Book of proceedings

THIRTIETH INTERNATIONAL CONFERENCE ON: "SOCIAL AND NATURAL SCIENCES – GLOBAL CHALLENGE 2023"
(ICSNS XXX-2023)

Madrid, 14 November 2023

Organized by

International Institute for Private- Commercial- and Competition Law (Austria)

in Partnership with

Institute of History and Political Science of the University of Białystok (Poland-EU), Keiser University (USA), Bielefeld University of Applied Sciences (Germany), School of American Law (Greece)

Edited by: Dr. Lena Hoffman

THIRTIETH INTERNATIONAL CONFERENCE ON: "SOCIAL AND NATURAL SCIENCES – GLOBAL CHALLENGE 2023" (ICSNS XXX-2023)

Editor: Lena Hoffman

Madrid, 14 November 2023

ISBN: 979-8-950029-09-7

Disclaimer

Every reasonable effort has been made to ensure that the material in this book is true, correct, complete, and appropriate at the time of writing. Nevertheless the publishers, the editors and the authors do not accept responsibility for any omission or error, or any injury, damage, loss or financial consequences arising from the use of the book. The views expressed by contributors do not necessarily reflect those of University of Bialystok (Poland), International Institute for Private, Commercial and Competition law (Austria), School of American Law (Greece).

ICSNS XXX-2023

TABLE OF CONTENTS

Cost-benefit analysis to evaluate the feasibility of structural strengthening of the heritage building of the National Gallery of Arts in Tirana

Idlir Dervishi
Faculty of Mechanical Engineering,
Polytechnic University of Tirana,
"Nënë Tereza" Square Nr.1, Tirana

Abstract

Although the heritage building of the National Gallery of Arts in Tirana was designed in the 1970s with the old Albanian Design Codes, full structural strengthening was not included in the reconstruction project that started in 2016. The structure was not damaged by the earthquakes of 2019, but it was decided to carry out an overall strengthening of its structural elements. The columns and foundations will be strengthened with the reinforced concrete jackets technique, 5 new anti-seismic reinforced concrete walls will be added, while the slabs and beams will be covered with high-strength structural mortar. But is it economically advantageous to strengthen a structure that wasn't damaged by the seismic events of 2019? The answer is affirmative, because admitting the extra expense, will make the structure seismically safer (according to Eurocode Guidelines), and also lengthen its lifespan, increasing its value, and lowering future maintenance and insurance expenses. In this study, a comprehensive cost-benefit analysis will be performed to determine whether it would be feasible to strengthen the structure.

Keywords: Cost-Benefit Analysis, Structural Strengthen, Heritage Building.

1. Introduction

The building of the National Gallery of Arts in Tirana was constructed in the 1970s according to the codes of that time [2]. It is now considered a heritage building due to its unique architectural and artistic features. The building consists of three floors above ground and one below. The structure is made of reinforced concrete and non-structural masonry walls. The building's facade is decorated with several highly valuable artistic mosaics. While the structure itself is valuable, the art pieces housed inside, including paintings and sculptures, are even more valuable. Unfortunately, the building's condition has deteriorated over time, especially since the 1990s. It has been decided to completely renovate and strengthen the current building in order to prevent further decay and potential harm to the artworks. Additionally, a new building will be constructed adjacent to the existing one to serve the same purpose.
The reconstruction of the existing building is a crucial matter not only in terms of cultural, artistic, and heritage preservation but also from an economic standpoint. The new exteriors and interiors will inevitably attract more visitors, leading to increased gallery revenues. Although the building structure did not suffer any damage during the 2019 earthquakes, it will undergo complete structural strengthening in addition to total reconstruction, which consists of adding reinforced concrete jackets to the columns and foundation, 5 new seismic concrete walls and the beams and slabs will be covered with high strength structural mortar. However, the question remains: is

it feasible to carry out structural strengthening on the building even though it wasn't affected by the earthquakes? This paper will answer this question by performing a cost-benefit analysis of the structural reinforcement works of the National Gallery of Arts (NGA).

Figure 1. The existing building of the National Gallery of Arts

2. Applied methods

Optimizing project impact is possible by identifying and comparing the costs and benefits of different construction options or design features through a Cost Benefit Analysis (CBA). It guides decisions on materials, design, and reconstruction methods to minimize expenses while maximizing benefits. CBAs are often required for public engineering projects to justify public expenditure, ensuring that taxpayers' money is spent efficiently, and projects are selected based on their net societal benefits. Since structural interventions have long-term implications, a CBA considers both short-term and long-term costs and benefits. This perspective is crucial for assessing the project's value over its lifetime.

Based on MUSGRAVE's main types of costs - benefits can be [1]:

- Tangible or Intangible;
- External or Internal;
- Intermediate or Final.

When considering how to strengthen a structure, there are several options to think about, including retrofitting, reinforcement, or complete replacement. We must evaluate each option's costs and benefits and calculate the net benefit or cost savings for each.

Based on the net benefits and sensitivity analysis results, the contracting authority has selected the strengthening option that offers the best balance between costs and benefits.

A well-prepared Cost-Benefit Analysis (CBA) can be a useful communication tool for different stakeholders involved in a project. It helps to explain the reasoning behind the project, expected outcomes, and potential impacts to investors, community

members, and government bodies. After the project is completed, the original CBA can be used as a benchmark to measure the actual performance of the project.

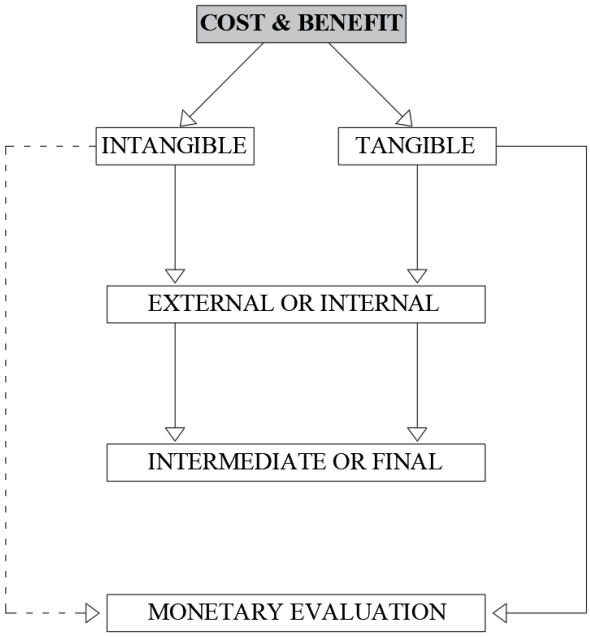


Figure 2. Cost – Benefit types [1]

This can help to determine whether the expected benefits were achieved and whether the costs were managed effectively and in a rational way. Once a project is completed, the initial CBA serves as a benchmark for measuring the project's actual performance. It helps in determining whether the expected benefits were achieved and whether the costs were managed effectively.

Figure 3. Interiors of the National Gallery of Arts

Cost and benefit analysis

To conduct a Cost-Benefit Analysis, we determined the costs and benefits of the structural strengthening process of the National Gallery Arts building and analyzed each individually.

2.1 Tangible costs

Tangible costs refer to the direct and measurable expenses or expenditures associated with a particular activity, or cost of engineering projects (*designs, labor, types of machinery, etc.).* These costs are typically easy to quantify and are often expressed in monetary terms. Tangible costs are contrasted with intangible costs, which are more challenging to measure and may not be expressed in monetary terms and metric values.

Tangible costs are crucial for budgeting, financial analysis, and decision-making because they can be easily tracked and accounted for in financial statements. Organizations use these costs to evaluate the profitability of projects or operations and make informed decisions about resource allocation and cost reduction strategies. Tangible costs can be internal or external, intermediate or final.

2.1.1 *Internal tangible cost*

In the project of strengthening the NGA building, tangible cost includes the design cost, labor cost, materials cost, assembly cost, cast-in-place cost, transportation cost, construction process security cost, etc. Below are presented all the internal tangible costs identified for this project:

-Material Costs: This includes the cost of the materials used for reinforcement, such as steel rebars, concrete, epoxy resins, high-strength structural mortar or other strengthening materials.

-Labour Costs: Labour costs involve the wages and salaries of the construction workers, engineers, and technicians involved in the structural strengthening process.

-Engineering and Design Costs: These costs include the fees paid to structural engineers and architects who design the strengthening methods and draw construction plans and details.

-Equipment Costs: Specialized equipment may be needed for structural strengthening, such as drilling machines, cranes, and wooden molds. The rental or purchase of this equipment is an internal cost.

-Permits and Regulatory Fees: Obtaining the necessary permits and complying with local building codes and regulations may incur costs. This cost is paid by the Contracting Authority (*Ministry of Culture*) to the Municipality of Tirana.

-Testing and Inspection Costs: Structural strengthening projects often require testing and inspection to ensure that the work is done correctly and meets safety standards.

-Project Management Costs: Managing the project, including coordination, planning, and oversight, comes with its costs.

-Quality Assurance and Quality Control Costs: Ensuring the quality of the strengthening work is crucial, and this may require additional expenditures.

- Health and Insurance Cost: Construction companies provide health insurance benefits to their employees. These benefits help attract and retain skilled workers and ensure their well-being. Health insurance costs can vary based on the level of coverage provided, time coverage, and the number of employees covered.

Measuring the tangible cost of the structural strengthening intervention is effortless because are categorized as special works and it is not easy to determine the labor hours and items units/prices, due to the lack of references. The cost of the strengthened intervention cannot be determined solely by quantity, but also by complexity. According to the structural design, 26 items need to be quantified, regarding the quantity and the unit price. Some of the unit prices were found on the Construction Price Manual sanctioned from the DM Nr. 627, date 15.7.2015, and some of them were determined by performing a market assessment. After an analytical analysis of all the items, the bill of quantities of the strengthened intervention was calculated at the value of **70,298,733.09 ALL** [3]**.** This project's final cost includes all previously mentioned expenses, except "*Permits and Regulatory Fees Cost*".
An intermediate tangible cost is *"Testing and Inspection Costs".* Also, part of the intermediate tangible cost is even the *"Health Insurance"* of the staff involved in the construction process of strengthening, which is paid only during the execution of the project.

2.2 Intangible cost

Intangible costs, also known as hidden or soft costs, are expenses or negative impacts associated with an activity, project, or business operation that are not easily quantified in monetary terms or values. These costs are more challenging to measure than tangible costs, as they often involve non-financial factors. Intangible costs can have a significant impact on an organization's overall performance and should be considered when making business decisions. Some common examples of internal intangible costs include:
Damage to the existing structure: Structural strengthening works must be very accurate, because it is necessary to intervene in the existing structural elements, such as in foundations (*digging under them (excavating), hammering and drilling holes to put new rebars, pouring concrete*), columns (*drilling holes*), R/C walls (*connecting with other elements*), beams and slabs (*applying structural plaster*).

Figure 4. Excavated basement and foundation strengthening

Some of the interventions that can damage the existing structure are:

Table 1. Structural intervention that can damage the existing structure

Nr.	**Intervention works in support of structural strengthening**
1	*Excavation with arms*
2	*Demolition of concrete slab plastering*
3	*Demolition of concrete layers*
4	*Demolition of ordinary plaster facade brick wall over 8m height ~ 5cm + Cleaning with Metal brush + Water washing with compressor*
5	*Hammering the outer layer of the existing foundations*
6	*Hammering the outer layer of the existing columns*
7	*Drill holes and install rebars in the foundation*
8	*Drill holes and install rebars in the columns*
9	*Installing steel reinforcement*

Figure 5. Columns were hammered and drilled to install the new rebars

Part of the project involves constructing 5 reinforced concrete walls from scratch, inside the building, and connecting them with existing structural elements. During this intervention, the contractor must exercise extreme caution to avoid damaging the existing structure, during the above structural strengthening works.

- Loss-damage of Intellectual Property and Artistic Fund of the NGA*:* The National Gallery of Arts, has a rich artistic fund of great importance, like painting and sculptures. To carry out strengthening works, it is crucial to maintain their integrity. However, unqualified workers may damage or lose valuable pieces during displacement. This is one of the most important costs that can occur during the strengthening works in this category of building.

Failure to protect intellectual property can result in theft of intellectual property or art funds, damaging the institution's reputation. This cost is the final intangible cost.

2.2.1 External Intangible Cost

External Costs (*Negative Externalities*):

External costs, also known as negative externalities, are the harmful side effects or costs that are imposed on third parties who are not part of the reconstruction and structural strengthening activity. These costs are typically not reflected in the prices or decision-making of the parties directly involved. Some negative externalities are:

- ***Environmental pollution:*** The National Gallery of Arts is located on the main Boulevard of Tirana, alongside many other institutions. To perform strengthening, it is necessary to make some excavation demolitions and striping finishes. These construction activities can release pollutants into the environment harm the health of nearby residents, damage ecosystems, and result in healthcare costs in a crowded zone. These costs are external to the businesses responsible for the pollution.
- ***Traffic Congestion:*** Increased road traffic due to the use of technological machinery in the service of the construction process, can lead to congestion and longer commute times, affecting not only drivers but also people who work and have activity near congested areas where the National Gallery of Arts is situated.
- ***Noise pollution:*** The use of machinery for excavation, drilling, and hammering can create disruptive noise for nearby public offices. Failing to address environmental and social responsibilities can have negative consequences, including regulatory issues and damage to an institution's reputation and long-term viability.

The 3 costs mentioned above are intermediate intangible costs.

2.3 Tangible benefit

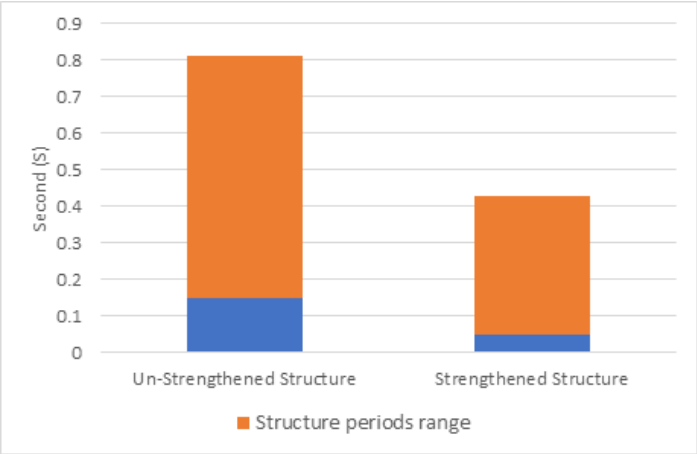
Tangible benefits are the quantifiable gains that result from an action, decision, project, or investment and are usually expressed in terms of monetary value or other easily defined metrics. Tangible benefits are easy to identify and assess, making them essential for decision-making and cost-benefit analysis. In the case of strengthening the building of NGA, we have identified these tangible benefits:

2.3.1 Enhanced Seismic safety

One of the most significant intangible benefits of structural strengthening is the increased safety it provides to occupants and visitors. Knowing that a building or structure has been strengthened gives people calmness, especially in areas prone to seismic activity. This sense of security is invaluable and fosters a more stable and resilient community. In the case of the National Gallery of Art, a seismically safer building can increase public confidence and attract more gallery visitors.

More specifically, according to the strengthened structure report of the NGA building [3], the vibration periods (T) of the un-strengthened structure will be at a range of **0.15 sec** up to **0.81 sec**. The drifts (D) will be at a range of **13.4mm** up to **56.8 mm**.

Whereas, the vibration periods (T) of the strengthened structure will be at a range of **0.05 sec** up to **0.385 sec**. The drifts (D) will be at a range of **0.023 mm** up to **17.36 mm**.



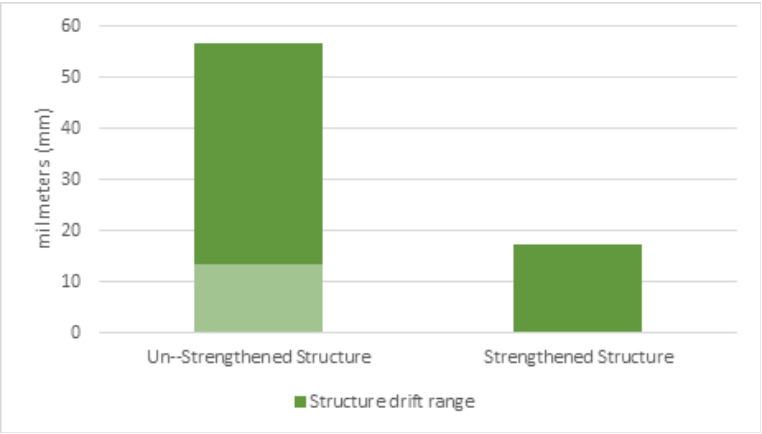


Figure 6. Comparison between periods of the un-strengthen and strengthened structure

Figure 7. Comparison between drifts of the un-strengthen and strengthened structure

It is evident from the results that the periods and drifts of the strengthened structure are significantly lower as compared to the un-strengthened structure. These are the final tangible benefits.

2.3.2 Reduced earthquake insurance cost

Earthquake insurance is crucial in areas prone to seismic activity because it covers property damage resulting from earthquakes. State institutions can even qualify for lower insurance premiums if they strengthen their structures. Insurance companies often reward proactive efforts to strengthen buildings against natural disasters or other risks, resulting in long-term cost savings and financial stability. The cost of the earthquake insurance depends on the importance of the building. In this case, we must consider the cost of reconstruction (*excluding electrical works and MEP system*) and strengthening. According to the Albanian Housing Entity, the cost of

constructing a building per square meter is 39,482 ALL [4]. The building of NGA is a public building, so we are obligated to refer to the above value, even though it is known that the market construction cost is higher. The usable area of the existing building of the National Gallery of Arts is 4633 m^2 [3].
So, the construction cost of the NGA building is:

4633 m^2 x 39,482 ALL = 182,920,106 ALL.

Also, we have to add the reconstruction and strengthening costs.

Referring to the design and bill of quantities the reconstruction works for the existing building of the National Gallery of Arts cost 132,427,060 ALL and the strengthening works cost 70,298,733.09 ALL [3].

According to the guideline of Albania insurance company Alb-Sig [5], the cost of annual earthquake insurance is 0.12% of the total cost of a new building, when it's built according to Eurocodes. For buildings over 50 years old or not built to Eurocode Seismic standards, earthquake insurance costs 50% more annually [5].

The annual earthquake insurance cost for the un-strengthened building of the National Gallery of Arts, with a life span of more than 50 years is:

$$AIC=0.0012\cdot (CC + RC) \cdot 1.5 \quad (1)$$

Where:
AIC- Annual Insurance Cost
CC- Construction Cost
RC- Reconstruction Cost

$$AIC= 0.0012 \cdot (182,920,106 + 132,427,060) \cdot 1.5$$
$$= \mathbf{567,624,8\ ALL}$$

The annual earthquake insurance cost for the strengthened building of the National Gallery of Arts will be:

$$AIC=0.0012\cdot (CC + RC)$$
$$= 0.0012 \cdot (182,920,106 + 132,427,060+70,298,733.09)$$
$$= \mathbf{462,775.1\ ALL}$$

The annual earthquake insurance cost of the strengthened structure of NGA will be 462,775.1 ALL/ year. The annual insurance cost of the unstrengthen structure is 104,849.7 ALL (*524,248.5 ALL in 5 years*) more than that of the strengthened structure. The annual earthquake insurance cost of the strengthened is 18.5% cheaper than the insurance of the existing building.

2.3.3 Reduced maintenance costs

Strengthening a structure can indeed help reduce building maintenance costs over the long term. Structural strengthening measures are aimed at enhancing the integrity and durability of the building, which can lead to fewer issues and less frequent maintenance.
The external coating of the columns, beams, and slabs is degraded. Reinforcement of the columns with a minimum of 10 cm reinforces the concrete layer and the beams with high resistance structural mortar (*50N / mm^2 mechanical resistance*), which not only increases their seismic performance but also stops the degradation of the concrete and steel rebars. If the columns, beams, and slabs remain in their current condition (without strengthening), As time passes, the building will require frequent

repairs, which will cost more than the current maintenance expenses. However, if the building is plastered, painted, and furnished inside, the strengthening will reduce the need for frequent and costly maintenance and repairs.

Figure 8. Beams and slab conditions of the NGA building

2.3.4 Intangible benefit

Structural strengthening involves modifying buildings to improve seismic resistance, load-bearing capacity, durability, and overall performance. While there are tangible benefits such as reduced earthquake insurance costs, there are also several intangible benefits that should not be overlooked. These intangible benefits play a crucial role in the decision-making process when considering structural strengthening projects.

3. Internal Intangible Benefits

3.1 The National Gallery of Arts reinforced concrete structure will be according to Eurocode earthquake resistance standards

Strengthening the building structures according to EN 1998-1:2004 Eurocode 8 "*Design of structures for earthquake resistance*", represents a fundamental approach to ensuring the safety, durability, and performance of construction projects. These guidelines provide a comprehensive framework for earthquake engineering and structural design. Eurocode standards not only guarantee structural safety but also promote sustainable practices and encourage innovation in the construction industry Ultimately, this contributes to the well-being, safety, and long-term resilience of the built environment and citizens. Structural strengthening brings older buildings into compliance with updated building codes and safety standards.

3.2 Preservation of Heritage and Cultural Buildings and increasing the lifespan of them

In our case, the structures being strengthened have historical and cultural significance. Strengthening the NGA building will preserve its heritage value, maintain a connection to the past, and increase its lifespan. Strengthening the heritage structures helps preserve architectural heritage and cultural landmarks, maintaining their value for future generations and tourism.

3.3. Environmental Sustainability

Structural strengthening can often be a more sustainable choice compared to demolishing and rebuilding. Repurposing and improving existing structures can reduce the environmental impact associated with new construction, such as the energy required for manufacturing and transportation of construction materials. The intangible benefit, in this case, is a reduced carbon footprint and a contribution to environmental conservation.

3.4. Reduced Disruption

While construction and strengthening work can be disruptive, it's typically less disruptive than demolishing and rebuilding from scratch. This means that businesses and residents in the vicinity experience fewer inconveniences, contributing to a better quality of life during the construction process.

4. External Intangible Benefits

Structural strengthening can provide various external benefits that extend beyond the immediate structural integrity and performance of a building. These external benefits often have broader societal, economic, and environmental implications. Here are some of the external benefits of NGA structural strengthening:

Enhanced Public Safety: A structurally strengthened building or infrastructure contributes to public safety by reducing the risk of structural failures, particularly in densely populated areas. This can help protect lives and property in the event of natural disasters or accidents.

Environmental Sustainability*:* Retrofitting and strengthening existing structures can be more environmentally sustainable than building new ones, as it reduces the environmental impact associated with resource extraction and construction dust and waste.

Reduced Carbon Emissions: Retrofitting and strengthening existing structures may have a lower carbon footprint than constructing entirely new buildings, as it reduces the energy and emissions associated with new construction.

