for in-class and independent study. The credit is given to the student after completing the assignments in a particular subject and passing the final exam. Each student must collect credits in order to receive a diploma in their chosen field and specialty in the future. Accumulated credit can serve a student throughout his or her lifetime to improve his or her skills or to pursue additional higher education. In economic terms, accumulated credit becomes a student's academic “asset.”

Credit technology gives students the right to choose the elective subjects included in the working curriculum, thereby directly participating in the formation of individual curricula. They are given the freedom to choose not only subjects, but also professors and teachers. It is also an indicator of the value of the assessment.

The credit system was first introduced in US universities in the 18th and 19th centuries to liberalize the learning process and to determine the student's

weekly academic workload. In 1869, Charles William Eliot, president of Harvard University and a prominent figure in American education, coined the term “credit hour.” Thus, in 1870-1880, a system of credit hours was introduced. Studying with the credit system and mastering the curriculum allowed students to independently plan the educational process, to control its quality, to improve educational technologies. The introduction of the credit accrual measure not only gave the student greater freedom, but also allowed him to independently plan the academic process so that he could become a competitive professional in his chosen field in the future. At the same time, it has led to improvements in the assessment system and educational technology.

As stated in the Bologna Declaration, the credit-module system serves two main functions, with an emphasis on independent learning:

1. Ensures the mobility of students and teachers, ie the free transfer (transfer of study or work) from one higher education institution to another without hindrance;

2. The academic load - credit for all educational and research activities of the student in the chosen field of study or specialty is clearly calculated. The sum of the credits shows how much the student has earned according to the chosen program.

Today, we hear from those involved in the education system about the Bologna system and its importance. So what kind of system is this? What are its advantages and disadvantages?

The unification of higher education in European countries matured in the middle of the twentieth century because it was no more competitive than American education. Attempts to improve European education to a single standard began in 1957, after the signing of the Treaty of Rome, which set radically new tasks: bringing national legislation in the field of education to European standards, expanding access to higher education, student academic mobility and their demand for labor in the market, the creation of a long-term education system. Over time, these ideas were developed in the decisions of the Conference of Ministers of Education of European countries (1971, 1976), the Maastricht Treaty (1992). Subsequently, various programs were introduced under the auspices of the European Union, the Council of Europe.

There are three stages in the Bologna process:

- *Information: Universities from the Magna Carta (1988) to the Bologna Declaration;*

- *Development: After the Bologna Declaration.*

The ideas of the European University Society and the creation of a single European space came from the oldest Bologna University in Italy and throughout Europe. In 1986, in preparation for its 900th anniversary, he approached all universities in Europe with an offer to admit the Magna Charta Universitarum. This idea was enthusiastically

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accepted, and in 1988, during the celebration of the anniversary, this document, which proclaimed the universal and permanent values of university education and the need for close ties between them, was signed by 80 university rectors.

Gradually, the process of integration of higher education into Europe began to rise from the university to the state level. In 1998, a meeting of education ministers from four countries (France, Great Britain, Germany, Italy) was held within the walls of the Sorbonne University in Paris. The Sorbonne Declaration, signed by them on the harmonization of the architecture of the European higher education system, for the first time substantiated and accelerated the strategic goal of creating a European Higher Education Zone. subsequent development events.

In 1999, Bologna (Italy) hosted the historic first conference of thirty European education ministers. The Declaration on the European Higher Education Area, adopted by them, sets out the main goals that will lead to the comparison and harmonization of national goals. education systems higher education in Europe. The Bologna process begins with this declaration.

Later, when new countries joined the Bologna process each year, meetings of European education ministers were held regularly with a two-year break. The ministers were received in Prague in 2001 and in Berlin in 2003. The fourth meeting took place on 19 May 2005 in Bergen, Norway. In this meeting, Ukraine joined the Bologna process. The last meeting was held in 2007 in London. Today, more than 40 countries are participating in the Bologna process, which is due to end next year. The training of highly qualified personnel in the Bologna system is carried out in two stages. Usually, the training of bachelors is not less than three years, and the master's degree is 1-2 years. Many experts oppose the Bologna Declaration's ability to attract talented students, the competition with the United States to value their knowledge in the labor market, the limited capacity of European higher education institutions, and the tendency of many "intellectuals" to leave the old continent and emigrate to the United States. admits that it is the cause[4]

Today, there are four common models for implementing this credit rating system. These are the United States Credit System (USCS); European credit system (ECTS); Asia-Pacific Credit System (UCTS); The UK Credit System (CATS). The most common of these models are the US and European models. According to the data, the Ministry of Higher and Secondary Special Education of the country prioritizes the use of the European ECTS system in the introduction of the credit system. Therefore, we consider it appropriate to dwell on its advantages, advantages, disadvantages and shortcomings. One of the most important aspects of the Bologna Declaration

is the use of a single "credit system" (ECTS) by higher education institutions. A credit or unit of credit is an indicator of the value of any learning activity included in the curriculum. The ECTS system offers great benefits to students in Europe and the Bologna Process in general. For example, it guarantees that the academic knowledge acquired at the university where the student is studying will be recognized in the higher education institutions of the member countries of the system. At the same time, the system allows members to resume, transfer and terminate their studies at another university. The ECTS system also offers a number of benefits to universities. In particular, it ensures the similarity and uniqueness of curricula that accurately reflect information about the learning process in a particular field of study and specialization. It also allows the content of the higher education programs to be agreed upon in advance in order to achieve recognition of the degree. The student retains responsibility and independence in resolving all issues related to education. In the European education system, courses and the entire educational process are calculated on credit, and in Uzbekistan and other CIS countries on academic hours.

Under the ECTS system, each institution of higher education independently determines the composition of credits, the number of credits for each module, as well as the total amount of credits that a student must collect to complete each course and the study period in general. In contrast to the current curriculum, in addition to the compulsory subjects, elective subjects are included in the student's individual course schedule. Students are not expelled or dropped from course to course. Higher education diplomas are awarded upon completion of the required credits. According to the ECTS system, the amount of credits that students have to accumulate in a year is 60. Assuming that one academic year consists of two semesters, a student must earn 30 credits per semester. If the bachelor's program is 3-4 years, the student is required to collect a total of 180-240 credits to obtain a bachelor's degree, and 60-120 credits to complete a 1-2-year master's program.[5]

As you know, we have limited access to information sources and various international databases. As a result, in higher education, professors' main focus is on finding information, assimilating it, and disseminating it to students after initial processing. That is, teachers were merely the subject of receiving and transmitting information. In this case, the student acted as a receiver of information as an object of the educational process, spending most of his time listening to lectures in the classroom. Today, with the acceleration of access to information, the expansion of access to international scientific and technical databases, and the acceleration of globalization, the issue of developing students' independent learning has been on the agenda. Curricula for specialties and specialties were

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supplemented by subjects not related to the demands of the labor market, mainly in terms of the principle of employment of professors and teachers, the allocation of classroom hours, as well as the distribution of subjects by mutual agreement of department heads.

The student was not only allowed to choose subjects and professors, but also to give up boring classes and study in the library. Student truancy was considered a serious loss, with warnings of more than 30 hours per semester and expulsions of more than 74 hours per semester. The student had to sit in the classroom, whether he liked the subject and the teacher, whether the knowledge he was given was left behind!

Thus, in the traditional system, no materials were provided on what knowledge the student would acquire in the future, what professors would teach, the profile of the direction, and a summary of the subjects. However, all information on the direction and specialties of education in all foreign universities of developed countries, in particular, a brief syllabus of subjects reflected in the curriculum (subject identification, information about the professor, description of the lesson, purpose of the subject, learning outcomes, teaching methods, science plans, literature), assessment methodology), professors and teachers in the disciplines and their achievements, brief requirements for specialists in the labor market, ie theoretical, practical knowledge, skills and professional qualifications, information on which is available on the official website of the university will be announced. At the same time, unfortunately, applicants find it difficult to find this information on the websites of our universities. In this regard, the time has come to form a culture.

The first steps are being taken to move away from the negative aspects of the traditional education system and to organize work within the requirements of international standards.

At present, 33 higher education institutions of the country are actively working on the transition to the credit-module system. All forces are being mobilized to create this system. An example of this is the fact that the El-Yurt Umidi Foundation regularly organizes seminars in foreign higher education institutions for citizens who are engaged in research and teaching activities and are familiar with the credit-module system. In addition, one of the members of the International Council of Experts under the El-Yurt Umidi Foundation has been appointed as an expert advisor to 10 self-funded higher education institutions. In order to fully implement these processes, the relevant departments of the higher education institution are being established. In particular, the Tashkent State University of Economics has a Department of Education Credit Management. From the 2020/2021 academic year, this department has begun work on the full transformation

of all areas of education and specialties taught at the university into the ECTS credit-module system.

According to preliminary estimates, the university has 15 weeks per semester for undergraduate studies and 6 weeks for certification (3 weeks per semester for exams). Thus, the number of study weeks in 4 years is 144, certification is 24 weeks, and the total number of holidays is 204 weeks. Curricula for all disciplines and specialties are divided into two parts at each stage: basic and elective. Based on the ECTS requirement, it is planned to oblige the student to collect a total of 240 credits over 4 years out of 60 credits per year. In this case, the student will have to spend 2880 hours for lectures, practical and laboratory classes and examinations for 4 years, 4320 hours for independent study, a total of 7200 hours.