Property Values and Tax Revenue: Structural strengthening will increase property values of NGA and, subsequently, property tax revenue for municipalities, contributing to local government finances.

Community Cohesion: Strengthening and maintaining public infrastructure, such as museums, schools, and theatres, fosters well-being and community cohesion.

5. Conclusions

The results presented in this study indicate that both from a structural and cost-benefit standpoint, strengthening the historic National Gallery of Arts building in Tirana is a feasible operation. The main tangible benefits resulted in the "Enhancement of seismic safety of the structure" by up to 70%, the reduction of the earthquake insurance cost by up to 18.5 %, and the reduction of maintenance cost (*the value will be materialized over time*). We observed several intangible benefits resulting from the seismic retrofitting of the NGA building. Firstly, the structure of the NGA building will be in accordance with Eurocode's earthquake standards, leading to a longer lifespan of the heritage building. In addition, the structural upgrade will increase the property value and improve the urban aesthetics, resulting in enhanced public safety and fostering community cohesion. Moreover, the strengthening will reduce the environmental impact and carbon emissions, while also contributing to the economic development of city of Tirana.

The tangible cost of strengthening the NGA structure will include the materials costs, labor costs, engineering and design costs, equipment costs, permits, and regulatory fees, testing and inspection costs, project management costs, quality assurance, and quality control costs, health and insurance cost, as part of all the project economic value.

The intervention in existing structural elements during the strengthening process can cause damage to the foundations, columns, and other structures, resulting in the main intangible cost. Lost or damaged intellectual property and artistic funds, can be a significant cost if the construction workers are careless during the removal process of the NGA artistic funds and strengthening process. Also, environmental and noise pollution and traffic congestion are some external intangible costs.

Performing a cost-benefit analysis is crucial when deciding on structural strengthening projects and involving relevant stakeholders, in order to ensure the best possible outcomes.

References

[1] Dupuis Xavier (1988). Applications and Limitations of Cost Benefit Analysis as Applied to Cultural Development (pp 7-13). Paris.

[2] Urban Planning and Design Bureau. Albanian Construction Archive (1974). Construction of The National Gallery of Arts. Tirana.

[3] Ministry of Culture, "4 AM" & "K.A.E.XH." & "Image & Communications Development", (2022). "Restoration, Reconstruction, And Rehabilitation of Spaces" and "Strengthen Design of the Existing Building of the National Gallery of Arts". Tirana.

[4] Albanian Housing Entity (2016), DM Guidance Nr.3 dt. 28.12.2016 Construction Housing Costs [Online] Available: https://ekb.gov.al/wp-content/uploads/2018/01/UKM-Nr.3-date-28.12.2016.pdf (December 12, 2016). Tirana.

[5] Alb-sig Insurance Company (2023). Guideline of Seismic and Fire Insurance Cost of the Building. Tirana.

Transparent Concrete: A still new material to discover

Enio Deneko
Polytenchnic University of Tirana, Faculty of Civil Engineering, Tirana, Albania

Abstract

Since the first use of concrete in antiquity, it is imagined as traditionally solid, giving a monotonous, dark, gray coldness and harshness feeling. Concrete is so ubiquitous, that we are surrounded by concrete at each step in the city. Yes, it is true that are so many various ways concrete is used depending on the architectural and structural request, but it still needed a lot of energy consumption for the internal illumination of the buildings, because of the loss of the natural light especially in big and high-rise structures. What if we can use a transparent concrete, capable to transmit the daylight, decreasing the artificial light consumption, but not affecting on its load-bearing?
This is the transparent concrete or also known as the translucent concrete, changing the traditional concept of the concrete, combining optical fiber, resin and concrete, and can produce multi-form and multi-style products, especially as a facade material and for cladding of interior walls. Optical fibers go through the whole concrete element, permitting the transmission of light through fibers. In this paper, the production, the use and the integration of this still new material in construction industry, is given. Although it is a new material, it started to be used in a variety of applications in architecture.

Keywords: Transparent concrete, optical fibers, illumination, architectural, compressive strength.

1. Introduction

Concrete has been used since Roman times, but its basic components have remained the same: concrete is a composite material composed of fine and coarse aggregate bonded together with a cement paste which hardens over time, accompanied by different additives depending on the purpose of use. As most of the concrete structures have deleterious effect on the environment, energy consumption for lightning, and also on the human mental state, considering the concrete as a harsh, rigid, cold-to-the-touch material, several new technologies are being developed to fight this issue and change these points of view.
One approach is to exchange the traditional ingredients with transparent alternatives. The ideator or better, the inventor of light transmitting concrete was the Hungarian architect, Aron Losonczi, who introduced it in 2001 and then successfully produced the first transparent concrete block two years later. He named it LiTraCon. Based on further research and innovations, this new type of concrete has been created being resistant, lighter, light-transmitting, white or colored.

Figure 1 LiTraCon blocks (Light Transmitting Concrete blocks)

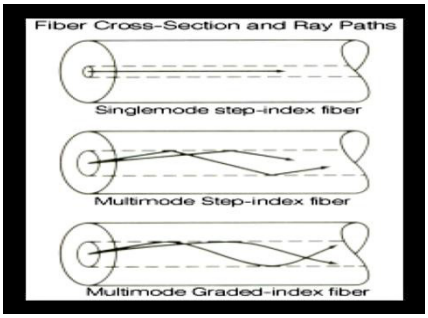
It is a combination of optical fibers and fine concrete and is produced only as prefabricated blocks, walls and panels. The fibers are commonly composed of glass or plastic and are organized in a manner to maximize the quantity of light that can travel through the concrete.

2. Methodology

The materials used in the construction of transparent concrete are the same as of the traditional concrete, only it uses fine aggregates in place of coarse aggregate and secondly, the use of optical fibers (4% to 5% of volume). The optical fiber used is made up of plastic or glass. Plastic fibers are much cheaper than glass optical fibers and have same properties, reducing the cost up to five times as compared to glass optical fiber but have disadvantage of less transmitting properties as compared to glass optical fibers. The concept is simple: it transmits light between two ends of the optical fiber. The thickness of optical fiber varies from 2 μm to 2 mm, but it can be more than 2 mm, losing some of the light-transmitting properties. Concrete is produced by adding 4% to 5% optical fibers by volume in concrete mix.
The optical fibres can be classified: according to their dimensions, as single-mode and multimode; according to their refractive index profiles, as step and gradient index fibres; and according to their material, as polymer optical fibres (POFs) and silica optical fibres (SOFs). There are three types of optical fibers:

- Single-mode step-index fibers
- Multimode step-index fiber
- Multimode graded-index fiber

A multimode fiber can propagate hundreds of light modes at on and the light can be more easily directed into the coree time, while single-mode fibers only propagate one mode as shown below (fig.2a). On the other hand, the existence of multiple modes has a negative impact on the quality of the light beam exiting the fibre. As various modes have different light speeds, the light at the output spreads in the time domain, an effect known as dispersion (fig.2b). Using gradient index fibres, the dispersion effect is reduced considerably.



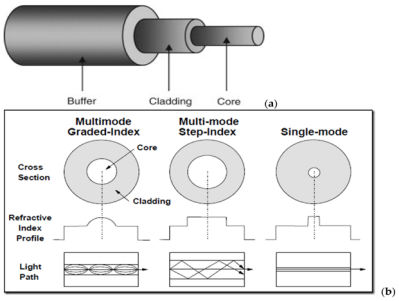
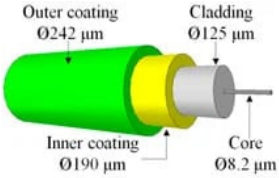


Figure 2 (a) Types of fibres (b) Structure of fiber and modal dispersion



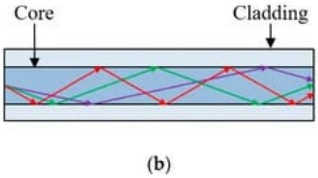


Figure 3 Multimode fibre of 0.242 mm diameter usually used in transparent concrete casting

Fibers and concrete are alternately inserted into molds at intervals of approximately 2 mm to 5 mm. Thinner layers allow more light to pass through the concrete. At the time of filling of concrete with fiber, concrete is poured slowly and carefully so that the position of optical fiber is not damaged or displaced from its desired position, using vibrating tables during the pouring of concrete in order to avoid the presence of voids inside the concrete. After casting, the material is cut into panels or blocks of the specified thickness and the surface is polished, resulting in finishes ranging from semi-gloss to high-gloss. After that, cutting work is done according to the shapes and dimensions needed.

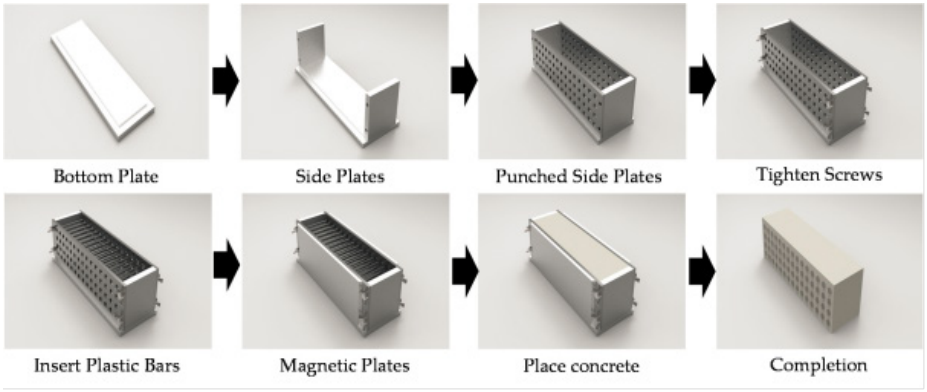


Figure 4 Production process of transparent concrete blocks (Byoungil Kim 2017)

3. Mechanical and thermal properties

The commonly used light transmitting concrete blocks have following properties:

- Ingredients: 96% concrete, 4% optical fibers
- Density: 2100-2400 kg/m^3
- Compressive strength: 50 -70 N/mm^2
- Bending tensile strength: 7 N/mm^2
- Flexural strength: > 5 N/mm^2
- Young's Modulus: from 2750 N/mm^2 to 3450 N/mm^2
- Elastic limit: greater than 60 N/mm^2
- Maximum water absorption: 0.35%.
- Limiting oxygen index: 25%.
- Thermal conductivity: 0.21 W/m °C
- Building material class: A1/A2, non-flammable
- UV-stability: durable
- Finish: polished
- Permits the passage of light through the concrete, can be produced in different colors and shapes to be seen through it.
- Can be a conductor of electricity.

4. Previous studies and laboratory tests

Past researches based on experimental analysis by different researchers, showed that the compressive and bending tensile strength depends on the percentage of fibers used, fiber diameters and fiber spacing In some tests performed on transparent concrete using plastic optical fibers (POF) in different proportions (3.14%, 3.80%, 4.52% and 5.3%), the following compressive strength values were found respectively: 19.5 N/mm^2, 19.0 N/mm^2, 21,9 N/mm^2 and 18 N/mm^2, indicating that the compressive strength decreases if the fiber percentage exceeds 4% [1].

A recent study attempted to test the compressive strength of 100 mm size transparent concrete blocks containing 0.25% to 4% of 0.5 mm diameter plastic optical fibers. The results showed that the compressive strength increased when the plastic optical fiber usage rate increased from 0.25% to 2%, but when the rate increased to 4%, the compressive strength decreased by approximately 15% (from 26 N/mm^2 to 22 N/mm^2). From the previous results we can assume that the recommendation for the optimum percentage of fibers, should be around 3% [8].

The cuboid shown in Figure 5(b) was experimentally tested for three different spacing of optical fibers layers (0.5, 1, and 2 cm) with 0.2 mm diameter strands; the best result in terms of strength property of concrete was 23 N/mm^2 when using 0.5 cm spacing. They also experimentally carried out results on a cube of 150 mm size for three different spacing of glass rods (1.5, 3, and 4.5 cm) with 0.5 mm diameter rods as shown in Figure 5(c); the best result was 26 N/mm^2 when using 4.5 cm spacing. Comparing the specifications of transparent concrete in term of the strength property, the results for 4.5 cm spacing of glass rods were greater than for the conventional concrete. [10].

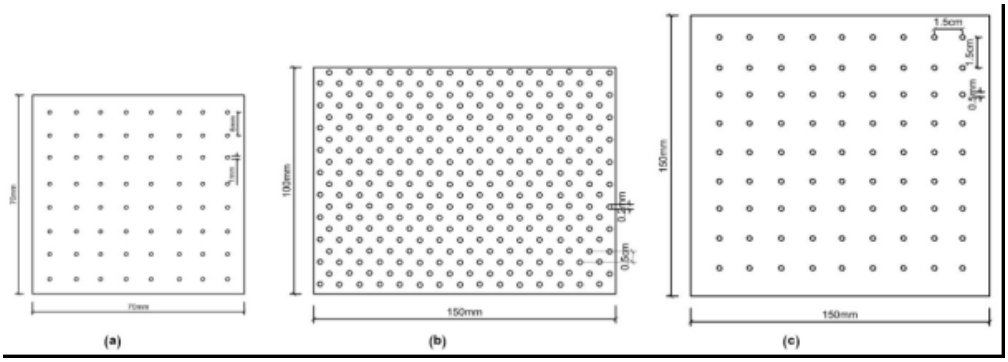


Figure 5 Fibers specimen's perforated boards: (a) cube of 70mm size; (b) cuboid 150mm*100mm*100mm; (c) cube of 150mm size, adapted from ([25], [10]).

Previous experimental studies were performed on transparent concrete panels [9]. The effect of using glass or plastic optical fibers, was evaluated in terms of light transmittance (LT) and energy demand for lighting. The experimental results showed satisfactory results for concrete panels with a light transmittance of 5% as a function of the fiber's volume. According to simulations, the energy demand for lighting was reduced 12.7% to 16%. Better results were obtained for internal walls concrete panels. Logically, light-transmitting increased with the percentage of plastic optical fibers, but without affecting the compressive strength. The best illumination was achieved using 1.43% of fibers of 1.5 mm diameter and distributed every 10 mm [6].

5. Advantages

- The main advantage of transparent concrete is the natural or artificial light transmission through it, from one side to other, and allows the lighting of the interior during daylight hours. The best thing about transparent glass is natural light or artificial light can be transmitted from one side to the other, allowing good indoor lighting during the day.
- The transparent concrete is "GREEN BUILDING". It is produced using sustainable materials, such as recycled glass to reduce the negative environmental impact.
- It emits less amount of carbon.
- It reduces consumption of energy, it is economic, and saves energy.
- It gives very good aesthetical view to the building.
- It gives spiritual value to the interior and provides a sense of calm to the people.
- The optical fibers also act as thermal insulators, being very effective in cold countries, reducing energy and saving money.
- Transparent concrete is durable, requires little maintenance, making it a long-term investment.
- On large scale objects the texture is still visible - while the texture of finer transparent concrete becomes indistinct at distance [3].
- Ceilings of office buildings or commercial structure realized in transparent concrete would reduce lighting costs during daylight hours.

6. Disadvantages

- The main disadvantage of LTC is higher costs due to the use of expensive optical fibers (around 700-800€/m²).
- Skilled people are needed for casting the transparent concrete blocks and panels.
- The integrity of the fiber optic cable mustn't be compromised from breaking down within the product.
- Limited availability and application: Because translucent concrete is still uncommon, it may only have a few uses because of its distinctive aesthetics, which may not match all building designs, needs or standards.
- Transparent concrete can't be casted on the building site; it is produced only as prefabricated blocks, walls and panels.

7. Applications

The usage of transparent concrete is limited for the moment, but its potentiality is enormous. Some of transparent concrete are:

Walls and facades

It can be used as building material for interior and exterior walls. Used as front doors of homes and offices, it allows the people inside to see when there is a person standing outside and vice versa, for more personal safety. Sometimes, it can also be used as wall covering illuminated from the back, giving a pleasant illumination to the room.

Ceilings and pavements

Ceilings of office buildings or commercial structure realized in transparent concrete would reduce lighting costs during daylight hours.

Creative design

It can be used in furniture for the decorative and aesthetic purpose for example, lamps, desks, wardrobe, etc.

Future applications:

- Transparent concrete walls on bars, restaurants, can reveal indistinctly how many persons are inside.
- Using of transparent concrete can help the security and supervision in places like schools, museums and prisons etc., where the presence of the people and their actions are seen but blurry and dimly, in order to protect their privacy. Prison guards would know if any of the prisoners were trying to escape or they are fighting. The same can be case for schools, colleges, too as well as museums and other places.
- Sidewalks could be made with lighting underneath the transparent concrete, creating illuminated walkways for more safety, permitting foot walking at night.
- The use of transparent concrete in an outer wall of an indoor stairwell would provide illumination during the day, resulting in safety and saving money.
- Subways using this material could be illuminated in daylight [5].
- Speed bumps in parking lots and driveways could be illuminated from below, making them more visible and therefore more effective [4].

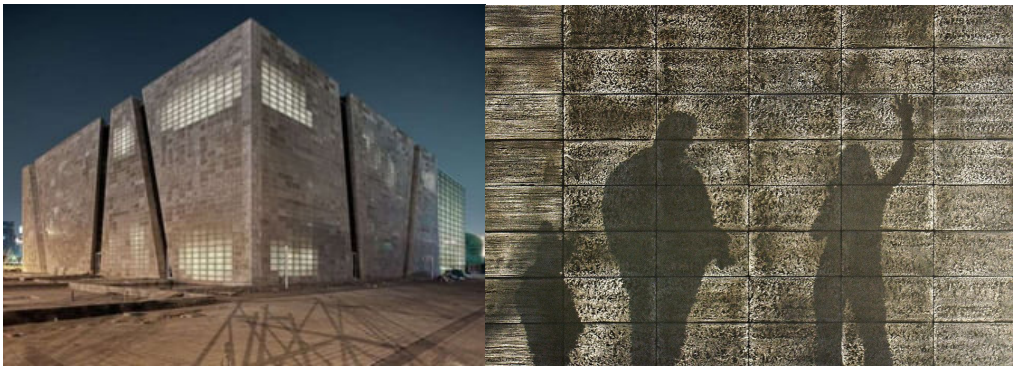


Figure 6 Transparent concrete as an exterior or interior wall

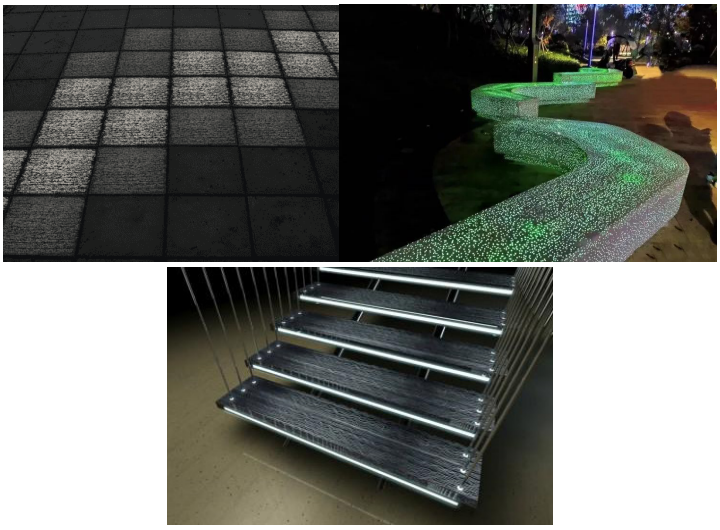


Figure 7 Transparent concrete for pavements and stairs

Figure 8 Transparent concrete sidewalks

Table 1: Comparison with conventional concrete.

Properties	Conventional Concrete	Transparent Concrete
Light transmission	Doesn't permit light to travel through them	Permit light to travel through them
Strength	Conventional concrete class strength	A little bit less than the same conventional concrete class
Aesthetics	Sometimes seems harsh, rigid and cold material	Gives very good aesthetical view to the building
Durability	Strong and long-lasting, less maintenance	Strong and long-lasting, more maintenance
Insultation	Provide higher insulation	Permit more heat to pass through
Cost	Conventional costs	Higher costs, because of specialized materials and production techniques
Use	All kind of use, especially for their structural qualities	Not for structural use, especially for walls, pavements, creative design

8. Conclusions and discussions

The energy consumption and environmental problems have increased to ultimate level. Everything is now focused on "green technology". New innovations are adopted and pursued by all. The energy consumption for artificial light inside the buildings during daytime is enormous. This brought to the invention of transparent or translucent concrete.

Transparent concrete is a still new material, but already it has many applications, not only for aesthetic purposes, but mainly is used to illuminate building interiors, and this needs further studies to expand its uses, especially is needed to have researches in the field of acoustic isolation.

The transparent concrete has good light transmitting properties, proportional to the ratio of optical fiber volume to concrete. The compressive strength of transparent concrete is the same as the conventional concrete. Transparent concrete can be used in furniture, walls, ceilings, pavements and panels for the best architectural aesthetics. It is concluded that, on usage of 4% of optical fibers the compressive strength increased and reached its maximum value. The compressive strength depends on the percentage of fibers used, fiber diameters and fiber spacing.

The use of the transparent concrete can reduce the pollution. By using plastic optical fibers the light transmission may decrease but it becomes cheaper so that it can be used widely.

As a new and innovative material, it is expensive and still has issues to be resolved or improved. In the coming year, this new material will be explored reducing its cost, and surely will be employed in many new interesting ways, changing the opacity of architecture as we know it.

To conclude, several types of joints are used during the casting of concrete, which can serve both structural and aesthetic purposes. A wide range of joint making technologies are available starting from saw-cutting devices, to grooves and joint molds. At the end, joints can be filled with materials like plastics, rubbers, epoxies, and even fiberboards.

Careful supervision is required in making connections.

References

Z. Zhou, G. Ou, Y. Hang, G. Chen, and J. Ou, Research and development of plastic optical fiber based smart transparent concrete, presented at the Smart Sensor Phenomena, Technology, Networks, and Systems 2009, 2009. doi: 10.1117/12.816638.

K. Mosalam and N. Casquero-Modrego, Sunlight permeability of translucent concrete panels as a building envelope, Journal of Architectural Engineering, vol. 24, no. 3, p. 04018015, 2018. doi:10.1061/61/(ASCE)AE.1943-5568.0000321.

S. Paul and A. Dutta, Translucent concrete, International Journal of Scientific and Research Publications, vol. 3, no. 10, pp. 1-10, 2013. doi: 10.29322.

M. Saleem, M. M. Elshami, and M. Najjar, Development, Testing, and Implementation Strategy of a Translucent Concrete-Based Smart Lane Separator for Increased Traffic Safety, Journal of Construction Engineering and Management, vol. 143, no. 5, p. 04016129, 2016. Retrieved from https://ascelibrary.org/journal/jcemd4.

A. Peña-García, L. M. Gil-Martín, and O. Rabaza, Application of Translucent Concrete for Lighting Purposes in Civil Infrastructures and its optical characterization, in Key Engineering Materials, 2016, vol. 663, pp. 148-156: Trans Tech Publ.