In our example, 1 credit = 12 academic hours + 18 hours of independent study. Therefore, 1 credit is considered to be equal to 30 hours, and a student's weekly classroom load is equal to 20 hours. The amount of credit allocated for the internship is intended to be at the expense of the relevant subject or disciplines.

The introduction of this system in higher education will improve the quality of education, ensure transparency, eliminate corruption, reveal the true knowledge of students and allow students to study and work independently. Today, the European credit system is used in almost all universities of the old continent. The introduction of a credit-module system is an important factor in the collaboration of teachers and students. In modular education, the teacher organizes, directs, advises, checks the learning process of the listener. The student moves independently towards the object. The greatest emphasis is placed on students' independent learning. The importance of independent learning in the learning process is growing, which in the future will increase the independence, creative initiative and activity of professionals. In the credit-module system, university students always have the opportunity to get help and advice from teachers and classmates. This strengthens mutual understanding and builds teamwork skills. The transition to a credit-modular education system will also increase the commitment and demand for university professors. As noted above, with a modular learning system, the teacher performs not only informational and supervisory functions, but also advisory and coordinating functions. The leading role of the teacher in the pedagogical process is preserved.

The credit system of education increases student exchange. This is because loans taken from one university are credited to another, and students can transfer from one university to another without losing credit. It is this system that allows Uzbek students to continue their studies at advanced foreign universities and remove complex bureaucratic barriers.

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However, it should be noted that the blind and direct application of any international experience, without taking into account our values, without a thorough analysis of each of its elements, based on scientific evidence, can lead to certain negative situations in the future. should also not be forgotten.

This does not mean that this system is fully consistent with our worldview, conditions, and values aimed at the development of a harmoniously developed person. Therefore, we need to change the

views of professors and students, who are the active elements of the educational process, to inculcate in them the requirements of this system, to form a unique culture.

After all, if we do not train personnel in accordance with the requirements of the labor market, we must feel that we will inevitably lose our place in the competition. But we have no better way or choice. After all, higher education institutions in all developed countries follow this path and achieve high results.

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EVALUATION OF THE EFFECT OF RTMS ON NON-MOTOR SYMPTOMS OF PARKINSON'S DISEASE

Abstract: This article describes the nature of non-motor symptoms according to the screening questionnaire NMSQuest with the study of the level of depression according to the Zung scale in patients with Parkinson's disease, as well as the effect of transcranial magnetic stimulation in accordance with the accepted protocols on the dynamics of the development of NMS and depression.

Key words: Parkinson's disease, non-motor symptoms, depression, transcranial magnetic stimulation.

Language: English

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Introduction

Relevance. The prevalence of Parkinson's disease in recent decades around the world has increased by 1.5 times, including in Central Asia. Parkinson's disease (PD) is a chronic progressive brain disease associated with degeneration of dopaminergic neurons in the substantia nigra, which is manifested by a combination of hypokinesia with rigidity, resting tremor and postural instability, as well as a wide range of non-motor phenomena (mental, autonomic, sensory, etc.) [2].

Currently, no complete cure for PD has been identified, however, existing methods of conservative and surgical treatment can improve the quality of life of patients and slow down the progression of the disease [3]. However, the main problem in the management of PD patients is associated with lifelong treatment, which requires constant correction. It is known that treatment is mainly aimed at restoring the activity of the dopaminergic system and correcting

neurotransmitter imbalance [3]. Despite treatment, 40% of patients remain symptomatic. Taking drugs with dopaminergic activity (primarily levodopa) at advanced stages in 28% of PD patients leads to the development of levodopa-induced dyskinesias [11].

It was found that, in addition to motor disorders, non-motor manifestations are noted in 10–50% of patients with PD [6]. It is about cognitive and anxiety-depressive disorders, vegetative disorders, sleep and wakefulness disorders, sensory disorders, etc. [11]. Anxiety-depressive disorders are among the most common psychoemotional manifestations of PD. Thus, depression occurs in 40–90% of patients with PD [1, 12]. It was found that the development of depression aggravates the existing motor deficit and reduces the quality of life of patients even more than motor disorders [13].

Recently, transcranial magnetic stimulation (TCMS) has been increasingly used as an adjunctive treatment [4, 5, 8]. TCMS is a method of

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neurostimulation and neuromodulation based on the principle of electromagnetic induction of an electric field in the brain. The main advantage of the method is its non-invasiveness, no need for surgical intervention or anesthesia. Repeated magnetic impulses for a short time in a specific area of the brain, conducted through a magnetic coil over the head, can modulate cortical excitability, decreasing or increasing it depending on the stimulation parameters. A change in excitability occurs not only at the site of stimulation, but also in areas of the brain anatomically associated with the site of stimulation, which has a great therapeutic potential [7, 9, 10]. The use of TCMS can significantly improve the quality of life without the use of antidepressants and psychoactive drugs [13].