A. Altlomate, F. Alatshan, F. Mashiri, and M. Jadan, Experimental study of light-transmitting concrete International Journal of Sustainable Building Technology and Urban Development, vol. 7, no. 3-4, pp. 133-139, 2016. doi: 10.1080/2093761X.2016.1237396.

S. Luhar and U. Khandelwal, Compressive strength of translucent concrete, International Journal of Engineering Sciences & Emerging Technologies IJESET, vol. 8, no. 2, pp. 52-54, 2015. doi: 10.7323/ijeset.

A. Kumar and R. Ahlawat, Experimental Study on Light Transmitting Concrete, IJISET - International Journal of Innovative Science, Engineering & Technology, vol. 4, no. 6, 2017. doi: 10.13140/RG.2.2.22833.28008.

S. L. Pagliolico, V. R. L. Verso, A. Torta, M. Giraud, F. Canonico, and L. Ligi, A preliminary study on light transmittance properties of translucent concrete panels with coarse waste glass inclusions, Energy Procedia, vol. 78, pp. 1811-1816, 2015. doi: 10.1016/j.egypro.2015.11.317.

A. Momin, R. Kadiranaikar, V. Jagirdar, and A. Inamdar, Study on light transmittance of concrete using optical fibers and glass rods, in International Conference on Advances in Engineering & Technology, 2014, pp. 67-72.

Dalia Elgheznawy, Sara Eltarabily, A Review of Translucent Concrete as a New Innovative Material in Architecture, Civil Engineering and Architecture 2020.

Kuang, K.S.C. Maalej, M. and Quek, S.T, "Hybrid optical fiber sensor system based on fibe Bragg gratings and plastic optical fibers for health monitoring of engineering structures". *Proc. of SPIE,* 6174(61742P) 1-12, 2006.

Byoungil Kim, Yoonjung Han, Flexural Performance of Transparent Plastic Bar Reinforced Concrete, Applied Sciences Journal 8(3):325, 2017, DOI: 10.3390/app8030325.

Sustainable tourism and legislation

PhD Enkela Hoxha
Agricultural University of Tirana
Department of Rural Tourism Management
Tirana, Albania

PhD (C.) Etleva Shore
Agricultural University of Tirana
Directorate of Human Resources and Legal Services
Tirana, Albania

Abstract

The relevance of the subject is conditioned upon the significance of the tourism sector for the economy of the Republic of Albania, which necessitates a proper consideration of the legal mechanisms designed to ensure the development of the tourism industry in the Albanian region. The purpose of the research is to analyse the state of implementation of the concept of sustainable tourism development in the Albanian legislation regulating the tourism industry. The following research methods were used in the research: logical and legal method, formal and dogmatic method, qualitative analysis method, correlation analysis method, and systematic approach. The publication highlights the main approaches to understanding the concept of sustainable tourism development both from the standpoint of international organisations (in particular, the World Tourism Organisation) and from the standpoint of theory. The research reflects a comprehensive analysis of the Law of the Republic of Albania "On Tourism" with a focus on the concept of sustainable tourism development in this regulation. Particular attention in the publication is devoted to the understanding of the concept of sustainable tourism provided for in the Law of the Republic of Albania "On Tourism", and to the identification of its characteristic features. The conducted research allowed for establishing the correlation between the normative provisions of the Albanian legislation in the field of tourism and the system of key features of sustainable tourism developed in the theory of tourism development science. The author describes the impact of the COVID-19 pandemic on the tourism industry of the Republic of Albania and the set of measures proposed at the level of individual tourism development programmes designed to overcome the adverse effects of the pandemic. The study allowed for developing recommendations for amendments to the Law of the Republic of Albania "On Tourism" at the level of detailing the concept of sustainable tourism for each type of tourism sector, which indicates the practical significance of the work.

Keywords: regulation, COVID-19 pandemic, United Nations, report, programme.

Introduction

The importance of exploring the current state of the tourism industry in the Republic of Albania is primarily explained by the fact that the Albanian government has

identified the tourism sector as a key sector of the economy. Therewith, the adverse effects of the COVID-19 pandemic have not spared the tourism industry in the Balkan region. Statistics in this context are disappointing: in 2020, only 2.65 million foreign tourists visited Albania, compared to 6.4 million in 2019. Considering the above facts, the issue of developing and implementing effective instruments (both legal and economic) designed to overcome the adverse impact of the COVID-19 pandemic, including on the tourism industry, is of particular importance. Consideration should be given to the fact that a rapid and appropriate response to the consequences of anti-epidemic measures at the level of national policy will ensure economic stabilisation in the Albanian region, and, as a result, an increase in the living standards of the citizens of the Republic of Albania.

Thus, although the legal doctrine contains scientific works on the theory of sustainable tourism development, the impact of the COVID-19 pandemic on the tourism industry, and particular issues of tourism development in the Republic of Albania, the problem of fixing the concept of sustainable tourism at the level of particular provisions of the Law of the Republic of Albania "On Tourism" has not been the subject of scientific research.

The purpose of the study is to assess the state of incorporation of the concept of sustainable tourism development into the legislation of the Republic of Albania and to explore the adverse effects of the COVID-19 pandemic on the tourism industry and measures designed to overcome them.

Materials and methods

In conducting the study, the author was guided by such methods as the logical-legal method, the formal-dogmatic method, the method of qualitative analysis, the method of correlation analysis, and the systematic approach.

The logical-legal method was used to explore the state of compliance of the Law of the Republic of Albania "On Tourism" with the main theoretical features of the concept of sustainable tourism. The formal-dogmatic method was used in conducting a legal assessment of the Law of the Republic of Albania "On Tourism" for the presence of both positive and adverse aspects of the regulation of the concept of sustainable tourism. Such an approach allowed the author both to state that the Albanian legislator is systematic in reflecting the concept of sustainable tourism at the legislative level and to present some comments designed to improve the content of the relevant Law. The method of qualitative analysis allowed reflecting on the main provisions of the Law of the Republic of Albania "On Tourism", which are related to the concept of sustainable tourism or fix this concept at the level of the considered regulation. Using the method of correlation analysis, the author established both the impact of the COVID-19 pandemic on the tourism sector of the Republic of Albania and described in detail the adverse effects of the anti-epidemic measures on the Albanian tourism industry. A systematic approach was used to review the content of the main programmes that are important for the development of the tourism sector in Albania.

Results

In the author's opinion, this part of the study should begin with an analysis of the understanding of the legal construct of "sustainable tourism" and the state of its implementation in Albanian legislation.

The legal construct of "sustainable tourism" is understood both at the level of international organisations (in particular, the World Tourism Organisation) and individual theoretical sources.

According to the World Tourism Organisation, for tourism to become sustainable, it must have a system of the following features: 1) full consideration of both current and future impacts (economic, social and environmental); 2) meeting the demands of visitors, the tourism industry, the environment and host communities (Sustainable tourism, 2020).

The theory of tourism details the approach outlined by the World Tourism Organisation and emphasises that the primary, characteristic feature of sustainable tourism is the consideration of three areas of interest: environment, society and economy.

The most recent approach is the one outlined in R. Adillon's scientific research, which discusses the so-called diamond model of sustainable tourism development. The essence of the diamond model of sustainable tourism development, developed by R. Adillon, is to support unpopular decisions to limit the number of visitors for the sake of sustainable tourism development. R. Adillon has developed a system of actions designed to implement the diamond model of sustainable tourism development, including determining the tourist capacity of the region, developing key indicators of the most pressing issues affecting the state of tourism development in the region, conducting sociological research on the level of tourist satisfaction with the quality of tourist services provided, and the opinions of residents regarding the positive and adverse impact of the tourism segment on the relevant area, developing a proper action plan to respond to all identified problems in the tourism sector, and using demand management methods.

Considering that the proper development of the tourism industry in the Republic of Albania will have positive consequences both for the public sector of the economy and for the private income of citizens, the author is convinced of the necessity to develop a relevant state programme for the coming years dedicated exclusively to the tourism sector. In the author's opinion, this programme should include, first of all, a set of legal and economic mechanisms, instruments, and guarantees designed to consider the specifics of the Balkan region to ensure the appropriate development of the tourism industry of the Republic of Albania. The content of such a programme can be the subject of further research and academic discussion.

Discussion

The author would like to stress that the study reflected the adverse effects of the COVID-19 pandemic on the tourism sector of the Republic of Albania, and therefore the research has its specifics in this aspect. In general, the prepared and presented results of the work have their system of characteristic features that significantly distinguish

them from previous studies. In particular, such features include an assessment of the status of implementation of the concept of sustainable tourism development in the legislation of the Republic of Albania, a description of the consequences of the anti-epidemic measures taken for the Balkan region and consideration of the system of tools designed to overcome them, a substantiated criticism of some provisions of the Law of the Republic of Albania "On Tourism" and the development of positions to improve its content.

Conclusions

Therewith, the author has identified some shortcomings of the Law of the Republic of Albania "On Tourism" and offered his own opinion on the ways to overcome them. Such shortcomings are primarily related to the fact that Article 4 of the Law of the Republic of Albania "On Tourism" actually provides for only one type of tourism - agritourism. In the author's opinion, it would be advisable to supplement Article 4 of the Law with other types of definitions of the tourism industry and to specify in what aspects the concept of sustainable tourism can be manifested for each of these types, following the approach provided for agritourism.

In addition, the study analysed the impact of the COVID-19 pandemic on the tourism sector of the Republic of Albania. It is stated that the adverse impact of the introduced anti-epidemic measures is primarily related to the economic sphere, the loss of income by citizens of the Republic of Albania from the tourism industry due to restrictions on movement both within the State and when crossing borders, which, in turn, has resulted in high unemployment.

The author would like to emphasise that at the level of state programmes of the Republic of Albania, the government - the Council of Ministers - responded to the challenges of the pandemic as quickly as possible and provided a system of economic guarantees for Albanian citizens who were adversely affected by COVID-19.

References

Abaydeldinov, Y., Kala, N. 2016. International legal aspects of tourism activity: International treaties analysis. Journal of Advanced Research in Law and Economics, 7, 714-720.

Adillon, R. 2019. Dianmond model. a theoretical framework for the sustainable development of tourism. MedCrave, 3 (1), 11-23.

Albania - Country Commercial Guide. 2021. https://www.trade.gov/country-commercial-guides/albania-travel-and-tourism.

.Albania Country Note. 2021. https://thedocs.worldbank.org/en/doc/764381588143421027-0080022020/original/RER17AlbaniaCountryNoteALB.pdf.

Alfaro Navarro, J. L., Andrés Martínez, M. E., Mondéjar Jiménez, J. A. 2020. An approach to measuring sustainable tourism at the local level in Europe. Current Issues in Tourism, 23 (4), 423-437.

Arrobas, F., Ferreira, J., Brito-Henriques, E., Fernandes, A. 2020. Measuring tourism and environmental sciences students' attitudes towards sustainable tourism. Journal of hospitality,

leisure, sport & tourism education, 27, 100-273.
Fennell, D. A., Cooper, C. 2020. Sustainable tourism: Principles, contexts and practices. Bristol: Channel View Publications.
Hysa, E., Kruja, A. D. 2022. Advances of sharing economy in agriculture and tourism sectors of Albania. In The Sharing Economy in Europe (pp. 365-383). Cham: Palgrave Macmillan.
Këshilli I Ministrave Republika e Shqipërisë Programi Qeverisës 2021-2025. 2021. https://www.kryeministria.al/wp-content/uploads/2021/10/Programi_Qeverises_2021-2025.pdf.
Ligj «Për aktivitetet e turizmit detar» Nr. 43/2020. 2020. https://turizmi.gov.al/wp-content/uploads/2022/01/Ligj-nr.-43-2020-P%C3%8BR-AKTIVITETET-E-TURIZMIT-DETAR.pdf.
Ligji «Për turizmin» Nr. 93/2015. 2015. https://turizmi.gov.al/wp-content/uploads/2018/02/Ligj_93-2015.pdf.
Pashaj, E. 2020. E ardhmja e punësimit në Shqipëri gjatë dhe pas COVID-19? https://www.monitor.al/e-ardhmja-e-punesimit-ne-shqiperi-gjate-dhe-pas-covid-19/.
Programi i Bashkëpunimit për Zhvillim të Qëndrueshëm ndërmjet Këshillit të Ministrave të Republikës së Shqipërisë dhe Kombeve të Bashkuara 2017-2021. 2017.
https://www.undp.org/sites/g/files/zskgke326/files/migration/al/e4c3e7049b7173e3f554a33f0e5bb16db23496f028d0f680309f9f9124a64a62.pdf

Transitional Justice in the context of Albania

Ines Stasa
Epoka University, Albania

Abstract

Transitional Justice, as a leading norm or a leading space for political gains, is a question that intertwines several answers. At the core of it should be a balance in order to bring a new policy and a new legal order. On this matter, Albania has not invested politically or socially in terms of the creation of a 'space' filled with the 'time' of dealing with the past. Transitional political agenda has ignored transitional justice by rejecting or putting off the table the core national issue to be dealt with. At the same time, keeping files of the past as their personal privilege to blackmail and threaten each other. Within this never-ending transition, Albania has evolved within several waves of transitions, which over years have overlapped and accumulated polarization. This analysis will focus on paradigm transition and context-based approach as counter-response to a failed 'one size fit all' methodology. This brings into question the citizen's political power to hold accountable former and current political class, and their responsibility in the political agenda. Transition is not a onetime event, but rather is a persistent participation of all citizens in the democratic process, which includes a wide range spectrum of moral commitments from politicians to capitalize on good willingness for cooperation and responsible leadership.

Keywords: Transitional, Justice, Albania, Politics.

Introduction

Our first impression when we started the research on Transitional Justice in Albania was that it is a huge gap in a national narrative and an obvious lack of professional research initiatives in the development of a public discourse. Most of all, there is a lack of serious attempts to reflect on the past, where actually lies the fundamental questions of our political identity. There is no surprise and almost everything is open for discussion. A society that not only suffered from the harshest regime from 1944 to 1990, but for many generations was forced to survive in a terrific silence of terror and propaganda. This regime brought with its ascendency, the skeletons of many historic events, including here the events of interwar between Nationalist Front (representing the right wing) and Communists (representing Bolshevism) that even today have left their marks in the political arena by fueling with the fire and dusting narrow political interests.

This undemocratic legacy of Albania, embraced into suffocation of local conditions and regional and international context, reinforced in the early years of a pluralist regime (we will use pluralism instead of democracy) a highly politicized and blackmail process. The Process of several acts and laws were never discussed openly to bring a national consensus and a wind of change in the relationship between political parties, rather than enhanced the making of partisan laws, showing a defective side of the rule of law in Albania.

Justice is a political concept that requires willingness, national conscience and acknowledgment of the truth as a top priority of the political agendas. If prioritized, justice can indisputably contribute and lead to the sustained development of a society and democratization of a particular country. This becomes particularly important for post-communist and post-conflict countries such as Albania, where healing of the society's wounds requires strong commitment to deliver a much-needed justice in order to keep the social cohesion and co-existence intact and strong.

Since the fall of communism, poor and insufficient initiatives and political steps are undertaken in Albania to address core transitional justice issues. Some of these insufficient initiatives include the Lustration Law or financial compensation to the victims. Although- the background of this mechanism is highly politicized and questionable for its political purposes, nevertheless timing is still relevant to deal with the past.

Contemporary transitional justice scholarship has played a major part in supporting research based on the significance of politics and transitional institutions in dealing with the past, though little attention is paid on the importance of timing, contextualization and participation of the public in advancing transformative approaches.

Seeking justice in a divided region has motivated scholars and practitioners in the field of human rights and peacebuilding to put transitional justice definition into the right context.

Transitional Justice in Albania may be the less spelled out concept by political and judicial actors; a country where the truth, justice and democracy have been in the shade for so long a process which has dealt with anything else except with its own past. Literature on Transitional Justice (hereafter "TJ") has remarked the fact that strategy in transition shifts approach including both norms and practices, and it is essential to put into context the timing of the norms of transitional justice, which in other words is linked with the "usage" of TJ mechanisms and instruments to achieve trust, peace and democracy as its endpoint. Speaking of Albania, this analysis is to be focused on contextual parameters, according to four steps. The first part of the paper is going to bring a theoretical framework of transitional justice through the "norm diffusion", "justice cascade" concepts in order to better understand the genealogy of TJ in terms of rule of law in Albania. The second part of it will enhance an analysis on the legitimacy of the political regime and of justice as a symbol of societal structure. The third part will identify the four steps of analysis on contextual parameters which include instrumental variables also and come to an end with the impact area on democracy. This research methodology helps to answer the question of this paper which is how the contextual backgrounds mean for the impact of "success" of TJ mechanisms. In order to set the development of justice transition into context, this paper seeks to identify conditions in the Albanian context, which enhance consolidation of democratic political institutions of third wave countries.

Justice and democracy are no copy-cat formulas that every society should follow in order to achieve any "status". Although the timeline of events and political arrangements taken in 30 years of transitioning in Albania reflect the one-for all toolkit approach in creating institutions of the "under-democratization" process.

Underestimating contexts, local conditions, norms and political culture, have reached at the point of a failure when the outcome is equivalent at coming to terms with the past. Why the past is important and necessary for us to deal with?

State of Art: Transitional Justice, transition paradigm and recent approaches

The 'transition paradigm' mindset enhanced after the Cold War was relied on theoretical assumptions that, according to Carothers, "constitutes a dangerous habit of trying to impose a simplistic and often incorrect conceptual order on an empirical tableau of considerable complexity" (2002:15). In order to understand this statement, we will draw lines on those assumptions which, for the sake of "context" were oriented as global changes went by in seven regions of the world:

1. The fall of right-wing authoritarian regimes in Southern Europe in the mid-1970s;
2. The replacement of military dictatorships by elected civilian governments across Latin America from the late 1970s through the late 1980s;
3. The decline of authoritarian rule in parts of East and South Asia starting in the mid-1980s;
4. The collapse of communist regimes in Eastern Europe at the end of 1980s;
5. The breakup of the Soviet Union and the establishment of 15 post-Soviet Republics in 1991;
6. The decline of one-party regimes in many parts of Sub-Saharan Africa in the first half of the 1990s;
7. A weak but recognizable liberalizing trend in some Middle Eastern countries in the 1990s (Carothers, 2002: 5).

In order to check a correlation on the much-longed transitional status of Albania, we will number a set of theoretical assumptions of the transition paradigm that were followed blindly by the political class emerged after the fall of communism. How did this paradigm fail to balance the pursuit of justice and democratizing the country?
According to Skaar & al (2015), there were several reasons for a real growing criticism in terms of the application of successful TJ mechanisms and initiatives, to mention "the lack of theorizing, the passing of unverified claims as universal truths, the muddled and inconsistent use of terms and variables" (Skaar et al., 2015: 1).
The abovementioned findings coupled with the elements of transition paradigm, placed Albania in a very unprecedented condition, while recently the debate is evolved around a post-transitional justice and on the basis of contextual driven approaches, when 'transition' itself is poorly applied and defined for many decades. These insights will be put in the conclusion section, while in the meantime we will focus on first steps of wrongdoings with the transition era in Albania.
Five core assumptions define the 'transition paradigm':

1) Any country moving away from dictatorial rule can be considered a country in transition toward democracy; 2) Democratization tend to unfold in a set sequence of stages (the opening, the breakthrough, consolidation); 3) The belief in the determinative importance of elections; 4) The underlying conditions in transitional countries-their economic level, political history, institutional legacies, ethnic make-up, sociocultural traditions, or other structural features-will not be major factors

in either the onset or the outcome of the transition process; 5) The democratic transitions make-up the third wave are being built on coherent, functioning states. The process of democratization is assumed to include some redesign of state institutions-such as the creation of new electoral institutions, parliamentary reform, and judicial reform- but as a modification of already functioning states (Carothers, 2002:8).

Evidence shows that none of these explicitly assumptions correlate with the state of art of Albania transition from 1990 until 2020. Albania is still a country scored transitional or hybrid regime (Nations in Transit), with features of an autocratically system, where the polarization of political parties and of society is at the highest points, sometimes followed by a compliant policy towards international standards and in other times with no point of orientation. Following the annual reports of Nations in Transit, the still transitional/hybrid regime evaluation of Albania, make the case of grey zone countries that Carothers (2002) bring as a category of states that are seen as feckless pluralism. In his considerations, this political syndrome has symptoms of an "elite-dominated domain, stale and corrupt politics, with a permanent weak state" (pg.11).

When one goes through most of the literature on TJ, it sounds like Albania make the unique case to be researched further and deeper and to raise questions like: how is seen by democracy promoters the rule of law and justice and on what basis their universal mindset correlate with the perceived concept of justice by the society? How is to be explained the deterioration of political leadership after the thirty years of pluralism? Is it a matter of willingness or of ability to rule Albania on principles of law and justice?

Fletcher, Weinstein and Rowen (2009) stated that contrary to what transition paradigm had contoured after the Cold War, there are other assumptions and theoretical reference points reflecting other indications of a "dynamic relationship among the

racial, ethnic, and religious identity of those persecuted, their political power, and the social values to which political leaders could appeal in crafting the state's response to the violence" (2009:207). Following this analysis, their contribution relied on core presumptions such as that in developed and less developed countries, transitional justice differs significantly; that mechanisms applied are influenced by the nature of conflict and its length. The same consists of post-communist countries which had a legacy of regime type and its leadership elements to have 'trapped' even in pluralist era; that among the most important features of successful transitional justice application lies on culture and traditional norms of a given country; that international approach constitutes a dominant way on after conflicts/repressive regime's policies; theory of compliance and reliance on a western model of justice implicates the chosen transitional justice path of a country (p.166).

The very challenging part of politics and its leadership depends on the commitment to address past wrongdoings by choosing an accurate and contextualized approach which would lead to a national consensus and reconciliation. In the meantime, with this huge political and societal responsibility to protect its own society by skeletons and myriads of the past comes further the ability to control and manage this delicate process in order to achieve trust, stable society, local ownership and a turning point in the history of politics. A point to consider in our analysis on transitional justice in Albania is to question whether justice reforms and tools are conceptualized as transitional justice or not? It requires further research on to drag into context the big picture of a divided society within the realm of a real politics of post-communism.

Earlier and recent scholars tend to dislodge the transition orthodoxy and emphasize the fact that transitional justice is not a political and societal 'diagnoses of post-communist/post-conflict/post-authoritarian countries, but a process that takes place even in the most developed ones (Lundy&McGovern,2008; Thomas Obel Hansen,2017). Thus, delivering justice and acknowledgement of human rights violations is a challenging action that evolves over time in time and space. This understanding of transitional justice, as it is referred also by Joanna R.Quinn (2017) in *Research Handbook on Transitional Justice*, extend the scope of only political and civil rights "to include aspects of development, social injustice and patterns of inequality"(Quinn, 2017:31). That is to say, that a society is to achieve reconciliation and the substantive form of the rule of law; need to enlarge the picture of the democracy itself.