Thus, electromagnetic therapy opens up new possibilities for treating PD patients. Since the main effects of TMS in PD include improvement of motor functions and a decrease in the severity of non-motor manifestations, stimulation may become a new additional therapeutic method for treating patients with PD [4].

Considering the above, the use of TMS requires further comprehensive study, with an analysis of the effect of this method on the non-motor symptoms of Parkinson's disease.

Materials and methods: the selection consisted of 34 patients with Parkinson's disease of the akinetic-rigid form with the degree of severity of the disease from 1.5 to 2.5 according to Hen and Yar, the average age of which was 63 ± 8.3 years. Of these, 20 are men and 14 are women. Moreover, the duration of the disease was no more than 3.5 years.

All patients were evaluated for the presence of non-motor disorders using the Parkinson's Disease Quantification Scale (NMS) (NMSQuest). This questionnaire is a screening method for diagnosing

non-motor symptoms of PD. The scale is filled by the patient or a relative, consists of 30 questions with short answers "yes" or "no". The analysis of non-motor symptoms of PD was carried out in the dynamics of the use of TMS (on the first day of the study, at the end of the TMS course). Also, all patients were examined for the presence and level of depression using the Tsung questionnaire.

To assess the effect of rTMS on NMS and depressive disorder, the patients were divided into two groups: the main group consisted of 17 patients who, against the background of basic therapy (levodoposine drugs and / or dopamine receptor agonists) received a course of rTMS, and the control group - 17 patients who received only basic therapy. The samples of the main and control groups were correlatively equal in terms of NMS and the level of depression.

RTMS protocol: the magnetic field strength was selected slightly below the motor threshold, in accordance with individual tolerance and amounted to 0.7-1.3 Tesla, the pulse frequency in the series is 10 Hz, the duration of the series is 7 s, the interval between the series is 1.0 s, the duration of the session 5 min., While stimulation of the amplitude of 110-120%. Course - 10 sessions. RTMS was carried out using the Neuro-MS / D apparatus with an amplitude of magnetic induction of up to 4 T, which has several versions. Stimulation types: biphasic.

The rTMS protocol was developed in accordance with the safety requirements of the US National Institute of Neurological Disorders and Stroke, taking into account the technical capabilities of the rTMS apparatus (Neuro-MS.NET software for controlling a magnetic stimulator).

Results of the study: analysis of non-motor symptoms during the initial examination of patients with PD revealed the following changes (Table No. 1).

Table No. 1 Average values of NMS in BP (in%)

Symptomgroup	N=34
Psychoemotionaldisorders	85,3
Vegetativedisorders	55,8
Sleepdisturbance	79,4
Intestinaldisorders	44,11
Sensorydisorders	
Psychoticdisorders	5,8
Cognitivedisorders	97
SexualDisorders	26,4

According to the results of this table, it can be seen that the most frequent NMS in patients with PD are such as psychoemotional disorders (on average 85.3%), sleep disorders (on average 79.4%), and almost all of them had cognitive disorders. And also vegetative disorders were found in half of the patients (on average 55.8%). At the same time, one patient accounted for from 4 (76: 70.5%) to 7 (23.5: 29%).

For a more detailed alignment of the psychoemotional spectrum, a more detailed analysis of psychoemotional disorders was required as one of the leading non-motor symptoms, which leads to a decrease in the quality of life of PD patients, and therefore the patients were further examined for the level of depression (Table 2).

Table No. 2 Assessment of the Tsung scale in both groups

Index	N=34
Milddepression	11,76% (Averagescore54±3,2)
Subdepression	44,1% (Averagescore63±3,6)
Truede Depression	44,1% (Averagescore77±6,7)

The data on the Tsung scale showed that depression was observed in all patients, while subdepressive states and true depression were noted in the overwhelming majority of patients with PD (88.2%).

The use of rTMS was carried out in the prescribed course, upon completion of which, the patients were re-examined for the presence of NMS and assessment of the level of depression (Table No. 3).

Table No. 3 Dynamics of NMS after application of rTMS

Symptomgroup / observation	Maingroup		Controlgroup		p
	1.	2.	1.	2.	
Psychoemotionaldisorders	88,3	41,2*	82,3	70,5	0,002
Autonomicdisorders	58,8	23,5*	52,9	52,9	≤0,001
Sleepdisturbance	82,3	58,8*	76,5	70,5	0,002
Intestinaldisorders	47	41,2	52,9	52,9	0,34
Sensoryimpairment	11,7	0	17,6	17,6	0,06
Psychoticdisorders	5,8	0	5,8	5,8	0,09
Cognitiveimpairment	100	70,5*	94	88,2	0,002
SexualDisorders	23,5	17,6	29,4	29,4	0,49

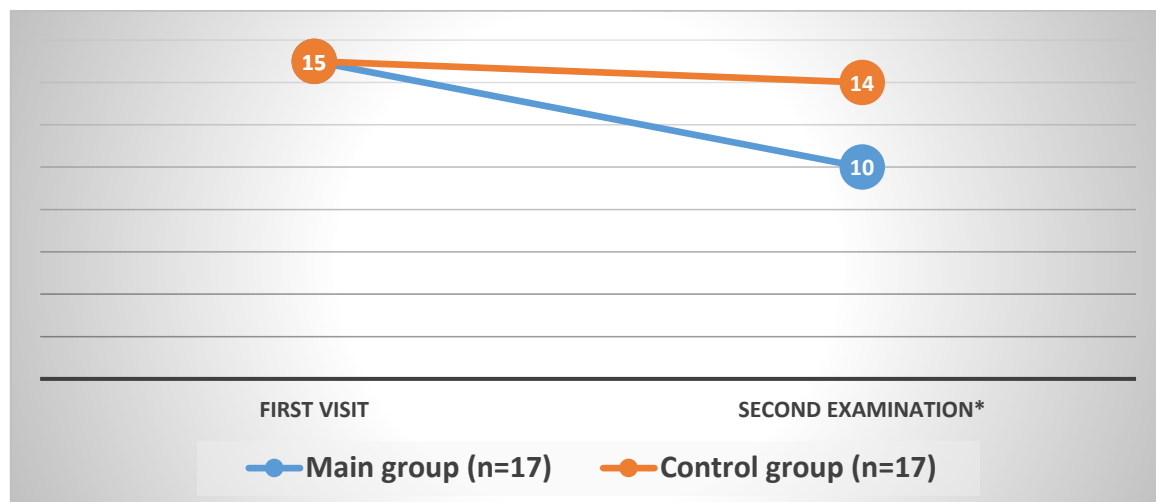
*Statistically significant differences between groups (p≤0,05)

Statistically significant changes in NMS were observed in the main group, which reliably indicates the effective effect of rTMS on the non-motor

symptoms of PD (p≤0.001), in comparison with the control group, where only basic therapy was used.

Analysis of depression according to Tsung showed the following results (Fig. №4).

Figure No. 4 Depression dynamics after rTMS application



*Statistically significant differences between groups (p≤0,5)

As it can be seen from the diagram, the change in the level of depression is statistically insignificant in both groups (p≤0.5), however, in the main group in 29.4% of patients there is a decrease in subdepression

to the level of mild depression, while in the control group this indicator remains practically unchanged (5.8%).

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Conclusion: stimulation of dopamine release by means of transcranial magnetic action significantly improves the non-motor symptoms of Parkinson's disease, namely anxiety, autonomic disorders, sleep disorders and cognitive disorders, which significantly improves the quality of life of patients by reducing the

need for constant drug therapy. However, the effect of rTMS on depression has a statistically insignificant indicator, which leaves room for further study of the effect of rTMS on the psychoemotional spectrum of patients with PD, and also raises the question of the need to take antidepressants regardless of TMS.

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AUTHOR'S SPEECH AND STYLE IN UNLOCKING THE SPIRIT OF THE HERO

Abstract: In this article, the author's speech in epic works analyzed the use of metaphorical tools to illuminate the psyche of heroes, the use of artistic means of images to reveal the character traits of the heroes of the work, the issues of the specific style of writers.

Key words: conflict, composition, bella lingua, special literary image tools, poetic syntax, rhythmic-intonation.

Language: English

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Introduction

String-like vine branches

The author's speech is manifested in the selection of the title, epigraph, the beginning and the end of the text, in the description of heroes, circumstances and events, landscapes and environments. The reader creates his own mind based on the author's speech in the image of the author, which helps to understand the intention of the writer or hero, to understand his point of view. As a rule, the speech of the author is performed as a speech of a third person, in the event that the image of the author-narrator or lyrical hero is used, the speech of the first person is used.

The complexity of describing the phenomenon of the author's style is determined by a number of reasons. On the one hand, it developed in the form of a certain tradition of studying it in different theories of aesthetics and art. Taking on the other hand, the authorship phenomenon is historically much younger; the term method has emerged as a result of the formation of capitalist relations and bourgeois law than general concepts.

In addition, there are different terms to describe the phenomenon we are studying. Thus, within the framework of various disciplines that study art and culture, there are several terms, which are called: style, direction, artistic system, artistic method, style and skill. In this place, we should note that skill means a much wider range than style. Because the scale of

skill and the extent to which the creator can see, perceive and describe events in artistic literature, as in Real life, also leads to a broader tessavuur according to the style. The style is determined by the method of statement or the mode of writing, which differs from others in part in describing the life case of the addicts

If the concept of style has long been engaged in scientific and philosophical thinking, then the author's style is a relatively young concept, which in the scientific literature differs little from similar terms. In Chinese scientific literature, the concept of author's style is a synonym for the word style, which also means a set of stylistic tools inherent in any author.