Context-driven dimension and a State-driven society yet to liberalize

There is no difficulty in understanding that after thirty years of transition in Albania, there are parameters and indicators whose rates and scores define almost the whole panorama of legal, political, social conditions. The big 'fight" is still held on free and accepted elections and on political agreements, which tend to shut the political boycott and take real/ functional political duties in front of communities. The big challenge is yet to be confined by an impartial and independent judiciary system and on electoral reforms. The unfinished debate is still on elements of Constitution-changes to extend political powers with no consensus and no public discussion. This is too little to frame in the context of political discourse, not to mention other regional

challenges and backgrounds that influence the state of mind of our politics. This section discusses context analysis, by exploring its significance in our society and how it has been ignored resulting in a poor, vague and unsettled approach to dealing with the past.

There is no coincidence that perspective analysis has weaved both transition paradigm and context approach aiming at placing what's at stake into a contextualized framework.

The end of transition paradigm has encouraged scholars over time to highlight the importance of context in addressing past wrongdoings, revealing the truth, delivering justice, building institutions and, as an endpoint, shifting to democracy. Skaar al (2015) state that circumstances, if not taken into consideration to implement transitional justice mechanisms, general and universal claims will ignore context and unique perspective of each society. According to Sriram, "Albania's ruling class still firmly held power at the time of transition, though it forces an increasingly restive population. Albania, having been extremely isolated, was slower to react to the new openness in the region than other countries" (2004:62).

I would consider four waves of transition within what we all define as 'transitional period' in Albania. From 1990 to 1997, Albania reproduced its political class, emerging political actors that were neither dissidents nor formerly prosecuted people (Austin, 2015). The clash between norms and interests began to come to the surface by boosting a hatred narrative which divided and highly polarized the whole society. It started with several laws, but the two most important and debated ones were the Genocide Law and the Verification Law, both decreed in 1995. These laws were labeled as the legal package of "The lustration Laws", but the Venice Commission on its Opinion Nr.524/2009 under the terms for the background of Albanian lustration framework, estimates as the first Lustration Law, the Law No. 7666, dated 26 JJanuary1993. This first attempt was strucked down in its entirety by the Constitutional Court on 21 May 1993, after the complaint of the Parliamentary Group of the Socialist Party on 30 April 1993. Thus, below we will see how context is blurred on the effects of the Lustration Laws that until today are pending their fundamental objective.

Accordingly, to Skaar at al (2015), there are three different dimensions with specific features that frame transitions such as the national context, regional and global context. Context matters because it takes into account the society's history, type of transition, regional legal and normative frameworks for coming to terms with gross human rights violations, international/global circumstances that have shaped over time boundaries of legal and political interventions (p.45). In other words, these represent contextual parameters that altogether with the type of transitional justice mechanism, the scope of it, timing, sequencing, and implementation and with its expected impact on peace and democracy, broadly position the given country in its relationship with the legal, normative and social understanding of the rule of law.

Context-based approach in addressing human right violations and issues of institutional reforms, state-building, structures and power imbalances, is also a focus subject of well-known scholars of Transitional Justice field. In a recent book, published in 2017, by the *International Center for Transitional Justice, context* is placed as a foundation stone in the hierarchy of factors to shape and frame processes of TJ. To be added to abovementioned steps of contextual parameters, Fletcher, Weinstein, and Rowen have identified other eight factors in the context matter (ICTY, 2017:8).

It is important to mention, that recent studies followed by several previous findings have come to the approach that without considering context (national, regional, global, nature of institutions, nature of conflict, nature of political settlement, nature of economic and social structures) in shaping objectives and strategies on transitional justice, there is difficulty in delivering justice to the people, and most important, make them comprehend the importance of taking part in the transformation of politics by putting efforts into a 'good' transitioning of legal regimes. One concern that flows within this context is the issue of legitimacy and accountability. Political discourse, political boycott, non-recognition of elections, fragility of institutions, massive waves of emigration, tendencies/actions/initiatives that enforce authoritarian attitude, regional instability and inconsistent policies sometimes not in conjunction with national interests, have eroded the bonds of legitimacy in Albania. Transitioning to where? After thirty years of the fall of communism, there is still a questionable process of reforming institutions and bringing unity in the society. Democracy and its transitioning path shall not be taken for granted, as it requires commitment, willingness, functioning political parties and leadership. Transition is often speculated in our environment and addressed as the finish of a glorious marathon. Meanwhile, transitional mechanisms are part of a process that occurs even in most developed countries, because defending and protecting human rights, holding perpetrators accountable for their atrocities or violations is a continuous reality that evolves and performs with the mindset of social reconstruction.

"THE LUSTRATION LAWS," 1990-1997

LAW	CONTEXT?
I. LAW 8001, 22.09.1995 *"On Genocide and Crimes against Humanity Committed in Albania during Communist Rule for Political, Ideological or Religious Motives,"* **II. LAW 8043, 30.11.1995"** *On the Verification of the Moral Character of Officials and other Persons Connected with the Defense of the Democratic State".* **III. LAW 8043, 30.11.1995,** underwent changes by narrowing the scope reflected on LAW **8151**, 12.09.1996; **LAW 8280**, 13.05.1997.	Already existed the legal framework under Article 73 and Article 74 of the Penal Code. Law 8001 did not legally bring any new mechanism. No further discussion on the impact of this law on broader aspects of society. The whole debate was on accusations for both main political parties, driven by tendencies to accumulate a divisive narrative among society which was fragile, unoriented and highly politicized. These two Laws were voted one year before the Parliamentary elections of 1996. The Social Democratic Party brought Law 8045 in the Constitutional Court, while the SP brought both of them. The context of elections and the fact that the emotions in the communist past were still fresh in public memory, the SP did not contested publicly the decision of the Constitutional Court to reject these complaints. Law 8043 expired in 2001 in the silence of political interests. The Democratic Party failed to design a proper strategy that would include all the interested groups and to a larger extent international actors. The lack of this meaningful strategy was used by the Socialist Party in its political discourse as hatred or revenge.

"THE LUSTRATION LAWS" 1998-2005

LAW	CONTEXT?
I. Verification Committee, 15.01.1998 **II. The new Constitution**, 21.10.1988 **III. Opinion No.277/2004,** 16.03.2004 **"***On the Draft Law on Recognition, Restitution and Compensation of Property of the Republic of Albania*" Venice Commission. **IV. Opinion No.298/2004,** 15.06.2004 *" Comments on the amendments to the Law of the Republic of Albania on the Status of Politically Ex-convicted and prosecuted people by the Communist Regime*" (Draft of amendment to Albanian Law No.7748 on the Status of Politically Ex-convicted and prosecuted people by the Communist Regime of 29.07.1993)	Known as Bezhani Committee, under the Socialist party rule, this "attempt" to exercise lustration purpose was fake and non-achievable on what is meant by vetting officials holding offices during the Communist regime. There is a clear context that this Committee would have these results since the Socialist Party had no intention and no political interest to deal with the past. It is still too early for them, in 8 years, to change the course of establishment. I assume that in this case there is no lack of capacity rather than lack of willingness and of ability to punish communist crimes. This dilemma has systematically accompanied the thirty years of political transition in Albania. There were attempts by three legislators of Albanian Parliament in 2004 to reinforce the goal of lustration by opening the files. None of political parties saw as an issue at the time. I assume that in this failure there is only one's 'fault' that saying only of political establishment, but also for the fact that a very large number of Albanians left the country since the first years of the regime change. This means that the domestic 'pressure' to take democratization as a high demanded politics, were always impinged by waves of emigration.

"THE LUSTRATION LAWS" 2005-2013

LAW	CONTEXT?
I. **LAW No. 9831**, dated 12.11.2007 "*On the Compensation of Former Political Prisoners of the Communist Regime.* **I.** **LAW No.10034**, 22.12.2008 *"On the Cleanliness of the Figure of High Functionaries of the Public Administration and Elected Persons".* **II.** **Amicus Curiae Opinion on the Law No.10034/2008,** Venice Commission, 2009 **III.** **LAW No.10242/2010,** 25.02.2010 "*On the Institute for the Studies of Communist Crimes and Consequences in Albania"* **IV.** **Resolution No. 11/ 2006**	This law (Law No.10034/2008) was brought again into the political debate as one other attempt of the DP to assault its political opponent. This time, not only the SP challenged the proposal but also international bodies and the Venice Commission opinion, giving more impetus to the Constitutional Court to suspend the Law in question. For the first time, Foreign Embassies stated that timing to put into place this Law correlated with the election period, which did not seem right and fair to conduct. On the other hand, timing was also an issue for the Venice Commission saying that "The Venice Commission is of the view that there must be cogent reasons to justify enacting a new lustration law eighteen years after the fall of the communist regime and seven years after the expiry of the previous legislation, and for foreseeing that it will continue to apply for so long" (2009:10). 'Moreover, if Albania wants to practice the theory of **"democracy defending itself**", *the Albanian legislator should not restrict its attention to the communist danger but should take into consideration the more recent dangers of terrorism and trans-frontier criminality*' (Venice Commission, 2009: 10).

"THE LUSTRATION LAWS" 2013-2020

LAW	CONTEXT?
I. **LAW No. 45/2015**, 30.04.2015 *"On the right to information on the Files of the Former State Security of the People's Socialist Republic of Albania"* **II.** **Report on the bill** "*For the dismissal from appointment, elections on management duties and employment in public and political offices to former functionaries, employees that have exercised official duties during the period 28.11.1944 until 08.12.1990*", 27.05.2020	There is a controversial rhetoric and policy-making in terms of dealing with the past. The establishment of the 'Authority for Information on Files of the Former State Security' and the latter report on the bill proposed by several MP on 27.05.2020 was rejected due to its lack of any novelty from previous bills, on terms of unconstitutionality. National context is highly polarized, frustrated by considerable governmental initiatives that lack transparency and consistency but most important, this period of 'transition' is totally involved into the Justice Reform challenges, political illegitimacy, lack of Constitutional Court and of High Court.

What do these waves of transition, detaching only lustration laws, tell us about transitional justice in Albania? In order to understand the level of political commitment, we have chosen to chronologically point out the lustration laws, starting from the recent rejection of this issue that occurred just a few weeks ago. Another reason for dragging only lustration into this picture of transition is that political establishment yet articulates and addresses concerns and provides information on people that take official duties, but without expanding or elaborating any political strategy on the very issue of transitional justice. The discourse hasn't changed over thirty years, and with it, nor the willingness to stop consuming lustration or any other mechanism that should have taken place in terms of transitional justice but has failed to do so, due to lack of political responsibility. That is why all this undone process of dealing with the past has been hidden behind the democracy promoters' lack of focus on countries' socio-economic perspective and of 'judicialization of politics. On the other hand, there is a regional context that during a period of years have had its own waves of conflicts, ethnics disputes, power-sharing agreements, peace-building missions, state-building projects but in particular a regional context that has its own "white spots of history or denials of what really happened in the past always serve as feeding grounds for myths and speculations" (Mihr, 2018:105). According to Mihr, the regional context provides a strong basis for the progress of any transitional justice mechanism. The main concern is how our transitional politics and transitional justice have affected the Albanian ethnic community in the region. Based on maneuvers for political gains and inability to remember correctly events of the past, as Huyse states, is very clear "in most of the post-communist countries, lustration is a way to sidestep criminal prosecution" (1995:52).

Conclusions

Lessons learned from thirty years of transition in Albania call for a deeper, context-based approach, constructivist process that would enhance the role of social and political dynamics significance. The one and foremost is the immediate necessity to advocate for a national strategy on transitional justice, not a State-driven approach but a more comprehensive goal that will bring together policymakers, experts, civil society and community. The truth is that a society has to know and take decisions on its future trajectory. Limited knowledge on the truth of the common past, do not make us stable and peaceful, on the contrary, it continues to divide us in 'Communists' and 'Ballists', because our history holds many unrevealed truths and events for this society to get to know its political identity. The transition paradigm failed to provide the real aim of a transitional shift, by making no turning point at all in the thirty years history of Albanian transitional politics. Its assumptions were too ahistorical and decontextualized from our national needs and boundaries, and this was highly corresponding to the lack of willingness to break with the past and correlated with the lack of perspective by political class that found ways to consume the debate on lustration and de-communization to lower legitimacy and value of a possible transitional justice mechanism. The international context also came into aids to this post-communist country with the boundaries and statute of limitations;

with the precedents of Constitutional Court decisions in Eastern and Central Europe, with universal principles of democracy and rule of law, while not considering the social costs of the society. Legal liability versus political responsibility has driven Albania onto a context wherein the rule of law is only a matter of legality, while not proceeding with the core issue in this aspect: how do Albanians perceive justice and rule of law when they never had free will and independent thinking and were constrained by a regime on a just order?

References

Austin, R. (2015). Transitional Justice as Electoral Politics. In L. Stan & N. Nedelsky (Eds.), *Post-Communist Transitional Justice: Lessons from Twenty-Five Years of Experience* (pp. 30-50). Cambridge: Cambridge University Press. doi:10.1017/CBO9781107588516.005

Duthie, R. (2017). *Justice Mosaics: How Context shapes Transitional Justice in Fractured Societies.* New York: International Center for Transitional Justice. Retrieved from https://www.ictj.org/justice-mosaics

Fletcher, L., Weinstein, H., & Rowen, J. (2009). Context, Timing and the Dynamics of Transitional Justice: A Historical Perspective. *Human Rights Quarterly, 31*(1), 163-220.

Grodsky, Brian, 2009. 'Re-ordering Justice: Towards A new Methodological Approach to Studying Transitional Justice', Journal of Peace Research 46 (6): 819-837.

Hansen, T. (2017). The Time and Space of transitional justice. In C. Lawther, L. Moffett, & D. Jacobs (Eds.), *Research Handbook on Transitional Justice.* Edward Elgar Publishing. doi:10.4337/9781781955314

Horne, C. (2015). The Timing of Transitional Justice measures. In L. Stan, *Post -Communist Transitional Justice: Lessons from Twenty-Five years of Experience* (pp. 123-147). Cambridge University Press.

Huyse, Luc, 1995. 'Justice After Transition: On the Choices Successor Elites make in dealing with the past', Law and Social Inquiry.

Leebaw, B. (2008). The irreconcilable Goals of Transitional Justice. *Human Rights Quarterly, 30*(1), 95-118.

Lundy, P., & McGovern, M. (2008). Whose Justice? Rethinking Transitional Justice from the Bottom Up. *Journal of Law and Society, 35*(2), 265-92.

Mihr, A. (2018). *Regime Consolidation and Transitional Justice.* Cambridge University Press. doi:DOI: 10.1017/9781108394895

Nations in Transit 2020. (2020). Washington,DC. Retrieved August 15, 2020, from https://freedomhouse.org/report/nations-transit

Quinn, J. (2017). The development of transitional Justice. In C. Lawther, L. Moffett, & D. Jacobs (Eds.), *Research Handbook on Transitional Justice.* Edward Elgar Publishing.

Skaar, E., Malca, C., & Eide, T. (2015). *After Violence: Transitional Justice, Peace and Democracy.* Routledge.

Sriram, C. (2004). *Confronting Past Human Rights Violations* (1st ed.). Frank Cass.

Legal Development and Challenges of Civil Society in Albania

Dr. Arian Dedej
"Aleksandër Moisiu University" Durrës, Albania

Abstract

The primary goal of this paper is to examine the historical and legal factors that have influenced the establishment and progression of Civil Society in Albania. One of the key factors in measuring the democracy of a nation is the presence and significance of Civil Society. The history of this concept is closely linked to the formation of the first Albanian state, as well as to the communist regime, which effectively erased it from the social and political fabric of the country for a period spanning over 45 years. The development of fundamental rights and freedoms of the individual greatly relies on the presence and active participation of civil society. When examining the most developed countries, it becomes evident that the level of their democracy is determined by civil society right from the outset.

The significance of civil society in the development of a democratic society cannot be overstated, particularly in the case of Albanian society. It is important to recognize that the current lack of trust is not solely a result of certain political actors' misuse, but also stems from the voluntary nature of these organizations. This value, which has been misinterpreted since the communist period, holds great significance.

The legal framework concerning Non-Profit Organizations is built upon the assurance and acknowledgment of fundamental human rights, which are upheld in the constitution as well as in all international agreements that are acknowledged and adopted as part of the domestic law in the Republic of Albania.

Under the current Civil Society Law, civil society organizations are classified into foundations, centers, and associations. This law also introduces modifications to how these organizations are structured and how they function.

Keywords: Civil Society in Albania, Democracy, NGO Law, Post-Communism in Albania.

Introduction

When compared to other Eastern countries, the concept of "Civil Society" had a relatively limited role and importance during the early stages of democratic changes. During the debates surrounding the drafting of the opposition's inaugural political program, the majority of speakers strongly advocated for the newly formed party to prioritize commitments to Euro-Atlantic integration, the protection of human rights, and the implementation of economic reform. The lack of experience, preparation, and personal political formation of the founding leadership was clearly evident in relation to the requirements for the Civil Society. The founding leadership's personal political design was a manifestation of this situation. This situation was clarified in the drafting of the main points of the political program, where within the 20 most important points there was a complete lack of reference to the need for the creation of Civil Society. A few weeks later, new positive interventions were made in the program, based on these from Western councils, although there was still no clear vision (Krasniqi, 2004, p.37).

In March 1991, a political commitment to Civil Society was finally articulated, marking a significant development that occurred four months after the formation of the opposition. Starting from this point, the opposition and the government were both heavily involved in advocating for the establishment and strengthening of Civil Society, with this topic taking center stage in their political speeches and diplomatic meetings. It was a common occurrence to come across the words "we fight for a free and democratic Civil Society" in newspapers on a daily basis, or hear them frequently at political gatherings. Despite this, there was no clear platform outlined to define the goals and methods of achieving them. Politicians went to great lengths to steer clear of any potential queries from journalists or voters regarding their political outlook on Civil Society, NGOs, and various civic initiatives. A substantial divergence between commitments, electoral ambitions, and the tangible practical circumstances became evident (2004, p.38).

The initial electoral campaign held in Albania's modern history, specifically for the March 31, 1991 elections, highlighted the arduous task of promoting novel concepts and emancipating citizens from the pervasive influence of long-standing communist propaganda. The compromised elections were the result of a volatile atmosphere, characterized by high tensions, the manipulation of old slogans, and the use of state blackmail against candidates and opposition parties. Given the circumstances of restricted media freedom, government oversight, and the absence of open discussions, it was to be expected that the opportunities for cultivating Civil Society were minimal. Unlike the other former communist countries in Eastern Europe, where various groups representing special interests began to form in the 1970s, Albania did not witness any independent group activity until the communist regime was overthrown in December 1990. In the time preceding that, there was a transitional phase wherein an intermediate zone emerged, separating the state from society, and it was during this phase that the ruling Communist Party held sway over all aspects of life. The existence of a previous regime and the absence of civic traditions and social movements in Albania, even prior to the rise of the communists, created substantial barriers and complexities in the development of a free and dynamic civil society, which is widely recognized as a key element in the consolidation of democracy (Biberaj, 2000, p.326). On the other hand, significant political shifts and economic shifts, notably the process of privatization and the gradual rise of a prosperous middle class who had the means to financially back an autonomous political entity, served as catalysts for the inception of intermediary civic organizations and collectives focused on the establishment, structure, and operational mechanisms of society. In the post-communist era in Albania, there was a significant emergence of various professional associations, societies, cultural organizations, clubs, women's organizations, unions, businessmen's organizations, environmental protection groups, and other voluntary groups. All of these groups aimed to establish a presence in public life. Their purpose was defined as engaging in civic activity with the intention of benefiting the general public, exerting pressure on state institutions, shaping political processes, promoting political participation, and advocating for government accountability, transparency, and openness.

In Albania, the Association for Democratic Culture has become one of the most influential civic groups, thanks to its sponsorship by the National Democratic Institute for International Affairs. By implementing a comprehensive array of non-partisan

initiatives, the Association aimed to cultivate tolerance, openness, and understanding within Albanian society. Recognized primarily for its involvement in voter education and mobilization, as well as election observation, the group emphasized the importance of broad citizen participation in the political and economic spheres of the country. The Association for Democratic Culture made an attempt to foster grassroots public dialogue by organizing community meetings that covered diverse topics. Furthermore, in collaboration with the National Democratic Institute, the Association engaged in efforts to enhance communication between legislators and constituent groups within the parliament (p.327).

The Helsinki Committee, which was established in December 1990, marked the first organization in post-communist Albania. This committee had the important task of monitoring the respect for human rights, and it specifically raised concerns about police brutality and other violations committed by the government. Apart from his dedication to judicial and legal reforms, he also made significant efforts to improve prison conditions. Nevertheless, the human rights organization faced challenges in maintaining its effectiveness as it was perceived mainly as a group opposing the democratic government, a perception that was reinforced by its affiliation with influential figures from the communist era. Several well-known activists, such as Jusuf Vrioni and Maks Velo, chose to resign from the Committee due to internal disagreements. Despite facing numerous challenges, the Helsinki Committee persevered and continued to carry out significant and impactful work. Additionally, the Committee's reports on human rights violations were consistent with those of international human rights organizations (p.328).

There were numerous other groups that operated within the wide spectrum of social interaction, all with the shared objective of impacting public policy. The limited nature of their identities being more one-dimensional instead of multi-dimensional resulted in their influence on government policy being inherently restricted. Government institutions faced minimal pressure from non-governmental organizations, with the trade unions being the only exception. The trade unions, despite their best attempts, did not experience much triumph in effectively articulating their straightforward interests. Large industrial enterprises faced closure as a result of the radical economic transformations, leading to a significant weakening of the trade union movement. Both politically and economically, the movement struggled to regain its former strength (p.328).

NGOs play a vital role in maintaining the functioning of a democratic society and are indispensable. Despite the fact that the initial NGOs in Albania emerged post-communism, their presence and influence have expanded significantly. For the continued democratic development, it is essential to have a strong and organized important sector, but the cooperation through NGOs and other sectors of Albanian society may be the key factor (USAID, 1999).

The post-communist transition period not only fostered the growth of Civil Society organizations and human rights and women's associations but also paved the way for the development of policy think tanks. The first Think Tank created in 1992 was the Albanian center for economic research. Alongside conflict resolution and management, which garnered attention particularly following the revival of canon and blood feud, other areas that caught the eye were environmental and economic development, as well as youth and media. The IDM report from 2010 reveals that a

significant proportion, nearly 30%, of the Civil Society organizations and associations that were registered and active throughout the two-decade period emerged during the early transition period.
The 1997 crisis, which was triggered by the collapse of pyramid schemes, seriously challenged the country's development. The negative consequences of this event extended to the economic, political, and social aspects of the country's life. In addition to the war in Kosovo, which made the situation more complex, Albania had to accommodate over a million displaced Kosovars. The developments mentioned earlier have resulted in the emergence of a substantial community of Civil Society organizations in Albania. These organizations actively work on a wide range of issues, including but not limited to women's rights and the eradication of landmines (Human Rights Watch, 1999). The HDPC (2009) conducted a study and discovered that approximately 49% of the Civil Society organizations registered in Albania came into existence from 1997 to 2001.

Legal framework and challenges

In a non-democratic society, where all members are involved in the organization and direction of social life, there are several fundamental rights that cannot be ensured, such as the right to uninterrupted life free from unnatural disruptions, the right to freely express opinions and be informed about the activities of public bodies and officials, and the right of conscience, which allows individuals to think and believe freely without external obstacles.
In order to address this matter, the 3rd chapter of the Second Part of the Constitution outlines the political rights granted to every individual in society. These rights encompass the opportunity for each member of society to actively participate and contribute to the social organization of life. Ensuring these rights is essential for upholding a democratic society, in which power is vested in the people through their elected representatives, and where all members of society are granted equal rights to engage in the social organization.
In order to guarantee basic rights and maintain a functional democracy in a modern society, it is essential to uphold the right to organize, as explicitly protected by Article 46 of our Constitution. In accordance with this principle, all individuals are entitled to join forces with other members of society in order to realize their justified aspirations. Regarding this basic entitlement, it encompasses more than just the privilege of citizens to establish political organizations that, in pursuit of their objectives, seek to obtain political influence. It first provides the opportunity for members of society to organize together regardless of political ideas, gender affiliation, social strata they belong to, to achieve their common goals by organizing in pressure groups.
These organizations, which are called Non-Profit Organizations or associations by law, constitute another very efficient means for members of society to achieve their goals by uniting with each other the strength of organization, pressuring decision-making institutions and sensitizing public opinion.
The NPOs that today all over the world are established by members of society to achieve certain goals, use much more efficient means than political organizations to achieve their goals. First, they have no ideological obstacles in the organization as long as their goals are comprehensive. This means that they and their goals are

joined by many more members than political formations, making the organization and promotion of goals more efficient, they use lobbying near decision-making bodies. Also, the lobbying of NGOs is considered very efficient in terms of achieving their goals. Due to its origins in non-profit civil organizations, this approach not only wields greater influence over decision-making bodies, but also possesses a higher level of reliability compared to the latter, as long as it remains grounded in rational scientific analysis rather than politics. Consequently, this significantly enhances trust in these organizations and augments their lobbying prowess. It is important to acknowledge that NGOs have a powerful tool at their disposal in the form of public opinion, which often supports their goals and objectives.

In Albania, there is a well-developed legal framework that facilitates the establishment and operation of NGOs or civil foundations, allowing them to work towards various goals that are of interest to the public. The establishment and operation of these organizations, which originate from the country's Constitution, are outlined in great detail. These provisions are not only governed by several international laws that have been ratified by the Republic of Albania, but also by the Civil Code and Law Nr 8788 dated 07.05.2001, which is titled "For Non-Profit Organizations."

According to the legal framework governing non-profit organizations and other associations, it is possible for anyone to create them and for there to be a plurality of these entities. In light of this rationale, it can be observed that the Constitution and additional legislations not only refrain from imposing any constraints on the establishment of NGOs, but they also actively foster an environment that encourages their abundance, diversity, and ability to represent varied interests within society. By allowing only 5 citizens to establish a non-profit organization with the ability to act and without any administrative costs, the legislation ensures the functioning of civil society in the country.

Moreover, the legal framework has been instrumental in not only promoting pluralism within these organizations but also fostering their democratic internal structure, affording them the chance to break free from the influence of interest groups or any political or decision-making bodies. There are various guarantees provided by the legal framework to ensure that NGOs are independent in their activities, follow their announced goals, and function as democratic bodies internally. Some of these guarantees include their inability to engage in profitable activities, the restriction of their income to be used only for declared purposes, and the court's assurance of implementing their statute in case of internal conflicts.

In two separate articles, the country's constitution has laid out the sole limitation for the establishment and operation of non-profit organizations. According to article 9/2 of the country's constitution, it is stated that political parties and other organizations that have programs and activities rooted in totalitarian methods, incite and endorse racial, religious, regional or ethnic hatred, use violence to gain power or influence state policy, as well as those that operate secretly, are strictly prohibited by law. Additionally, article 46/3 of the constitution also declares that organizations or associations that seek to achieve unconstitutional objectives are strictly prohibited by law.

The constitutional limitation for the establishment of Non-Profit Organizations remains the same, regardless of the fact that it is mentioned in two different articles. Their aim should not be directed towards violating the constitutional values, which

are placed at the highest level of importance in every modern society, and have been acknowledged as such by the members of these societies since the Constitution was ratified as the Basic Act.

Approved by the parliament in May 2001, the new law on NGOs officially labeled them as NGOs. Through a participatory approach, the relevant legislation was revised in a manner that involved government representatives, international experts (particularly the International Center for Not-for-Profit Law), representatives of Civil Society, and OSCE. This collaborative effort led to a consensus being reached on almost all issues related to the new law.

New developments emerged in the activities of Civil Society after 2005, and these changes were also reflected in the way Civil Society is viewed. One of the defining features of this era was the increasing inclination of Civil Society actors to enter the realm of politics, leading to a merging of the boundaries between the two sectors of public opinion. Consequently, the reduction in funding from financial supporters of Civil Society organizations resulted in a decrease in both the scope and geographic reach of the third sector (IDM, 2010).

Although the third sector in Albania has been experiencing a decline, the Albanian government has demonstrated a commitment to bolstering the legislation governing Civil Society through recent positive efforts. The Council of Ministers, in their meeting held in October 2007, came to the decision of setting aside a specific budget under the State Budget, which was dedicated to providing support for Civil Society. The Albanian Parliament took action in March 2009 by approving the law "On the organization and operation of the Civil Society Support Agency" and establishing procedures for the distribution of funds to support Civil Society. The strengthening of the Civil Society in Albania has been furthered by the implementation of additional steps by international organizations. The wide consultation and subsequent approval of the Civil Society Charter in 2009, which resulted from these initiatives, is considered to be one of their most important outcomes. In spite of the progress made, the majority of ministries and departments have not taken the necessary steps to involve Civil Society and utilize their administrative expertise. It is evident that more work needs to be done in this regard (p.9).

Albania has been actively engaged in a political, economic, and social transformation for over two decades in order to align itself with democratic models of governance prevalent in the Western world. The current focus in Albania is on the consolidation of democratic institutions, ensuring accountability within the governing system, and promoting participatory policy-making processes that prioritize citizen involvement. These efforts are driven by the objective of better positioning Albanian society in global processes and reaping the benefits they offer. Within the given context, being a member of the European Union is not only viewed as a challenge but also as an opportunity to address the desires of citizens for a functional democracy, sustainable development, and prosperity (IDM, 2013).

The efforts of Civil Society in the country's transformational endeavors are focused on generating added value. These efforts are often facilitated by international partners who sponsor reforms in areas such as democratization, human rights, good governance, citizen involvement, and other specific reforms. Not only is the third sector highly valued in Albania and plays a crucial role in the country's transformational processes, but the obstacles faced by Civil Society development

have only recently been acknowledged by state actors and the donor community. In the 1990s and early 2000s, the support provided to Civil Society was primarily centered around addressing urgent needs. During this period, the emphasis was on supporting Civil Society organizations that offered essential services. However, it is only in the past few years that there has been a notable focus on the sustainable development of Civil Society, especially in relation to the withdrawal of donors from the country during the last wave (2006-2008) and the ongoing membership processes of Albania in the EU (IDM, 2013).

The state-sponsored support provided by the Civil Society Support Agency is, at best, replicating the same mistake made by the majority of donors. Neglecting the significant challenge of guaranteeing "financial sustainability" for the mobilization of local donor resources and funds by CSOs is the core aspect of this error.

In the case of the "Government Relations - Civil Society Organizations" axis, the Albanian experience highlights the disregard of state institutions for the services offered by Civil Society Organizations and their input in policy-making processes. The Civil Society Index for Albania of 2010 highlights the failure in this aspect, specifically indicating that state institutions and policy-making processes do not welcome the involvement of Civil Society. Furthermore, the survey conducted among Civil Society Organizations reveals that approximately 60% of them perceive the dialogue and relationship between the "State and Civil Society" to be either limited or non-existent. According to the USAID's index on the sustainability of Civil Society Organizations, there is additional evidence pointing in the same direction. The "Advocacy" dimension of Civil Society Organizations has demonstrated a significant decline over the course of the past five years, as highlighted in a report by IDM in 2013.

The analysis suggests that state actors, along with the donor community and Civil Society actors, share the responsibility of enabling Civil Society to contribute an additional value to policy-making processes and societal transformation. This is particularly important considering that Civil Society Organizations are primarily project-based and often constrained by such limitations. Civil Society organizations and civil actors at the national and local level are not excluded from the challenge in this regard. When it comes to Albania's EU membership, Civil Society needs to go beyond project-based alternatives in order to effectively address concerns regarding the development and sustainability of the sector. While the state and donors bear the primary responsibility for sustainable solutions, it is crucial for Civil Society Organizations to initiate action by addressing their internal governance issues, such as establishing a code of ethics and transparency standards. This will enable them to forge stronger connections with the local context, cultivate a supportive citizen base, and foster extensive vertical and horizontal networks that cover various thematic sectors and geographic areas. Until now, the funding for establishing citizen networks in Albania has come from different donors, however, these networks tend to only remain active as long as there is funding available. In only a few instances, they have managed to sustain their involvement beyond the completion of projects.

The only plausible explanation for such exceptions is that these networks were established based on genuine local priorities, which is not the usual practice in the country. Furthermore, they have a clear sustainability strategy in place that takes into account the developmental needs of Civil Society. The primary objective for Civil

Society actors is not just to register the next network for funding program requests, but also to identify sector partners who will play an active role in establishing funding priorities. Implementing such a measure will not only alleviate the challenges faced by Civil Society Organizations, by facilitating the sharing of resources among network members, but it will also provide an opportunity to motivate and support important state and community stakeholders of donors, to move once and for all towards a more meaningful involvement of Civil Society in the planning and implementation of strategies in support of Civil Society with the aim of sustainable development and impact of the sector (IDM, 2013).

The current number of registered Non-Profit Organizations in Albania stands at 2231. These organizations are predominantly located in Tirana and other major cities throughout the country. The registration status of these organizations is as follows: 314 of them are registered with the Civil Society Support Agency, while the remaining 1917 have completed their registration with the Tirana court.

Conclusions

Civil society organizations play a significant role in the process of a country's integration into the European Union, highlighting their importance. The integration process into the EU requires that any country aiming to join must meet and abide by the integration criteria, known as the Copenhagen criteria. It is about the political criteria: the stability of the institutions that guarantee democracy, the rule of law, human rights, as well as the respect and protection of human rights; economic criteria: the existence of a valid economy, a capacity to withstand the pressure of competition and the strength of the EU market; accession to acqius communitaire: that is, to accept the obligations of integration and, in particular, the economic and monetary objectives of the EU.

In its own legal framework, the European Union recognizes and values the crucial role that civil society plays in ensuring good governance within the EU. Participatory democracy forms an essential element of the European model of governance. The engagement of civil society is crucial in order to successfully implement both greater citizen participation and increased transparency in European politics.

References

Biberaj Elez, "Shqipëria në tranzicion-Rruga e vështirë drejt demokracisë", Ora Tiranë, 2000.
IDM-CIVICUS-UNDP "Indeksi I Shoqërisë Civile për Shqipërinë" Tiranë, 2010.
Krasniqi Afrim "Shoqëria Civile në Shqipëri" Geer Tiranë 2004.
Kushtetuta e Republikës së Shqipërisë,1998.
Ligji nr. 8781, datë 3.5.2001. Fletorja Zyrtare e Republikes se Shqiperise, Botim i qendres se publikemeve zyrtare, Nr.24 Maj 2001.
Kodi civil i Republikës së Shqipërisë i miratuar me ligjin nr.7850, datë 29.7.1994.
Udha e Shqiperise drejt Demokracise, ORT/USAID, Tirane 1999.
Human Rights Watch World Report 1999.
Human Development Promotion Center, Report 2009.
Instituti për Demokraci dhe Ndërmjetësim: Policy brief nr 1, January 2013.

Does the start of university studies influence the appearance of anxiety and stress?

Denada Selfo
Faculty of Health, University "Ismail Qemali" Vlora

Anjeza Sejdiraj
Faculty of Health, University "Ismail Qemali" Vlora

Abstract

Introduction: Anxiety disorders are conditions in which individuals experience anxiety that does not go away and may worsen over time. Most often, the onset of separation anxiety disorder is triggered by a stressful life event. They are usually caused from a combination of factors including genetic factors, family heredity, recent stressful factors, living conditions, personal beliefs and attitudes, ability to express feelings. **Purpose:** To evaluate the impact of starting university studies on the appearance of anxiety and stress. **Material and method**: Study developed in the University of Vlora. A self-administered questionnaire was used among the students of these faculties in a period of three months. SPSS 23 was used for statistical analysis. **Results**: From the evaluation of the results, it was noticed that the beginning of university studies has caused difficulties in adaptation by giving a series of signs or manifestations that affect the students' behavior. It showed significance and the relationship between the beginning of studies and the inability to calm down for values of p=0.000. The influence of the factor of starting university studies has had a significant relationship for values of p=0.000 influencing the development of these conditions such as fear of death, suffocating feeling, nervousness, rapid heartbeat, fear of losing control, difficulties in concentration. **Conclusions:** It was evident that most of the students showed anxiety and stress disorders thus affecting their academic performance but also in other aspects of life. The more demands there were against them, the higher the anxiety and stress they experienced. **Recommendations:** Promoting "healthy academic learning" and self-care through promotional activities by mental health specialist in order to raise awareness among students. Promotion is equal to prevention of unwanted emotional states.

Keywords: University studies, anxiety, stress, mental health, nervousness, suffocation.

Introduction

What is anxiety. Mental health is one of the most important determinants of quality of life and satisfaction. Poor mental health is a complex and common psychological problem among university students in developed and developing countries. Students are a unique group of people who are passing through the most critical period of life in which they experience many stressful events. Anxiety is an unconscious reaction to depressive tendencies that can turn into severe fear or panic. Additionally, anxious female students are also reported to suffer from difficulties in orientation and problem solving. Psychological and physical symptoms include hand and lip tremors, dry mouth, frequent urination, and restless sleep. .[1]

Anxiety disorders are conditions in which individuals experience anxiety that does not go away and may worsen over time. Types of anxiety disorders: Generalized anxiety

disorders, Panic disorder, Phobias, Separation anxiety disorder, Post-traumatic stress disorder, Obsessive-compulsive disorder. .[2] Research has shown that women are about twice as likely to develop fear and anxiety-related disorders as men:[3]
Stress is the body's way of reacting to a situation such as a threat, challenge or physical and psychological obstacle. Anxiety disorders in students can appear in different forms such as hand and lip tremors, nervousness, frequent urination, disturbed sleep or inability to concentrate. :[4]
Some predictable stressful times include studying for exams, competing for admissions or internships, and trying to master large amounts of content in small amounts of time. Sudden changes, unexpected challenges or traumatic events can be unpredictable sources of stress.

Student stress
Almost everyone experiences stress to some degree, and college students are certainly no exception. Many college students report dealing with varying levels of stress throughout college for a number of different reasons. Stress affects everyone in different ways and for different reasons, and people respond to stress in different ways, but it doesn't have to cripple you or prevent you from achieving your goals. [5]

Why are students stressed
University students commonly experience stress due to:
- increased responsibilities
- lack of good time management
- changes in eating and sleeping habits and
- not taking enough time off to take care of themselves. [6]

The transition to university can be a source of stress for most first-year students. Some predictable stressful times include studying for exams, competing for admissions orinternships, and trying to master large amounts of content in small amounts of time. [7]

Purpose:
Evaluation of the relationship between the impact of the study period and the development of anxiety disorders and stress in the students of the University "Ismail Qemali" Vlora in order to highlight the etiological factors and design new policies for 2023.

Hypothesis:
The academic period affects students in increasing the risk of developing anxiety and stress disorders.
Results:
The characteristics of our population according to socio-demographic factors are:
The dominant age is 19-22 years, respectively 80.8%, the female gender dominates 72.7%, the highest percentage in terms of faculty is related to the faculty of health 39.1%. The students who live in the city dominate 70.1%, according to the academic year the highest percentage is the first year students 55.5%, according to the marital status the "single" students dominate 74.4%. The highest percentage of students according to "Financial support status" dominates the students "With financial

support from the family" 62.1% and according to the living status dominates "Live with the family" 67.8%

Table. 1 The relationship between gender and the level of recently experienced stress

We have a statistically significant result when (p-value (sig.) <0.05). In this case we can say that the independent variable has a significant impact on the dependent variable. In this connection, the value is p=0.000, which means that there is a statistically significant relationship between gender and "Level of experienced stress".

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	74.828			
Final	35.328	39.500	1	.000

Table.2 Evaluation of the relationship between the Factor "I feel stress and anxiety before the beginning of the exams because I want to do well" and the symptom "Nervousness".

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	156.268			
Final	65.408	90.860	4	.000

Case Processing Summary			
		N	Marginal Percentage
General evaluation on the level of stress that the student has had during the last months.	No stress at all	43	8.4%
	Mild stress	175	34.2%
	Moderate stress	175	34.2%
	Too much stress	119	23.2%
Male gender	Male gender	140	27.3%
	female	372	72.7%
Valid		512	100.0%
Missing		0	
Total		512	

We have a statistically significant result when (p-value (sig.)<0.05). In this case we can say that the independent variable has a significant impact on the dependent variable. In this connection, the value is p=0.000, which means that there is a statistically

significant relationship between "Factor 3. I feel stress and anxiety before the start of the exams because I want to do well" and Symptom 9. Nervousness.

Table.3 Evaluation of the relationship between the factor "Starting university studies has caused me difficulties in adapting" and all anxiety symptoms in the study according to the ANOVA model.

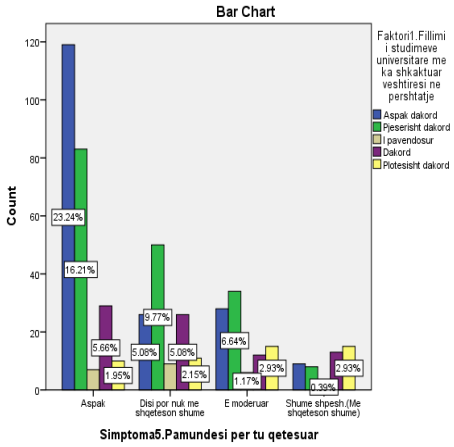
The table shows that the factor "Starting university studies has caused me difficulties in adapting" affects students in the appearance of symptoms "Fear that something bad will happen" P=0.000, Body tremors P= 0.000, Rapid heartbeat P=0.000, Difficulty concentrating P= 0.000, Nervousness P=0.000, Suffocating feeling P= 0.000, Fear of losing control P=0.000 but it was found that there was no statistically significant relationship between this factor and the symptom Fear of death P=0.07 and that this factor had a significant relationship with the fainting symptom, but this relationship was not very strong

Evaluation of the factor "Starting university studies has caused me difficulty in adapting and anxiety						
Variabla e varur		Sum of Squares	df	Mean Square	F	Sig.
Symptom. Fear that something bad will happen	Between Groups	47.228	4	11.807	9.302	.000
	Within Groups	643.514	507	1.269		
	Total	690.742	511			
Symptoms. Body tremors	Between Groups	36.990	4	9.247	10.187	.000
	Within Groups	460.229	507	.908		
	Total	497.219	511			
Symptoms. Rapid heartbeat	Between Groups	62.081	4	15.520	13.627	.000
	Within Groups	577.433	507	1.139		
	Total	639.514	511			
Symptoms. Difficulty concentrating.	Between Groups	61.276	4	15.319	13.165	.000
	Within Groups	589.957	507	1.164		
	Total	651.232	511			
Symptoms. Nervousness .	Between Groups	61.962	4	15.490	12.754	.000
	Within Groups	615.802	507	1.215		
	Total	677.764	511			
Symptom. Suffocating sensation.	Between Groups	28.966	4	7.242	7.391	.000
	Within Groups	496.753	507	.980		
	Total	525.719	511			
Symptom. Fear of losing control.	Between Groups	26.723	4	6.681	8.177	.000
	Within Groups	414.245	507	.817		
	Total	440.969	511			
Symptom. Fear of death .	Between Groups	7.953	4	1.988	3.599	.007
	Within Groups	280.123	507	.553		
	Total	288.076	511			

Symptoms. Difficulty in digesting food .	Between Groups	19.338	4	4.834	6.346	.000
	Within Groups	386.223	507	.762		
	Total	405.561	511			
Symptom. Fainting condition.	Between Groups	7.815	4	1.954	4.312	.002
	Within Groups	229.685	507	.453		
	Total	237.500	511			

Graphic1. Evaluation of the impact of the factor "Starting university studies has caused me difficulties in adapting" and the prevalence of the symptom "Inability to calm down".

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	77.097[a]	12	.000
Likelihood Ratio	71.606	12	.000
Linear-by-Linear Association	48.871	1	.000
N of Valid Cases	512		



The prevalence of the occurrence "Very often" of the symptom "Inability to calm down" influenced by the factor "Starting university studies has caused me difficulties in adapting" results in "Fully agree" Prev.=2.9%, and the evaluation of the significance of the influence from this factor on the prevalence of the occurrence of this symptom is p=0.000, which proves a very strong relationship between exposure to this factor and the prevalence of development of the symptom "Inability to calm down".

Discussions

According to our study, it was found that the highest level of stress was found in women with 72.7%, and the significance of the connection was p=0.000. Based on the results of a study conducted in Ireland, and Saudi Arabia, the prevalence of academic

stress was higher in females than in males and data analysis revealed significant relationships between the prevalence and level of academic stress and gender with p values = 0.013 and p=0.042, respectively.
Our study referred to the distribution of the symptom "Difficulty in concentration" in 71% of students, of which 22.3% state that this symptom appears "Very often". In another study carried out at the University of Botswana, the appearance of this symptom resulted in a percentage of 88%, which indicated that 88% of students had difficulty concentrating when they had to do something.

Conclusions

The prevalence of stress among students based on gender resulted in a lot of stress F=19.53% and M=3.71%. p=0.000 which proves that gender affects the occurrence of stress in students. It was evident that most of the students showed anxiety and stress disorders thus affecting their academic performance but also in other aspects of life. The more demands there were against them, the higher the anxiety and stress they experienced.

Recommendations

Promoting "healthy academic learning" and self-care through promotional activities by mental health specialists in order to raise awareness among students. Promotion is equal to prevention of unwanted emotional states.