Main part

The style of the writer is understood as the means and methods for the implementation of the author's ideological plan. The concept analogy is based only on the unity of creative characteristics inherent in this or that writer. Under its influence, the object world, language, historical events and the inner world of man change. Seeing the world by the writer and understanding His laws is reflected in his style, which distinguishes his creativity. The level of life experience, talent, understanding of social progress make the writer's works unique and recognizable. "Individual style, — writes prose N.Shukurov,—...the creative person's own perception of reality, reflection of events with specific images and means of

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subconscious yaslane-eb laughing sensibly from your master, maybe he will be mocking you ⁴.

Sometimes the author moves away from the events and heroes in his story, expressing his personal thoughts and feelings and penetrating deeper into their depths. A. My member and X. We can observe more of this in the dostmuhammad novels. But it is natural that this restriction also occurs as a result of the direct influence of the main events. Such fragments are called the restriction of the author from the described artistic reality, and if the main thing in them is the expression of the author's feelings, then the lyrical retreat is considered. Phrases that belong to the author, with the help of which the direct speech of the characters is introduced, usually we call this the author's speech.

It is known that the main components of the work of art are the author's speech and the speech of the personage. The speech of the hero not only gives an action to the narration, but is also characteristic of his character, which allows us to talk about the features of his speech. Characterization of speech is achieved by a special selection of words, phrases, speech turns, etc. as a means of artistic depiction of the heroes of the literary work.

Author's speech these are parts of a literary work in which the author refers to the reader not only through the speech characteristics of the personages shown, but also by himself. However, not always the author refers directly to himself, but directly to the reader. He can also talk to her through a narrator. Since the second half of the XIX century, the introduction of the author's substitute narrator figurehead has become widespread in the artistic literature. Referring to the reader through the storyteller, the author already follows from his own views and worldview, his attitude to the object of reality. If the author knows everything about all his heroes, then the narrator will be limited in his personal contacts and possibilities of personal observation. Like any other witness, he only knows what he saw or said by others, maybe. they achieve this by breaking the truth. The insides of all actions, all actions of the heroes can not get into it. As can be seen from the above, there is a very complex connection between the author's speech, the storyteller's speech and the speech of the personage. V.V. Vinogradov wrote about it this way: "the faces of the storyteller and the author, having entered into a different relationship with the characters' images, cover each other (more precisely complement each other) or replace." The speech of the hero can be presented in two ways: oral (direct speech) and unspoken (internal speech). The first plays an important role not only in characterization of the character, but also in the movement of the plot.

The second is aimed at stimulating the actions and actions of the heroes, so together with this, this process reveals their causal relationship and serves as an important tool for opening the inner world of the characters. Unlike direct speech, the inner speech of the persona does not have an address and does not participate in communicative action, which makes it incomprehensible for a stranger. This can only be explained by the fact that the writer introduces the reader into someone else's inner world. The author's non-interference in the inner speech of the personage leads to the fact that it becomes increasingly clear to the reader and becomes a "stream of consciousness". In addition to the flow of consciousness, internal speech has different forms of manifestation. The most numerous and widespread of them is the internal monologue

Any phenomenon, whether it refers to the methods of describing the personage. let him turn to the methods of the plot and composition, revealing its meaning only in connection with the integrity of the artistic world of the writer. In turn, the integrity of the work can be understood as the product of the writer's will, his worldview, his understanding of both art and reality, the embodiment of his attitude to it. In addition, the attitude of the author is not always manifested directly with the help of words that directly denote the characteristics of various positive or negative characters with the help of evaluative adjectives that characterize a positive or negative evaluation; or indirectly, using different comparisons, characterization of different characteristics of appearance means advantages or disadvantages of the interior of this hero. It can be assumed that the author's attitude can manifest itself in other ways.

The ratio of author's speech and personages speech in the epic type of literature is determined depending on the author's position. A. Member's "real or trip to Gulistan", N. In the novels of eshonkul "Gürügli", the author's speech and the speech of personaj are intertwined. Every time Julia shows the discrepancy between the speech of the girl and Guli and her Fe'li, the authors demonstrate the hypocrisy, deceit of the heroes. Having skillfully used the interaction of the author's speech and the personage speech, the author cancels everything that the girl and The Flower said, but not with simple negation, but with the most thorough and detailed description of how it is said. She is a Gulya girl with her often sarcastic comments and constantly interrupts the speech of Guli. As a result, everything that Julia said about the girl and the flower, re-interpreted by the reindeer reader, is looked at from the other side. Between the author's speech and the personage speech

⁴ X. Dohmuhammad. Wise Man SIZIF. T. "Uzbekistan" 2016. P.263-265.

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there is a certain "antagonism", both in terms of content and in terms of expression.

It should be noted that there are different concepts and approaches to the development and study of the theory of methods. Education about the style was also known in ancient rhetoric. This was the basis for the teaching of notes in ancient Greece and ancient Rome. According to the beliefs of ancient thinkers, the style of speech was considered one of the methods of persuasion.

The founder of the theory of style was Aristotle, who created the system of Speech Art. Aristotle described his views on the field of study of artistic speech first in Poetics, and then in rhetoric, paying great attention to style issues. Aristotle first introduced the concept of "clarity of speech" and began to use a special terminology: the dignity of the style is in accuracy; proof of this: if the speech is not clear, it does not fulfill its purpose. The style should be neither low nor too high raised, but fit the subject of the speech. From nouns and verbs, they are distinguished by their clarity, which is used in the literal sense. Since Aristotle, the clarity of speech is considered its main quality. The value of speech is assessed by Aristotle from the point of view of his perception. To do this, the speech should not be infinite, but its boundaries. So the doctrine of the period and rhythm is followed. When we come to the form of speech, it should be devoid of neither metric Nor Rhythm. The style devoid of rhythm has an unfinished appearance, and completeness should appear to it - but not with the help of a meter, because everything that is not completed is unpleasant and incomprehensible. Ancient thinkers distinguish three types of speech: glorious" or high", "not at all" or "immature" and "average". We see that it is appropriate to use the same Trinity in relation to the creators of the present day. Because some works really want to create a large masterpiece from something that is not worth it in the middle or in life. Our admirers do not pay much attention to the extent to which the scope of the subject chosen for the work is. Therefore, even the works can not find their readers. This is the period of the life of the work, the work of the writer.

In addition, researchers of the ancient literary tradition argue that most of the iqtibos quoted in the works of ancient thinkers are poeticibibos, which makes it possible to emphasize that the teaching of the style is oriented towards poetry.

It can be seen that since ancient times philosophers have wondered about the style and tried to determine its features and types.

The term style is as follows: 1) a set of artistic means inherent in the artistic works of any writer, period or nation; 2) a set of linguistic means and ideas inherent in this or that literary work, genre, author or literary direction; 3) a set of specific manners, style of activity, some kind of work styles, and, finally,

sometimes this word means "emotional tonality) it can be used in meanings.

About the style Yana can be cited below in the "Explanatory Dictionary of the Russian language" style - this is a system of linguistic means and ideas inherent in a particular literary work, genre, author or literary flow. This definition fully reflects the essence of the phenomenon we are studying tiradi and at the same time is short, clear and understandable..

In literary criticism, style is understood as an aesthetic unit of all elements of an artistic form, it has a distinctive feature and expresses a certain composition. In this sense, the style is an aesthetic appraisal category. When we say that the work has a style, it implies that the artistic form has acquired a certain aesthetic perfection, the ability to have an aesthetic effect on the conscious mind.

The aesthetic effect of the work of art on the reader is precisely due to the unique charm of the style, the ability to influence emotionally. Like any aesthetically significant phenomenon, the style is natural to cause aesthetic controversy. Simply put, the reader may or may not like the style of expression of the writer. This process is carried out initially at the level of the pupil's perception. Naturally, aesthetic evaluation is determined not only by the specific object features of the style, but also by the characteristics of the conscious mind, which in turn are determined by various factors: psychological and even biological characteristics of the individual, upbringing, previous aesthetic experience, etc. As a result, different features of the style provoke positive or negative aesthetic feelings in the reader: someone likes a harmonious style and does not like disagreement, someone prefers brightness and color, someone - a calm restriction, someone likes simplicity in style and transparency, some, on the contrary, complexity and even confusion please.

It should be borne in mind that any style, regardless of whether we want it or not, has an aesthetic significance. As already mentioned above, style is an expression of the aesthetic integrity of the work. It implies the subordination of all elements of the form to a single artistic law, the existence of an organizational principle of style. This organizational principle, as it were, is a whole composition of a fur form, determines the nature and functions of any of its elements. For Example, N. In eshonkul's novel "Gürüglü", the main style is printed, the regularity of the style turns into contrast, a clear and sharp reflection, which is carried out in each episode of the work. For Example, Quot; N. getting off the bus and looking at the building opposite the station, the old man and the old woman, who had grown old before, began to lean on each other. They were apparently either juhud or Armani; their faces were so weary that they could barely walk as if they were tired of life. Apparently, walking was also as Basoor as they would

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like to keep in the same world even if it was a minute of their steps starting increasingly closer towards the last rock of their lives as they walked, harassing them.

If the old woman did not pin her light and capricious eyes with anger, she would not even pay attention to these things. In their eyes, jealous of the young and the young man, who was very jealous, came to the house and did not hide it, but came to his close.:

– Good young man, give way to the elderly, it will happen even if you walk on snowdrifts yourself, - they did not restrain themselves from saying.