References

Fryers T, Brugha T. Childhood determinants of adult psychiatric disorder. *Clin Pract Epidemiol Ment Health.* 2013;9:1-50. doi:10.2174/1745017901309010001

Ressler KJ. Translating Across Circuits and Genetics Toward Progress in Fear- and Anxiety-Related Disorders. *Am J Psychiatry*. 2020;177(3):214-222. doi:10.1176/appi.ajp.2020.20010055

Merz EC, He X, Noble KG; Pediatric Imaging, Neurocognition, and Genetics Study. Anxiety, depression, impulsivity, and brain structure in children and adolescents. *Neuroimage Clin.* 2018;20:243-251. doi:10.1016/j.nicl.2018.07.020

Jeffrey Ditzell Medically reviewed By Jayne Leonard — Updated on May 6, 2022
https://www.medicalnewstoday.com/articles/322510

Ratanasiripong P, China T, Toyama S. Mental Health and Well-Being of University Students in Okinawa. Educ Res Int. 2018;2018:4231836.

McCrae RR, John OP. An introduction to the five-factor model and its applications. J Pers. 1992;60:175–215.

Kawase E, Hashimoto K, Sakamoto H, et al. Variables associated with the need for support in mental health check-up of new undergraduate students. Psychiat Clin Neurosci. 2008;62:98–102.

Calculation of the Lagrange points in eight different exoplanetary systems

Msc. Azem Hysa
"Aleksander Moisiu" University, Durres, Albania

Abstract

This work is focuses on the Planar Circular Restricted Three-Body Problem (PCRTBP). One of the most extreme cases of this problem involves the study of exoplanets orbiting either one or both components of a binary star system, in which the more massive and less massive stars are called the primary and secondary. In this work, we will label the primary star with A and the secondary star with B. Lagrange point is a point where the primary's and secondary's gravitational forces are balanced. The aim of this paper is to calculate the position of the Lagrange points in a binary star system composed of stars with different mass and the same masses. And then to calculate the Jacobi's constant for a system with mass ratio μ=0.5. Zero Velocity Curves (ZVC) were plotted for constant values of Jacobi's constant. From this simple result we see that we have curves around star A, around star B, around two stars and around the Lagrange points L_4 and L_5. In order to generate an orbit around the star A or the star B, in the binary stellar system, the nonlinear equations of motion for the PCRTBP were numerically integrated in MATLAB® 2023. We also perform several numerical tests to discover different possible orbits in this system. One of these orbits are found around the star A and another around the star B. And finally, from another result we see that we have non-periodical behavior of this system for a long time.

Keywords: Lagrange point, binary stellar system, exoplanet.

Introduction

Traditionally, the dynamics of two-body problem coupled with the patched conics method was used as a basic for interplanetary trajectory design. In the last few years, the interest concerning the Lagrange points for space exploration has risen within the scientific community. This is because the Lagrange points maintain a natural solution for the Circular restricted Three-Body Problem (CRTBP) and their locations remain constants with respect to the primary and secondary [1]. From analytical solutions of the three body problem, Euler and Lagrange have identified the existence of 5 equilibrium points, which are commonly known as Lagrange points. Euler and Lagrange were both awarded the Prix de academia Royale des Sciences de Paris in 1772 for their work on the three-body problem. Euler was the discoverer of the collinear equilibrium points, now known as L_1, L_2, and L_3, while Lagrange had a more general approach, revealing also the triangular (equilateral) equilibrium points L_4 and L_5 [2]. At Lagrange points, the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. Any infinitesimal body at any point of the Lagrange points would be held there without getting pulled closer to either of massive bodies. The points L_1, L_2, L_3 are colinear with the line joining the two massive bodies, while the triangular points L_4, L_5 are found 60° ahead of and behind the less massive body, along its orbit. These two triangular points $L_{4,5}$ is forming equilateral triangles with the two massive bodies [3].

The Lagrange points are also called the libration points [5]. The Lagrange points play an important role in the theory of motion of planets and exoplanets, satellites (natural and artificial), and in space mission projects. These points are positions in space where objects sent there tend to stay at these points. These points can be used in space by scientists to position spacecraft in such a way as to reduce the fuel consumption needed to stay in a certain position in space [6]. Missions to Lagrange points have been effective because they provide opportunities for flexible, low-energy trajectories [12]. In celestial mechanics, the periodic (or quasiperiodic) orbits have a considerable importance due to the existence of a direct relationship among the periodic orbits and the motion of planetary systems, as well as the motion of most stellar systems. These orbits are important for the understanding of the dynamics of differential systems. In space science, the importance of periodic orbits is not only restricted to celestial mechanics but also to astrodynamics [16]. In the PCRTBP existed different types of trajectories such as periodic, quasiperiodic, and chaotic [23].

Dynamics Equations of Classical PCRTBP and positions of Lagrange points

In this section, the dynamics equations of classical PCRTBP in two-dimensional space will be described. The planar circular restricted three-body problem considers the motion of a test mass $m_3 = 0$ in the presence of the gravitational field of two massive body with masses $m_1 = 1 - \mu$ and $m_2 = \mu$ in circular orbit about their center of mass, where is the mass parameter [16]. Throughout this report, the test particle is assumed to begin in the orbital plane of the primary and secondary masses with its velocity component normal to that plane equal to zero, so that its motion is constrained to the m_1-m_2 orbital plane for all time. Without loss of generality, all units are normalized and positions are defined relative to a rotating coordinate frame whose x-axis coincides with the line joining m_1 and m_2 and whose origin coincides with the center of mass of m_1 and m_2, as shown in Figure 1.

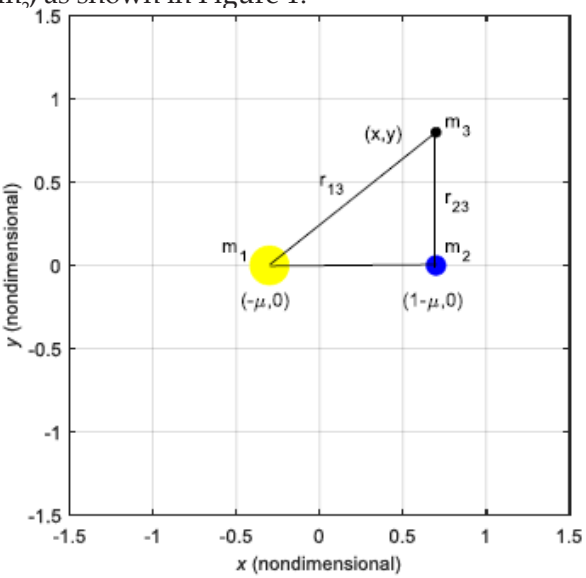


Figure 1. Rotating coordinate system in the PCRTBP. All units are nondimensionalized.

The equations of motion for the test particle are then [7]:

$$\ddot{x} = 2v_y + \frac{\partial U}{\partial x}$$
$$\ddot{y} = -2v_x - \frac{\partial U}{\partial y} \quad (1)$$

where

$$U = \frac{1}{2}(x^2 + y^2) + \frac{1-\mu}{r_1} + \frac{\mu}{r_2}, \quad (2)$$

is the efective potential function and $r_{13} = \sqrt{(x+\mu)^2 + y^2}$ and $r_{23} = \sqrt{(x+\mu-1)^2 + y^2}$ are the distances from primary and secondary massive bodies to the third body, respectively. The complete analytical solution of system (1) is unknown, the generation of trajectories in the scope of this problem requires the use of numerical integration [15]. The system of equations of motion (1) admits a quantity that is conserved for any solution. This quantity is called the Jacobi constant and is given by $C = 2U - v^2$, where v is velocity of mass m3. For $v = 0$, we have $C = 2U$. This quantity defines boundaries of the forbidden regions and the realms of motion and also gives rise to zero velocity curves [1]. The equations of motion (1), can be drastically simplified if we consider locations where the position of the third body is fixed in the rotating frame of reference. At these locations the position and velocity of the third body do not change with time, meaning that $v_x = v_y = \ddot{x} = \ddot{y} = 0$. This points represent particular solutions of equations of motions (1) [3, 8]:

$$U_x = \frac{\partial U}{\partial x} = 0, \; U_y = \frac{\partial U}{\partial y} = 0. \quad (3)$$

The Lagrange points L_1, L_2, L_3, L_4, and L_5 of the CRTBP are stationary only in the rotating frame and are critical points of the function U [3]. The Lagrange points, L_1, L_2, and L_3, can be evaluated when y=0 and z=0; hence, these points lie on the x-axis [8, 9]. Consider equilibria along the line of primary and secondary, where, $y = z = 0$. In this case the effective potential function has the form

$$U = -\frac{1}{2}x^2 - \frac{(1-\mu)}{|x+\mu|} - \frac{\mu}{|x+\mu-1|} \quad (4)$$

It can be determined that U has precisely one critical point in each of the following three intervals along the x-axis: (i) $(-\infty, -\mu)$, (ii) $(-\mu, 1-\mu)$ and (iii) $(1-\mu, \infty)$. This is because $U(x, 0, 0) \to -\infty$, as $x \to \pm\infty$, as $x \to -\mu$, or as $x \to 1-\mu$ [10]. So

$$U_x = x - \frac{(1-\mu)(x+\mu)}{|x+\mu|^3} - \frac{\mu(x+\mu-1)}{|x+\mu-1|^3} = 0 \quad (5)$$

Equation (5) has one solution in each of the following three intervals along the x-axis. These solutions can be calculated numerically as they are the roots of polynomials [11]. Lagrange points L_4 and L_5, are located at positions with coordinates: $L_{4,5}(x, y, z) = \left(\frac{1}{2} - \mu, \pm\frac{\sqrt{3}}{2}\right)$ [3]. Determining the position of the

Lagrange points is very important and, in this paper, I will calculate the position of these points in the different binary star systems.

Results and conclusions

The values of the coordinates for collinear Lagrange points L_1, throught L_3 are determined numerically. For this, we us the Iterative Methods and Convergence Analysis. One of the basic problems in mathematics is how to solve nonlinear equations f(x)=0. In order to solve these equations, we use iterative methods such as Newton's method and its variants. Recently, there has been some progress on iterative methods with higher order of convergence using decomposition techniques. The zeros of a nonlinear equation cannot in general be expressed in closed form; thus, we have to use approximate methods. Nowadays, we often use iterative methods to get the approximate solution of the equation (5); the best-known method is the classical Newton's method [18]. For example, solving these equations can be done in MATLAB® via the *fsolve* function. Locations of the triangular Lagrange points L_4 and L_5 are calculated based on an exact solution.

The position of the five Lagrange points is actually a function of the μ of the gravitational potential of the second primary. In Figure 2 we show how the position of the collinear points L_1, L_2, and L_3 evolves with respect to the value of the power μ. In Figure 3 we show how the position of the triangular points L_4 and L_5 evolves with respect to the value of the mass parameter μ.

Consider an exoplanetary system consisting of a binary star system such as the **DP Leo (AB) system**. The mass of star A is 0.6 $M_\odot$ while the mass of star B is 0.09 $M_\odot$ [13]. So, the mass parameter for this system is μ=0.0147783251. From the performed calculations, it turns out that the positions of the Lagrange points are as follows:

$$L_1 = (x, y, z) = (0.824681951576357, 0, 0)$$
$$L_2 = (x, y, z) = (1.165011455224992, 0, 0)$$
$$L_3 = (x, y, z) = (-1.006157458512345, 0, 0)$$
$$L_4 = (x, y, z) = (0.4852216749, +0.866, 0)$$
$$L_5 = (x, y, z) = (0.4852216749, -0.866, 0)$$

Hd 213240 Ab C is a possible binary star system in the constellation Grus [14]. The system is located at a distance of 40.75 pc from the Sun based on parallax [13]. The mass of star A is 1.22$M_\odot$ and the mass of the star B is 0.146 $M_\odot$. So, the mass parameter of this system is μ=0.107 and the location of the Lagrange points are:

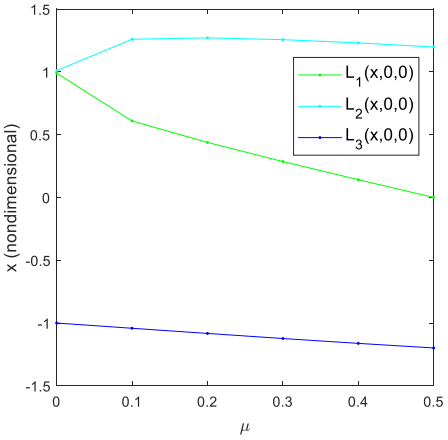


Figure 2. Evolution of the position of the collinear Lagrange points L_1, L_2, and L_3 as a function of the mass parameter μ.

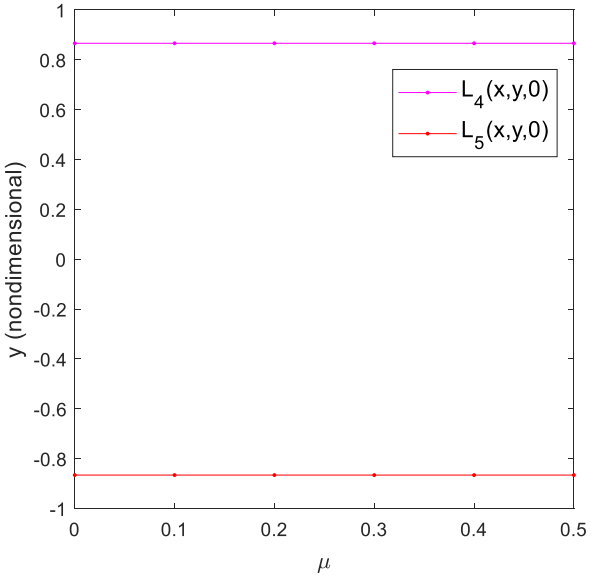


Figure 3. Evolution of the position of the Lagrange points L_4, and L_5 as a function of the mass parameter μ.

$$L_1 = (x, y, z) = (0.595853173549000, 0, 0)$$
$$L_2 = (x, y, z) = (1.262052783083668, 0, 0)$$
$$L_3 = (x, y, z) = (-1.044512261038866, 0, 0)$$
$$L_4 = (x, y, z) = (0.393000000000000, +0.866, 0)$$
$$L_5 = (x, y, z) = (0.393000000000000, -0.866, 0)$$

NSVS14256825 system, is another exoplanetary system consisting of a binary star system. One of the stars of this planetary system is called NSVS14256825 A,

whose mass is 0.419 $M_{\odot}$, while the other star is called NSVS14256825 B and has a mass of 0.109 $M_{\odot}$ [19]. So, the mass ratio of this system is μ=0.2064393939. From the calculations performed, it results that the positions of the Lagrange points are as follows:

$$L_1 = (x, y, z) = (0.427917543401203, 0, 0)$$
$$L_2 = (x, y, z) = (1.270657504602737, 0, 0)$$
$$L_3 = (x, y, z) = (-1.085470831606991, 0, 0)$$
$$L_4 = (x, y, z) = (0.2935606061, +0.8660, 0)$$
$$L_5 = (x, y, z) = (0.2935606061, -0.8660, 0)$$

K2-288Bb (previously designated EPIC 210693462 b) is a super-Earth or mini-Neptune exoplanet orbiting in the habitable zone of K2-288B, a low-mass M-dwarf star in a binary star system in the constellation of Taurs about 69.3 pc from Earth [20, 19, 22]. It was discovered by citizen scientists while analysing data from Kepler spacecraft's K2 mision, and was announced on 7 January 2017 [20, 21]. **K2-288Abb** is within a binary system of two red rwarfs. The primary, K2-288A, is 52% the mass and 45% the radius of the sun, while the secondary, K2-288B, is 33% the mass and 32% the radius. They are both much cooler and dimmer than the Sun, with temperatures of 3584 K and 3341 K, and are 0.03236 and 0.01175 times as luminous as the Sun, which has a temperature of 5772 K [21]. The mass of primary is 0.52 $M_{\odot}$ and the mass of secondary is 0.33 $M_{\odot}$ and the mass parameter of this system is μ=0.388 [13]. The location of Lagrange points for this binary system are:

$$L_1 = (x, y, z) = (0.158740719059036, 0, 0)$$
$$L_2 = (x, y, z) = (1.234334012794345, 0, 0)$$
$$L_3 = (x, y, z) = (-1.157493021797107, 0, 0)$$
$$L_4 = (x, y, z) = (0.112000000000000, +0.866, 0)$$
$$L_5 = (x, y, z) = (0.112000000000000, -0.866, 0)$$

XO-2 is a binary star system. It consist of two components: **XO-2S** (also known as **XO-2A**) and **XO-2N** (Also known as **XO-2B**) [17]. This system is located approximately 500 light-years away from Earth in the Lync constellation. Both of these stars are slightly cooler than the Sun and are nearly identical to each other [4]. The mass of this stars are equal 0.98 $M_{\odot}$. So, the mass parameter of this system is μ=0.5 [13]. Some other stellar binary systems with μ=0.5 are **HD 80606b/HD 80607**, **HD106906Abb** and **FW Tauri Ab** [13]. For this value of the mass parameter, we calculate the positions of Lagrange points:

$$L_1 = (x, y) = (-5.052745355750563 \times 10^{-17}, 0)$$
$$L_2 = (x, y) = (1.198406144554920, 0)$$
$$L_3 = (x, y) = (-1.198406144554920, 0)$$
$$L_4 = (x, y) = (0.00000000000, +0.866)$$
$$L_5 = (x, y) = (0.00000000000, -0.866)$$

And the Jacobi constant for this positions are:

$$C_{L_1} = 4.250000000000000$$
$$C_{L_2} = 3.706796224086153$$
$$C_{L_3} = 3.706796224086153$$
$$C_{L_4} = 3.000000001452054$$
$$C_{L_5} = 3.000000001452054$$

Figure 4 presented the positions of Lagrange points and the zero-velocity curve in a binary stellar system with $\mu = 0.5$. From this results we see that the Lagrange point L1 is located close to the origin of the coordinate system, which is also the center of mass of the binary star system. Trajectory in yellow around two stars and around each star is for $C_{L_1} = 4.25$, trajectory in blue is for $C_{L_2} = C_{L_3} = 3.706796224086153$ and trajectories in red is for $C_{L_4} = C_{L_5} = 3.000000001452054$. Does there really exist any periodic orbit around one star in a binary stellar system with mass ratio $\mu = 0.5$? From numerical tests we discover two possible orbits around the star A and the star B in a system with $\mu = 0.5$. The result is presented in Figure 5. The initial conditions we used for the orbit around the star A are: $x(0) = -0.3;\ y(0) = 0;\ v_x(0) = 0;\ v_y(0) = 1.790530647601431$ and for the orbit around the star B: $x(0) = 0.7;\ y(0) = 0;\ v_x(0) = 0;\ v_y(0) = 1.785870469360344$. Also, we can present this result in the phase plane x-v_x (Figure 6).

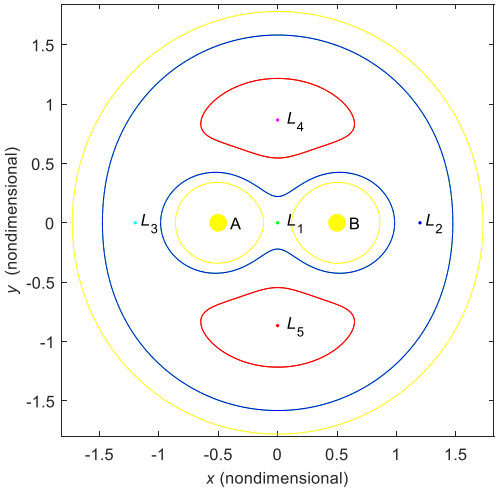


Figure 4. The positions of Lagrange points and the zero-velocity curve in a binary stellar system for $\mu = 0.5$.

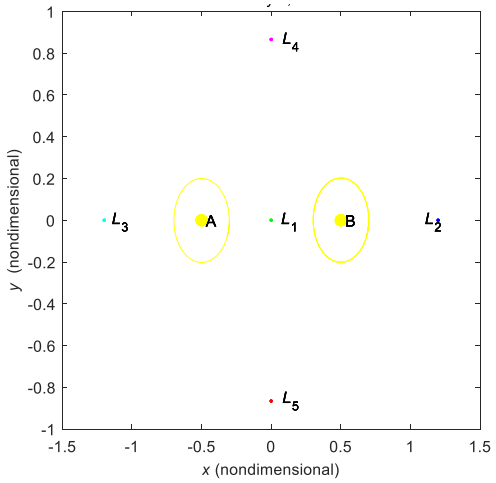


Figure 5. Two periodic orbits around star A and B. These results come from the numerical integration of the nonlinear differential equations (1).

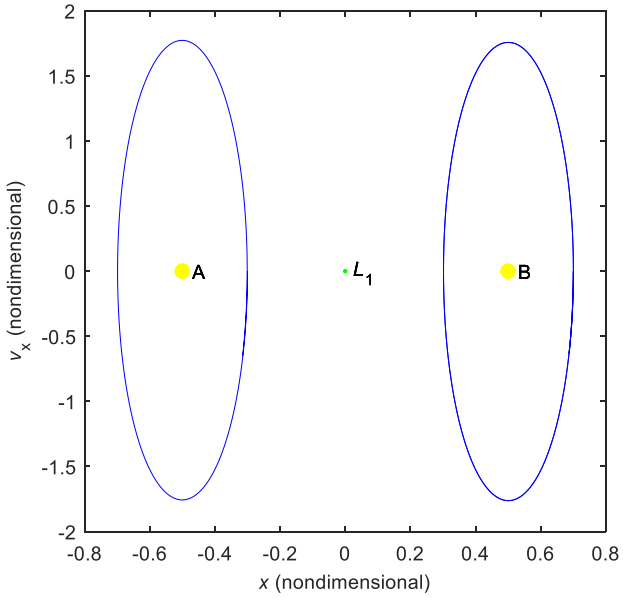


Figure 6. Trajectories in the phase plane x-v_x for a system with mass ratio $\mu = 0.5$.

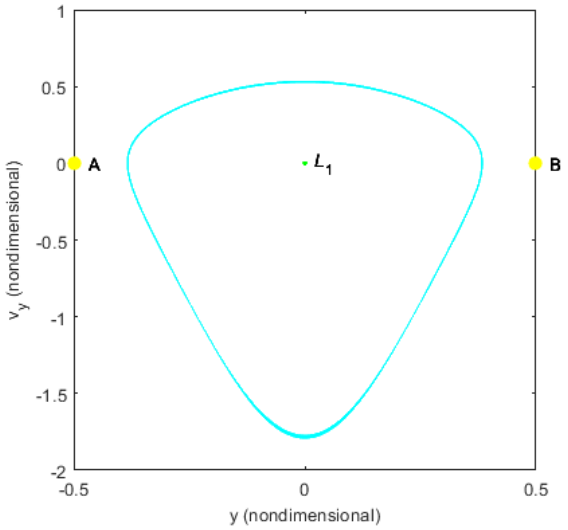


Figure 7. An orbit in the phase plane y-v_y for a binary stellar system with mass ratio $\mu = 0.5$.