Through this episode, the writer described the harmony of old age and winter, along with the dependence between man and nature. The purpose of this is N. if each of his works expresses his dislike for that period, that is, his action against the old system, as if it were a winter breeze, then through the images of the old cholu old woman, everyone remembers that the adage of his life is such.

People who snore in old age will always be Asabi. Old age can not even turn its chain of inferiority over everyone. He chooses everything as an example by clicking and clicking; but at the beginning of all the same a living bird circulates"⁵

Only now the old woman passed before him. It is interesting that someone else's poison always seems to be melting to the one whose case is running, if it builds without anxiety or at all. As the old woman said, her actions caused sympathy in her soul. As soon as he entered the hallway of the building, the old man-campirga, who was walking slowly through the tiny steps, looked once again. They had gone much farther as the winter sun, which quickly passed. From where someone else's sun sets, another's sun comes out. Although the end of any road that a person walks ends in absence, all the same he becomes a victim of living. Life itself is nothing more than an exaggeration. The old man-she is now an old woman, jealous and addicted to Gina, and she is to nobility and compassion. The man who walks by his work and does not land on the tree of trouble Crows always comes to be a nobleman. Life always consists of a struggle of nobility and envy. There is nothing surprising in the fact that nobility turns into envy. Envy is also a sign of vitality. A person lives like this for a lifetime, deception becomes his joy, Hasham, the meaning of his life. The soul that has learned to deceive can not live without him, he deceives a lifetime to make himself happy, is deceived, one day when he reaches the end of life, he looks at the trail, nothing but deceit and lies is visible.

N. despite being young, he considered himself to have enough experience about life. He went up to the second floor and pressed the bell on the door, where

the rustle of his leather went out and, apparently, the children's business, with chalk, all sorts of figures, indecent words were written. Despite the fact that these records appeared much earlier, the housewife did not delete them. Maybe he likes that? For some reason, in the nimkorangi hallway this door looked very gloomy. Maybe it was even decades before it was painted? From the inside came a step-by-Step sound that made the ceiling; a little sur and indecent, in a sound that sounds like a scream if not a raft, a woman asks the question "who?"he asked. He said his name. The door opened sharakla. He had never seen this door locked. With the opening of the door, along with the smell of burnt onions from the inside, somehow ran into the notorious hallway, and on the threshold was a bald bust, a jingle, a woman whose eyes were standing on a man and feeding in vain, the waterfall on his face did not say paint, rather a desire appeared in an open backpack, approaching

In the field of psychology, the regularity of the style is embodied in the form of a constant internal struggle, in the mind of the hero of the impressions of an anti-dependent life, in the form of an anti-dependent attachment to the mind and under the consciousness. In the field of theme imaging, the stylistic printzip is manifested in contrasting landscapes, in the inconsistency of appearance and clever movements, with the emphasis on the leading feature in bright, clearly displayed portraits. For example, the so-called N is reflected in the image of the external, that is, the relationship of the hero with the natural phenomena of his inner nature and the environment surrounding him. Uniqueness in the concept of artistic style and non-similarity to other styles is considered an indispensable attribute. This is also true in a certain sense. The style of writing of any person or writer's expression of reality is easily recognizable in any text, in a work or even through a piece or piece, and this identification occurs both at the synthetic level (primary perception) and at the analytical level. The first thing we notice in the perception of the work of art is the emotional tonality - a general aesthetic tonality, which embodies the work Paphos. Thus, the style is initially perceived as a meaningful form.

Conclusion

It is known that the speech of the author and the speech of the personage in the epic genre were formed as independent components of the work only by the XIX century. This was especially evident in life works. It should be noted that by the nineteenth century realism became the leading literary direction of artistic literature and the main method of describing the object reality. Its uniqueness lies in the fact that in

⁵ N. Eshonkul. "Gürügli". Journal of the Eastern Star 2012 № 2. P. 19-20 .

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this image it is not separated from the real space, that is, in the historical process it is manifested in the method of preserving figurative images from the material of reality, which is given to the writer as an object.

So, the landscape A.My member, X.Dostmuhammad is very important for his works, because it helps to reveal the characters of the personages. The description of historical events and situations is also subject to the same task. It is

desirable to pay attention to the features of the selection of images, their interaction, the choice of words, morphological forms, syntactic structures, ritualism and others. We can go deeper into the essence of the work and form ourselves an idea of the worldview and mood of the writer. And the role of the reader is determined by his deep and subtle understanding of the worldview and mood of this writer and his sympathy for him. It really depends on the style and skill of the writer's expression.

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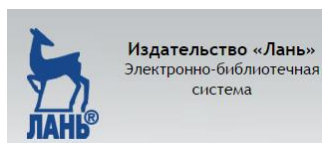
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