From calculations we concluded that there is the possibility of periodic orbits around the star A and around the star B for a binary stellar system with mass ratio $\mu = 0.5$. In the Figure 7 presented an orbit in the phase plane y-v_y for a binary stellar system with mass ratio $\mu = 0.5$ and initial conditions: $x(0) = 0.31;\ y(0) = 0;\quad v_x(0) = 0;\quad v_y(0) = 1.771166161568490$ and C=3.706796224086153.

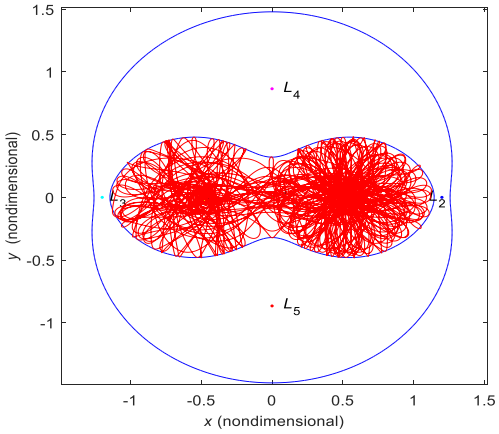


Figure 8. Trajectory in red is a chaotic orbit (nonlinear orbit) in a binary stellar system with mass ratio $\mu = 0.5$ and the trajectory in blue is the zero-velocity curve for C=3.47.

Figure 8 shows a chaotic trajectory (in red) with initial conditions: $x(0) = 0.17;\ y(0) = 0;\quad v_x(0) = 0;\quad v_y(0) = 1.046395775817981$ and C=3.706796224086153. Trajectory in blue is a zero-velocity curve for C=3.47. We performed the numerical computation of the trajectories with the program in MATLAB 2023 using integration options ode set ('RelTol',1e-11,'AbsTol',1e-08) for the time step. MATLAB's ode45 Runge-Kutta solver is used. From the result of Figure 8, we conclude that: we have non-periodical behavior of this system for a long time. From this we say that the system we examined is a deterministic system that shows sensitivity to the initial conditions.

References

[1] R. Th. Eapen, R. K. Sharma. Mars interplanetary trajectory design via Lagrangian points. Astrophys Space Sci (2014) 353:65–71. http://dx.doi.org/10.1007/s10509-014-2012-x .

[2] B. Sicardy, "Stability of the triangular Lagrange points beyond Gascheau's value", 2010. https://link.springer.com/article/10.1007/s10569-010-9259-5 .

[3] Fawzy A, Abd El-Salam, "Discovery of an Equilibrium Circle in the Circular Restricted Three Body Problem", American Journal of Applied Sciences 9 (9): 1378-1384, 2012 ISSN 1546-9239, 2012 Science Publication. https://doi.org/10.3844/ajassp.2012.1378.1384 .

[4] Vallenari, A.; et al. (Gaia collaboration) (2023). "Gaia Data Release 3. Summary of the content and survey properties". *Astronomy and Astrophysics*. **674**: A1. arXiv:2208.00211. doi:10.1051/0004-6361/202243940.

[5] Z. E. Musielak and B. Quarles, The three-body problem. Arxiv 1508.02312v1[astro-phEP], 10 Agust 2015.

[6] Brown, A. G. A.; et al. (Gaia collaboration) (August 2018). "*Gaia* Data Release 2: Summary of the contents and survey properties". *Astronomy & Astrophysics*. 616. A1. https://doi.org/10.1051/0004-6361/201833051 .

[7] A. Moore, J. Marsden. Trajectory Design Combining Invariant Manifolds with Discrete Mechanics and Optimal Control. Journal of Guidance, Control, and Dynamics Vol. 35, No. 5, September–October 2012. http://dx.doi.org/10.2514/1.55426 .

[8] Lata Kumari Bairwa, Ashok Kumar Pal, Reena Kumari, Sawsan Alhowaity and Elbaz I. Abouelmagd. Study of Lagrange Points in the Earth–Moon System with Continuation Fractional Potential. Fractal Fract. 2022, 6, 321. https://doi.org/10.3390/fractalfract6060321 https://www.mdpi.com/journal/fractalfract.

[9] Nick Truesdale, "Using Invariant Manifolds of the Sun-Earth L2 Point for Asteroid Mining Operations", ASEN 5050 Spaceight Dynamics 12/19/2012.

[10] Wang Sang Koon, Martin W. Lo; Jerrold E. Marsden; Shane D. Ross-Dynamical system, the three-body problem, and space mission design. The three-body problem-São Paulo. Cambridge University Press 2005.

[11] J. Washington, "A Study of the Planar Circular Restricted Three Body Problem and the Vanishing Twist", October 2012.

[12] Gheorghe Sirbu, Mauro Leonardi. Fully Autonomous Orbit Determination and Synchronization for Satellite Navigation and Communication Systems in Halo Orbits. Remote Sens. 2023, 15, 1173. https://doi.org/10.3390/rs15051173 https://www.mdpi.com/journal/remotesensing.

[13] http://www.univie.ac.at/adg/schwarz/multiple.html.

[14] Mugrauer, M.; et al. (2005). "Four New Wide Binaries Among Exoplanet Host Stars". AstronomyandAstrophysics. 440 (3):1051–1060. arXiv:astro

ph/0507101. doi:10.1051/00046361:20042297. S2CID 14065040.
[15] Alexander Korneev and Sergey Aksenov. Calculation of libration point orbits in the circular restricted three-body problem. Journal of Physics: Conference Series 1740 (2021) 012019 IOP Publishing https://iopscience.iop.org/article/10.1088/1742-6596/1740/1/012019 .
[16] Elbaz I. Abouelmagd, Juan Luis García Guirao and Jaume Llibre. On the Periodic Orbits of the Perturbed Two- and Three-Body Problems. Galaxies 2023, 11, 58. https://doi.org/10.3390/galaxies11020058 https://www.mdpi.com/journal/galaxies.
[17] Desidera, S.; et al. (2014). "The GAPS programme with HARPS-N at TNG. IV. A planetary system around XO-2S". Astronomy and Astrophysics. 567 (6). L6. arXiv:1407.0251. https://doi.org/10.1051%2F0004-6361%2F201424339 .
[18] Na Huang and Changfeng Ma. Convergence Analysis and Numerical Study of a Fixed-Point Iterative Method for Solving Systems of Nonlinear Equations. Hindawi Publishing Corporation Scientific World Journal Volume 2014, Article ID 789459, 10 pages http://dx.doi.org/10.1155/2014/789459 .
[19] https://exoplanetarchive.ipac.caltech.edu/docs/counts_detail.html
[20] Hawkes, Alison; Cofield, Calia; Reddy, Francis (7 January 2019). NASA. Retrieved 8 January 2019. https://www.jpl.nasa.gov/news/news.php?feature=7313 .
[21] Feinstein, Adina D.; et al. (7 January 2019). "K2-288Bb: A Small Temperate Planet in a Low-mass Binary System Discovered by Citizen Scientists" (PDF). The AstronomicalJournal. 157 (2):40. arXiv:1902.02789. https://doi.org/10.3847%2F1538-3881%2Faafa70 .
[22] Mack, Eric (9 January 2019). CNET. Retrieved 9 January 2019. https://www.cnet.com/news/nasa-kepler-helps-amateurs-spot-unusual-new-planet-in-goldilocks-zone/ .
[23] Vinay Kumar, Beena R Gupta & Rajiv Aggarwal. Numerical Simulation of the Phase Space of Jupiter Europa System Including the Effect of Oblateness. ISSN: 1932-9466. Vol. 12, Issue 1 (June 2017), pp. 479 – 495. https://digitalcommons.pvamu.edu/aam/vol12/iss1/31?utm_source=digitalcommons.pvamu.edu%2Faam%2Fvol12%2Fiss1%2F31&utm_medium=PDF&utm_campaign=PDFCoverPages

Brexit and its consequence in the development of trade relations

Dr. Ejona Bardhi
University of Tirana, Albania

Abstract

The decision for the exit of the United Kingdom from the European Union brought a wide political debate for the very fact of the consequences it brought to the development of trade, and the provision of services and products between the member countries and the English state. With its exit from the EU, the English state was no longer bound by the obligations assumed at the time of accession, especially the part of the rules and provisions related to unrestricted trade. At this time, the United Kingdom created the right to impose customs duties, forcing firms and companies that want to import or export goods or products to the English territory and vice versa, must pay a certain amount.
From immigration policies to agricultural subsidies, criminal justice measures to environmental standards, financial services regulations to nuclear energy technology, university student payments to employment and aviation laws, Brexit requires rethinking and revising a range of policies. This study aims to describe and analyze the effects that Brexit has had in relation to trade relations between EU member states and the United Kingdom. For the realization of this study, we relied on foreign and local literature.

Keywords: commercial agreement, proces, disagreement, international law.

Introduction

The European Union was born as an idea to strengthen relations between states in order to avoid conflicts in the future. The creation of this union was made possible thanks to the agreement of 4[1] European states that signed an agreement to regulate the steel and coal trade as a from the most important sectors of that region. Over the years, countries began to understand the real importance of free cooperation in the field of trade and commerce and in this way submitted their request to become part of the European Union. At the time of its birth, the community had a purely economic connotation, as it aimed at the free circulation of production factors, in order to create a competitive internal market as well as achieving a rational distribution of resources.[2] For this reason, the individual was seen simply as a worker and, for this purpose, the first aspects that have been disciplined within the EU are those contained in this sphere. In the Treaty of Rome, which, as we pointed out above , founded the European Economic Community, the freedom of free circulation was reserved only for some special categories, constitutes a database which allows the competent authorities of the states. The member states enrich this data-base by means of national networks connected in a central system and integrated by a network called SIRENE, which constitutes information requested at the crossing of the national border.
Later, the Maastricht Treaty, on the one hand, marks the transition from the EEC to the EU, on the other hand, presents for the first time "European citizenship", making free movement an autonomous right, belonging to every citizen of a country member.

In this way, free movement was no longer exercised only for the economic purposes of the treaties.
With the evolution of the integration process, the focus has shifted to the citizen as an individual, since free circulation is one of the innovations that derives directly from European citizenship.
This integration process leads to two basic points:
1. The innovations of free movement within the Charter of Fundamental Rights, as a right of the individual;
2. Codification of the EU acquis in this area through directive 38/2004.
However, the doctrinal current excluded citizens of third countries from the group of persons who could benefit in relation to the rules of free movement, since article 1 of regulation 1612/68 regarding the entry, stay and treatment of family members of a European worker emphasized that it was an important condition to exercise the right of free movement that the person concerned was a Community citizen.
Also, the entry and stay of non-EU citizens in the territory of a member state was always subject to entry flows and some special conditions, which were and continue to be a sovereignty of the member state.
Based on the development of society and, also, proving that the union of the community worker with his family members further developed the intertwining of the social relations of the latter, the European legislation expanded the field of family reunification for non-community family members of the worker, by expanded the provisions contained in regulation 1612/68.
So, what is clear is that at the moment when these normative acts were adopted, the fact that the family members of the community worker, who were citizens of a third country, were also included, albeit indirectly, in the field was no longer in question. of the applicationCommunity provisions on free movement, in the sense set forth above by articles 10 and 11 of regulation 1612/68, and then by directive 38/2004, which partially modified the said regulation.This behavior of disinterest in someone "different" from oneself, i.e. a non-community citizen, has marked the history of the community, based also on the dynamics that had active policies to obtain labor force from the parent states, as well as on the lack of competences of the community itself, a situation which began to change starting from the 60s. In the process of expanding the holders of exercising the right to free movement, the Court of Justice has also played an essential role, which through the decisions of has made it possible to include in this community not only those who performed a service, but also those who were the beneficiaries of these services, such as tourists, since the latter also enjoy the same basic rights, among to whom the right of free movement. An important development in relation to this topic was brought about by the three directives of 1990, which were approved in three separate texts:
- directive 90/364 regarding the general right of residence of community citizens who did not benefit from this right based on the provisions of the Community Treaty and also the provision of a residence card valid for five years and renewable automatically;
- directive 90/365 regarding the right of residence of employed or economically inactive persons, who have completed their professional activity21, and also of pensioners;

- directive 90/366 (was annulled by the Court of Justice and then replaced by the directive 93/9622) regarding the right of residence for students, citizens of a member country. The right of residence, exercised through the residence permit, is limited by the duration of the selected pre-university or university education, or annual, if the education duration exceeds the period in question; in the latter case, the residence permit is renewable every year. The availability of means of subsistence is necessary in order not to become a burden to the host state and, also, essential to exercise the right of residence.

The directives in question regulated the status of economically inactive persons, that is, those persons, community citizens, who did not benefit from the right of free movement based on other provisions of the community legislation.The importance of these acts should be underlined not only as they form the first organic contribution to overcoming the economic character that the free movement of persons had in its beginnings, but also for their content. This is also confirmed by the latest developments in European legislation, bearing in mind that the freedom of movement and residence of Union citizens and their family members has been subject to change and improvement in a coherent manner and in line with the spirit of the directives of the year 1990.In this way, we come to a historic date for EU citizens and for the European Union, the year 2004, where on April 29, directive 38/2004/EC was adopted by the European Parliament and the Council, an essential directive for the free movement of EU citizens and their family members. theirs.

Directive 2004/38 regulates the ways of exercising the right to free movement for all citizens of the European Union and for their family members, recognizing the right to a permanent residence as well as imposing restrictions on this right for reasons of order. public, public security and public health (Article 1)24.

To promote its objectives, the activity of the European Community supports "the elimination, between member states, of obstacles related to the free movement of personsUntil the year In 2016, the union consisted of 28 countries until the moment when the United Kingdom decided to take the decision to leave the EU. The very path of this country's membership has been full of problems and constant tensions due to the very fact that the English did not like being in a warehouse with other countries which, in terms of their importance and position in the international arena, were lower than England. The United Kingdom decided to become part of the EU in 1961, driven by the economic and social problems it was experiencing in that region where many sectors of the economy were in total crisis and losses were becoming unaffordable. UK membership is in British and European interests. The common market is the key factor in the development of trade between member states that have the possibility of offering services and products without additional tariffs. This was the same for all countries until the UK decided to leave the EU by implementing tariffs and customs controls at the border to prevent the passage of goods and services. This was the worst blow to international markets after the 2009 crisis, where everyone had to pay more to get the same product or commodity that was previously offered at a higher price. to sit. Rising costs were the main consequence of Brexit. England was the driving force to standardize product standards, safety and consumer protection. The same EU rules were often mocked by UK politicians and right-wing tabloids. That is

about to change. England has been given the leading role. England was the driving force to expand the EU to the former Soviet countries with weak acceptance only by Germany and France. The United Kingdom was heavily involved in the discussion on the creation of the euro currency, but did not join. I could say that England was one of the top three countries, apart from Germany and France.Regardless of the cooperation between the EU member states over the years, in December 2016 Great Britain decided to finally leave the union and creating a series of problems and concerns that had to be solved immediately. The biggest problem that arose with the departure of the UK was respecting the contracts and agreements taken over by the respective states that implemented the common provisions for the free market and without obstacles. The moment a state leaves the union, it is no longer obliged to implement the regulations or directives that it had assumed as consequence of joining a common community such as the European Union. This situation caused by the lack of a prior agreement on the resolution of the consequences in case of unilateral termination of these contracts brought the obligation for the member states to pay the losses of firms and companies their respective states. Germany and France were states that suffered a loss of 2 billion euros after a good part of the cooperation and trade they had with the United Kingdom, this was due to a number of factors:
The competition policies offered by Great Britain in relation to the registration and operation of commercial companies in this country.The possibility of payment of obligations in long periods of time.The possibility of financial support for companies that managed to hire a certain number of employees.[3]
Thus, many firms and private companies, especially those operating in the market of goods and services, mainly food products, chose to invest in their business by moving to the English territory. In addition to the firms, many other workers qualified in certain professions, but also the professions of lira as a result of favorable policies were established in this country. With the departure of the UK from the EU, this group found itself in front of a dramatic situation, previously unknown to them and that they had to resolve if they were to continue working in England respecting the rules of new ones decided by the English government or would they move their activity to another member state.[4]

The goals of the EU

In the economic and social aspect, both sides wanted to minimize the losses as much as possible and to be able to face the crisis that would follow with the final departure of the United Kingdom from the EU. The EU as a political and economic organization made up of many target states Its main aim was to reach a cooperation agreement with England to discuss the general terms for the existence of contracts and agreements that were in force until that moment. This was the main goal of this union since most of the member states were in the vicinity trade with the English state. Basing itself on the principles on which it operates and operating in mutual cooperation and sharing the desires of its members, it wanted to reduce its economic damage caused by the

[3] Acierno S., "The Carpenter sentence: fundamental rights and limits of the Community legal system", ne-DUE, 2002.
[4] Ibid fq 90

departure of England.[5]
The devaluation of the euro currency was one of the problems that all member states of the European Union have to face, and this was noticed in the first year of Brexit, when the euro suffered a drastic reduction in international currencies and in the stock market. The stability of the currency of together with the preservation of its positions against other currencies was one of the objectives of the EU, which began to take immediate measures to face the costs caused by this situation. The risk of inflation was a major concern for the EU's governing body, which were faced with such cases before, where they mention the crisis of Greece and Spain, which required the commitment of all countries to make it possible to overcome the situation. In the current situation, we are not talking about 2 countries, but about a larger group which are facing this danger.[6]
The free and unrestricted trade was a problem that concerned both sides because of the fact that now trade relations would be burdened with customs duties as well as the payment of additional fees for the passage of goods and products between the respective countries. The imposition of customs tariffs by The United Kingdom worried quite a few countries of the European Union, especially those that were on the border with this country and used the sea or land access of the English state. We mention here France, which had the right to fish in English territorial waters as a result of the treaty between the two countries for the implementation of free and unrestricted trade. According to these provisions, more than 2,000 thousand French fishing boats were sailing in British waters, exercising their fishing activities under the same conditions as the English fishing boats. From fishing alone, France accumulated around 550 million euros, which they used a considerable amount for a single sector, with the exit of England, this policy changed and French citizens were prohibited from entering British territory, being denied the right to swim in these waters, the English Channel would have been the dividing line between these two countries where they exercised their territorial sovereignty in relation to the wandering waters. Also, each of the fishermen or frims who operated in this market if they wanted to trade with Angina must resect and pay the fees and taxes imposed by the English government. This would mean the same commodity with a higher price since many of the fisherwomen sold their catch in the English market since the demand for fish and seafood was higher in this country.[7]
The free movement of services and those who provide these services was a problem that the European Union countries had to face as part of the Brexit reform. Many of the European citizens worked and lived in the United Kingdom as a result of the migration was guaranteed by the relevant provisions. Most of them who worked in England were deployed in the free professions such as accountants, accountants, architects and many others which were professions that enjoyed high integrity and respect in this country. Many of they had been pouring contributions for the English

[5] Calafà L., Foreigners between politics and rights after Lisbon, in Lav. dir., 2011, 3, p. 527 ff.
[6] Bonetti P.: "Principles, rights and duties. Migration policies", in B. Nascimbene (edited by), Right of Foreigners Cedam, Padua, 2004.
[7] Conforti B., The Charter of Fundamental Rights of the European Union and the European Convention of Human Rights, in L.S. ROSSI (edited by), Charter of Fundamental Rights and the European Constitution, Milan, p. 8 ff.

state for years and had concluded a series of agreements with firms and companies in this country to cover the necessary services. With the departure of England from the EU, the majority of these contracts did not find a solution because the terms with which had been signed, they were no longer in force. As a result of these changes, many contracts were suspended, causing irreparable economic damage to these entities, where many of them were forced to close their activities, while a good part left for their countries of origin. [8]

Effects on the English economy

The free movement of persons, together with that of goods, services and capital, constitutes one of the four basic freedoms recognized by the legislation of the European Union. Nowadays, EU citizens have the opportunity to move and migrate freely in the territory of the Schengen area, without being subject to special controls. Inter-European migration is not far removed from national migration, as citizens of EU member states can not only move freely and stay in the territory of different Schengen countries, but are also guaranteed the same rights as citizens of the host countries. .

The creation of a space without internal borders has contributed to the strengthening and spread of the European feeling, although we must note that recently we have witnessed a return to this idea, as happened with the citizens of the United Kingdom, who voted in favor exit from the European Union.

However, the opportunity to travel to the territory of another country, different from the one of origin, without being a victim of discrimination, for a variety of reasons, such as tourism, employment, study, or simply family reunification with other family members, is essential in the development of a community and in the development of the individual himself.[9]

The elimination of internal borders requires, for the countries of the European Union, a strengthened administration of the external borders of the EU, as well as an entry and stay within the contours of the legislation of the member countries, as far as non-EU citizens are concerned, even of a common asylum and immigration policy. Schengen cooperation, being part of the legal and institutional framework of the EU, has been gradually extended to most of the member states, as well as to some non-EU countries.[10]

As far as this category of citizens is concerned, i.e. those who are not part of the Schengen area, even though there was an intervention to improve and adopt the most favorable legislative proposals, these individuals can enjoy a more limited freedom of movement in compared to community citizens.Also, taking into account the innovations brought by the Treaty of Lisbon, the difference in treatment between these two categories of persons has not narrowed, for this reason a feeling of mistrust and a lack of interest on the part of the institutions is often observed. This happens

[8] Acierno S., "The Carpenter sentence: fundamental rights and limits of the Community legal system", ne-DUE, 2002.

[9] .Chiaromonte Ë., The fundamental right of non-EU citizens to social security between the ECHR and the Nice Charter, in Observatory on respect for fundamental rights in Europe, 2007.

[10] Ibid fq 90.

due to the fact that in most cases these individuals are seen as competitors in the distribution of relevant resources.[11]

However, almost every state has, in its recent or distant past, a history of internal or external migration, which is often considered an essential factor for the evolution of a citizenry. As a consequence of recent expensive developments, the UK's departure from the EU, two different typologies will be examined, such as that of immigration policies, which discipline the entry and acceptance of regulated and controlled requests of foreigners, and immigration policies, which allow foreigners to stay , to move and integrate in the territory of the host country. It is necessary more and more to define the status of foreign and community citizens, especially in terms of passive subjects, who settle and become part of a different community from the one of origin and who, moreover, make their contribution both to the economic and to the political life of the host country. In-depth and up-to-date knowledge of migratory flows, the security of objectives and the genuine application of norms are factors necessary for the immigration policy, within which the theme of free movement and family reunification of citizens from all over the world is placed. The right of free movement, as it originally had only economic connotations and was expressed in the free movement of workers.

Individuals, considered as labor force, constitute the third productive factor along with goods and capital. For this reason, their movement is a necessary complement to the free movement of the other two factors.

Regardless of the fact that apparently England emerged as the winning party from Brexit as a result of the fact that the majority of society wanted this fact, in fact the situation is different. Taking the 70s as a reference, which corresponds to the last economic crisis that the English state has experienced, which was reflected in the interruption of production and the dismissal of thousands of people from work, the period after Brexit constitutes the second blow to the economy of the country. their countries of origin did not move to other natural states as a result of the change in working conditions and tariffs applied by the English government. [12]About 10,000 thousand workers left the Angka territory during the period 2017-2018, the UK economy seems to have entered an existential crisis where the demand but the work reaches an alarming level. All this affected the decrease in income and profits that flowed as a result of the production of these companies. With the closure of these businesses, the Angeline companies that had negotiated agreements for the production of different from their work. The departure of the part of the female workers led to the loss of working hours in these companies as their employees were unable to cover the part performed by the dismissed workers. This situation brought a series of difficulties and problems as the English government was forced to reimburse the losses of the largest part of the local currencies as a result of the events that occurred with the departure of England from the EU. The financial markets were still hit, where the local currency lost significant ground against the US dollar and the Swiss franc, reaching the lowest figure in the last 50 years. in terms of trade relations,

[11] Acierno S., "The Carpenter sentence: fundamental rights and limits of the Community legal system", ne-DUE, 2002.

[12] Bonetti P.: "Principles, rights and duties. Migration policies", in B. Nascimbene (edited by), Right of Foreigners Cedam, Padua, 2004.

UK suffered a significant decrease in exports to European countries, not as a result of the imposition of customs tariffs by the member states, applying the same policies as the English state operates against them. The lack of some basic products, especially in the food sector, was a of the worst problems the English state faced seriously, especially during the period of 2019, which coincides with the emergence of the covid 19 pandemic. Being an industrial state and concentrated in the sectors that make up the part in heavy and light industry, agriculture and livestock were sectors which in England did not find great support. As a result of this policy, products such as meat, cheese or bread were imported from other countries with which England had trade relations based on free tariffs and without restrictions. Located in front of this situation, the English government was forced to make some changes in the next year's budget in order to shift a part of it from industry to agriculture and livestock, financing farms and entities that wanted to be active in the agriculture and livestock sector.[13]

Effects on trade

The effects of the departure of England from the European Union were also felt in trade relations in the international arena, since for many economic markets the United Kingdom was the main exporter and importer. The largest part of European markets declined, especially those that had a direct connection with United Kingdom after they found themselves facing irrecoverable losses. The banking sector was the one that suffered the most losses as most of the loans were authorized based on European regulations regarding the transfer of credit and monetary amounts and the country's departure from the EU, bankt they had to respond to the changes that happened in this sector. Many of the banks were forced to increase the loan interest, thus bringing a decrease in the interest of firms and companies to borrow, as the increase in the interest affected the increase in bad loans.

The policies followed by the respective states operate mostly through the financial system. In countries like the United Kingdom where the financial system is dominated by the banking sector, they operate mainly through banking channels. Of course, this interaction depends on the phases of the financial cycle, the characteristics of the economy and of course on the exchange rate regime. But, for example, if changes in monetary policy can affect the terms of the loan, they can affect the borrower's ability to pay and therefore also the probability of the borrower's inability to repay the loan. In addition, the increase or tightening of the base rate of monetary policy in an open economy may be accompanied by foreign exchange inflows and may create some pressure on the exchange rate. Monetary policy can also have a great impact on the price of assets, financial and non-financial.

Furthermore, it can affect the willingness of financial intermediaries to take risk. Precisely for these reasons, macroprudential policy may need to intervene.

In cases where there are so-called external effects or secondary effects from monetary policy, macroprudential policy can intervene and try to mitigate these types of risks. For example, if we see that there is an increase in asset prices or non-financial

[13] Cherednychenko, O. , Potential UK Withdrawal from the EU and Access to the Single Market under EU Financial Services Legislation, In-Depth Analysis for the ECON Committee, 2016.

assets, then the use of a macroprudential instrument can inhibit trend in asset prices and prevent this vicious circle where asset prices and credit increase together. In general, I think that these similar transmission channels between monetary and macroprudential policy are a reason for policy coordination and complementarity to realize the respective objectives, while mitigating possible distortions. Arguably, there are times when there may be some confusion over the objective and use of monetary and macroprudential policies.

The authorities must ensure that this confusion is avoided and that any use of these policies is best communicated to the public and in accordance with specific objectives. Scale and direction of interaction will certainly vary and depend on the structure of the financial system; naturally, the argument for interaction may be stronger in cases where we are dealing with a financial system dominated by the banking sector. As mentioned before, the case for interaction can also be affected by the phase of the financial cycle and, of course, by the openness of the economy, because there can be foreign exchange flows that can have an adverse impact on the exchange rate and there can be room for intervention from both policies. The institutional set-up can be determined by experience with macroprudential policy - which as we all know is very new in almost every country - whether these powers have remained with the central bank or have been introduced to other institutions. On the other hand, effective calibration of instruments is quite a difficult task.[14]

References

Aitken, N (1973), "The Effect of the EEC and EFTA on European Trade: A Temporal Cross-Section Analysis," American Economic Review, 63(5): 881-892.

Alesina, A, A Miano and S Stantcheva (2018), "Immigration and Redistribution," NBER Working Paper 24733, October.

Altorjai, S (2013), "Over-qualification of Immigrants in the UK," Essex: ISER WP 2013-11.

Anderson, S, J Waldfogel and D Strömberg, eds (2015), Handbook of Media Economics, Elsevier.

Baldwin, R, ed (2016), Brexit Beckons: Thinking Ahead by Leading Economists, CEPR Press.

Becker, S, T Fetzer and D Novy (2017), "Who Voted for Brexit? A Comprehensive District-level Analysis," Economic Policy 601-651.

Becker, S, P Egger and M von Ehrlich (2017), "EU Regional Policy and the UK" in N Campos and F Coricelli (eds) The Economics of UK-EU Relations: From the Treaty of Rome to the Vote for Brexit, Palgrave.

Begg, I (2017), "Making Sense of the Costs and Benefits of Brexit: Challenges for Economists," Atlantic Economic Journal, 45(3), 299-315.

Bekaert, G, Harvey, C, Lundblad, C and S Siegel (2017) "Economic and Financial Integration in Europe," CESifo DICE, 15 (1): 36-42.

Blanchard, O and J Acalin (2016), "What Does Measured FDI Actually Measure?" PIIE PB17.

Blanchflower, D and C Shadforth (2009) "Fear, Unemployment and Migration," Economic Journal, 119, F136–F182.

Born, B, G Muller, M Schularick and P Sedlacek (2018), "The Costs of Economic Nationalism: Evidence from the Brexit Experiment," University of Bonn, mimeo (June).

Breinlich, H, Leromain, E, Novy D and T Sampson (2018), "The Brexit Vote, InflatiBooth, S.,

[14] Acierno S., "The Carpenter sentence: fundamental rights and limits of the Community legal system", ne-DUE, 2002.

C. Howarth, M. Persson, R. Ruparel and P. Swidlicki (2015) 'What If..? The Consequences, Challenges and Opportunities facing Britain outside the EU', London: Open Europe.
Borchert, Services trade in the UK: what is at stake?, in UK trade policy observatory, 2016, Briefing Paper n. 6.
Bloom, N., P. Romer, S. Terry and J. Van Reenen (2014) 'A Trapped Factors Model of Innovation', Centre for Economic Performance Discussion Paper No.126.
Blerim Peka – European studies: identity, history, European integration, EU institutions, policies and law, Arbëria Design, 2004.
Deloitte (2017), *Brake Block Brexit - How a hard Brexit would impact the German automotive industry*, Deloitte Brexit Briefing 5. Departement Buitenlandse Zaken (2018), *Actieplan Brexit*, November 2018.
Harvey, D. "In light of the guidelines": Brexit and the European Council revisited, in European Law blog, aprile 2017.
Davies, G. Representing the people vs channelling them: constitutional niceties in an age of instant democratic gratification, in European Papers, 2016, vol. 1, n. 3, pp. 1263-1267.
Acierno S., "The Carpenter sentence: fundamental rights and limits of the Community legal system", nedue, 2002.
Adinolfi A.: "Circulation of third-country nationals", in Nascimbene (edited by), The free movement of workers, Giuffrè ed., Milan, Fq. 124.
Bonetti P.: "Principles, rights and duties. Migration policies", in B. Nascimbene (edited by), Right of Foreigners Cedam, Padua, 2004.
Barbera M., Equality and difference in the new era of Community anti-discrimination law, in DLRI, 2003, p. 399
Baratta R., The main innovations of the Lisbon Treaty, in DUE, 2008, 1, p. 22 ff.
Bascherini G., Europa, Cittadinanza, Immigrazione, in Dir. pubb., 2000, p. 767 ff.
Conforti B., International Law, Naples 2014.
Calafà L., Foreigners between politics and rights after Lisbon, in Lav. dir., 2011, 3, p. 527 ff.
Erjona Canaj: "Free movement of persons in the European Union", UET Press, Tirana, 2014.
Iva Zjami "European Union", Modena Press, Tirana 2018.
Erjona Canaj "Free movement of goods and services" WetPress 2019.

Agricultural land protection and concreting, a lost battle?

PhD (C.) Etleva Shore
Agricultural University of Tirana
Directorate of Human Resources and Legal Services
Tirana, Albania

PhD Enkela Hoxha
Agricultural University of Tirana
Department of Rural Tourism Management
Tirana, Albania

Abstract

The years 1991-2001 in Albania were characterized by mass movements of the people living mainly in the mountainous areas towards the capital and the areas around it, without excluding here as well other western lowland cities.
This immediate demographic movement had its negative consequences. Whole areas geographically, located in the hilly and mountainous areas of the country were depopulated, and the land agriculture in these areas remained barren.
Unlike these areas, the western lowlands, in which the largest fund is also found agricultural land, experienced a gradual but unstoppable invasion by migratory movements interior. Large areas of agricultural land were gradually occupied by new residents, who built there without any criteria, and concreted the entire surfaces on the outskirts of the urban areas which for 45 years served as the main agricultural fund, completely alienating their agricultural destination and transforming them into informal residential areas.
In 2006, the Parliament approved the law for the legalization of informal constructions, legislating thus ultimately the damage caused at the expense of agricultural land.
On the other hand, large areas of agricultural land are falling prey to large projects development. The lack of development planning of these areas and the ease with which you can change the destination of agricultural land is irresistibly reducing the fund of the agricultural land in Albania, thus damaging this national property with irreparable consequences.

Keywords: protection of agricultural land, concreting, the law for the legalization of informal buildings, mass movement of the population, lack of urban development planning.

Introduction

Albania is a Balkan country situated across the Adriatic sea from Italy. It is bordered on the southeast by Greece and Macedonia and in the north by Kosova, Montenegro, and a total land area of 28'000 Km^2, with a population of only 2.761.785.
Immediately following the political changes of 1990 – 1991 in Albania, one of the biggest reforms undertaken in Albania to date was the 1991 land reform, which brought about a radical change in land ownership and property rights over agricultural land, from state ownership to private ownership.

Methods

The study methodology in this paper is complex and is based on the combination of techniques such as doctrinal research, comparative methods, descriptive methods, historical methods and legislation analysis.

On 19.07.1991, the Albanian Parliament approved one of the most debated laws in these 30 years, law no. 7501 "For the earth". With its implementation, the agricultural land was divided equally between the members of the cooperative and the employees of the state farms, in accordance with the quality and productivity of the land, as well as the number of family members, who were registered in the civil status, in the August 1991.

Of course, the primary purpose of this law was the transfer of a vital asset such as land, to the benefit of rural families, and guaranteeing the use of agricultural land according to its destination, but the high degree of fragmentation and the creation of small farms led to reduction of agricultural production, and land degradation.

On the other hand, in addition to the provisions of this law, the political, economic and social changes of the years 1990-1991 in Albania were characterized by massive movements of the people who lived mainly in the mountainous areas towards the capital and its surrounding areas, without excluding the cities, others of the western lowlands, in which the economic development of the country was and is concentrated. This immediate demographic movement had its negative consequences. Entire geographical areas, located in the hilly and mountainous areas of the country, were depopulated, and the agricultural land in these areas remained barren, uncultivated for years, so much so that today in most of its parts it has completely lost its natural function, for due to abandonment.

It is now an indisputable fact that a significant part of the surface of the agricultural land, surface that is registered as such in the state cadaster records, does not fulfill its essential characteristic "fertility" as it is not planted/occupied with field plants, orchards, vineyards or olive groves.

Unlike these areas, the western lowlands, in which the largest fund of agricultural land is also found, experienced a gradual but unstoppable invasion by internal migratory movements. The large areas of agricultural lands were gradually occupied by the new residents, who built there without any criteria, rules or plans, and concreted the entire areas on the outskirts of the urban areas of the western lowlands, which for 45 years served as the main agricultural fund, completely alienating their agricultural destination, and transforming them into informal residential areas.

As a result of these displacements and demographic changes, it is estimated that in January 2023 Tirana occupies about 33.5% of the total population, and is one of the most populated counties in the country, followed by Durrës and Fieri with 10.5% and 9, 8 % respectively. As for the other counties, five of them occupy respectively from 1.9% to 4.1% of the total population.

Of course, the increased population in these areas led to the phenomenon of illegal constructions, a phenomenon that was completely out of the control of state bodies. In this process that lasted for about 20 years, impotence, negligence, apathy and in many cases also misunderstanding or confusion of competences between the law-enforcement bodies, which could not stop this phenomenon, also affected it.

Occurring in this irreversible situation, the Albanian state, in 2006, adopted the law for the legalization of informal constructions, thus finally legislating the damage caused at the expense of agricultural land.
The lack of official data, the lack of a land census, or the lack of an accurate cadastral register for agricultural land, makes it difficult to accurately calculate the alienated and ultimately lost surfaces due to this process. However, it is estimated that about 2/3 of informal constructions were located in rural areas and 1/3 in urban areas or peri-urban areas, which have been high capacity, productive land.
According to the data of the Ministry of Agriculture, the total area of agricultural land in the Republic of Albania occupies about 24% (or about 696,000 hectares) of the total area of the country. Of this area, about 562,000 ha or 80% is privately owned and 134,000 ha or 20% is publicly (state) owned.
However, due to informal constructions, expansion of urban areas and alienation for public investment, the agricultural land fund has decreased and is decreasing steadily.
This phenomenon has found a legal basis since Article 14 of Law No. 131/2014 "On an amendment and addition to Law No. 9244, dated 17.6.2004, "On the protection of agricultural land", as amended, in some way allowed construction activity on agricultural land by linking this process with:
- Carrying out and approving regional studies and master plans in order to expand the boundary line for construction also in the areas/surfaces of agricultural land
-Argument and proof of the fact that within the limiting lines of construction in urban areas there is a complete lack of other free physical surfaces
- Verification of the fact that urban land surfaces that can be reused are missing even in the case that by applying the rules and norms of urban planning, old constructions could be demolished
- Argument and proof of the fact that the area of agricultural land on which it will be built (will be urbanized) is non-fertile land, with low fertility or land of the barren category.
The existing legal framework does not support land consolidation.
By land consolidation is understood the procedure/instrument regulated by law that is led by a public authority and used to adjust the property structure in rural areas through a comprehensive reallocation of parcels, coordinated between the owners and users of the land, in order to reduce land fragmentation, enable farm expansion and/or achieve other public objectives, including nature restoration and infrastructure construction
Current legislation mainly focuses on addressing issues related to agricultural land management, protection and land administration, but does not address any of the key issues related to agricultural land consolidation. This thing, coupled with the hunger/ desire of their owners to make quick profits from agricultural lands, has practically alienated the way of thinking of their owners, who do not see agricultural land as an economic resource according to the destination of it, but as a means to ensure profits that originate from construction.
And unfortunately, this process is not stopping. The peripheral area of the main cities of the country, even though it is categorized as agricultural land, today is almost

alienated in its destination. The legalized constructions within the reform of 2006 are mostly concentrated in these areas, but also due to the gradual expansion of the yellow lines of the cities.
On the other hand, large areas of agricultural lands are falling prey to large development projects, mainly in agricultural areas, with the aim of building tourist complexes or large strategic investments. Unfortunately, even the construction of complexes or investments of a strategic character or of national importance affect the surfaces of agricultural land. Also, this bitter truth finds legal support in point 1 of article 27 of law no. 55/2015 "On strategic investments in the Republic of Albania" which legislates the fact that lands, forests, agricultural lands can be made available for the development, realization and implementation of strategic investment projects. The SIC, Strategic Investments Committee during the year 2019-2020 has reviewed and approved 7 strategic projects aimed at investments in the field of tourism and has approved only 1 strategic project aimed at the field of agriculture and fishing.

Year	2019		2020	
	Total	Approved	Total	Approved
Projects	8	5	7	5
Tourism	6	4	5	3
Agriculture and Fisheries	1	0	1	1
Priority development area	1	1	-	-
TEDA			1	1

These data clearly show the fact mentioned mostly in this material that strategic constructions/investments that mean massive occupation of agricultural land are a phenomenon that is spreading throughout the country.

Conclusions

Finally, the lack of long-term planning for the development of agricultural areas, coupled with the legal/technical ease with which the destination can be changed as a cadastral item from agricultural land to land for construction, as well as with the same legal justification of strategic investments as a necessity for development of the economy in Albania, the fund of agricultural land in Albania is decreasing in an alarming manner, unfortunately unstoppable, damaging this national wealth with irreparable consequences for the future.

References

Francesco Galgano, Private Law, 2006.
Kushtetuta e Republikës së Shqipërisë.
Haxhi P., Haxhi E., E drejta agrare e Shqipërisë, Tiranë 2008.
Ligji nr.7501, datë19.07.1991 "Për tokën".

Ligji nr.7512, dt 10.08.1991 "Për sanksionimin dhe mbrojtjen e pronës private të nismës së lirë, të veprimtaruive private dhe privatizimit"
Ligji nr.8053, dt 21.12.1995 "Për kalimin në pronësi pa kundërshpërblim të tokës bujqësore.
Ligji nr. 7698, dt 15.04.1993 "Për kthimin dhe kompensimin e pronave ish-pronarëve"
Ligji nr.7699, dt 21.04.1993 "Për kompensimin në vlerë të ish-pronarëve të tokës bujqësore".
Ligji nr.9235, datë 29.07.2004 "Për kthimin dhe kompensimin e pronës"
Ligji nr.9583, datë 17.07.2004 "Për disa shtesa e ndryshime në ligjin nr.9235, "Për kthimin dhe kompensimin e pronës"
Ligji nr.9482, datë 03.04.2006 "Për legalizimin, urbanizimin dhe integrimin e ndërtimeve pa leje"
Ligji nr.141,dt 02.05.2013, "Për disa shtesa e ndryshimenë ligjin nr.9482, datë 03.04.2006"Për legalizimin, urbanizimin dhe integrimin e ndërtimeve pa leje"
Ligj Nr. 171/2014 "Për përfundimin e procedurave ligjore të kalimit të tokës bujqësore të ish-ndërmarrjeve bujqësore në pronësi të përfituesve"
Raport Vjetor 2020 AIDA Agjencia Shqiptare e Zhvillimit të Investimeve
Instat – "Popullsia e Shqipërisë" – 1 Janar 2023
"Udhezuesi ligjor per konsolidimin e tokes", FAO, 2022, Prishtine, Veršinskas, T., Vidar, M., Hartvigsen, M., Mitic Arsova, K., van Holst, F., Gorgan, M.

Examining hate speech in Albanian online media: An in-depth study of Social Networks

Dr. Pranvera Skana
University of "Aleksandër Moisiu", Durrës, Albania

Abstract

This paper examines one of the most pressing challenges faced by online media in Albania, namely, the proliferation of hate speech. While media technology has democratized information dissemination, it has also unleashed an uncontrolled torrent of content. The rise of "citizen journalism" has granted individuals unprecedented freedom of expression, yet it has also fostered anonymity and discriminatory language. This study explores the specific manifestations of this phenomenon in Albanian social networks, examines the reasons for the prevalence of unethical discourse, and investigates the attitudes of online portal managers towards this issue, which often emerges in the quest for clicks and sensational news. This topic holds significant importance, not only in light of international reports, such as the 2022 US Department of State report and the 2023 OSCE findings, both highlighting Albania's high incidence of hate speech in the region but also due to the infringement upon the dignity and privacy of ordinary citizens. The research methodology employed is qualitative, featuring in-depth interviews with the chief editors and founders of the five most prominent and long-standing portals in Albania: CNA.al, Boldnews.al, Syri.net, Dosja.al, and Balkanweb.com. This article does not intend to merely monitor online media but aims to provide an analytical-critical examination through the perspectives of key stakeholders who are intimately connected with this societal issue, making a significant impact.

Keywords: Hate Speech, Online Media, Citizen Journalism, Unethical Discourse, Discriminatory Language.

Introduction

Democratization of information, freedom of expression, public participation in communication, etc. have brought a new phenomenon, the "discriminatory language" in social networks. This phenomenon is very present in Albanian society, a concern raised by the international factor, civil society, the public itself, or even the community of professional journalists. The manifestation of incitement to hatred seems to originate from parliamentary podiums, the media, from social networks, but has a wide diffusion, especially among young people, as main internet users. Referred to the official website of the European Union, in common language, "hate speech" refers to offensive discourse targeting a group or an individual based on inherent characteristics (such as race, religion or gender) that may threaten social peace.[1] The report of the U.S. Department of State qualifies the media in Albania as having serious problems. Observers asserted that the government, political parties, businesses, and criminal groups sought to influence media in inappropriate, nontransparent ways. There are free media, with the proliferation of media outlets,

[1] https://www.un.org/en/hate-speech/understanding-hate-speech/what-is-hate-speech#

especially online, representing a broad spectrum of views with no accountability, often without attribution. There is little independent media, however, as most media outlets are owned by prominent businesspersons with sprawling interests, who use their media outlets to advance their interests, including by gaining favor and promoting their interests with political parties.[2] The responsible lack, especially of online media, of challenges to clickability to ensure advertising survives in the market, has led to an uncontrolled, coarse "media content" and therefore orienting the public, expressing its participation in communication with discriminatory language, mainly directed against social and political phenomena in conflict with their interests, against businesses, corrupt politicians, or against phenomena at their expense.[3] Fines imposed, corruption of the big television media has reached the portals, which have low costs to start working and anyone can have a portal where to write, blackmail, and carry out fines to earn money.[4] While traditional journalism was more responsible and professional in its mission, digital journalism is favorable in terms of functioning, allowing unlimited spaces of expression, becoming the potential or wide-ranging arena of the "citizen journalist".

2. Literature Review

"We must confront bigotry by working to tackle the hate that spreads like wildfire across the internet," Antonio Guterres, United Nations Secretary-General,[5] has expressed concern about the presence of hate speech in the online media. To provide a unified framework for the United Nations to address the issue globally, the UN Strategy and Plan of Action on Hate Speech defines hate speech as…"any kind of communication in speech, writing or behavior, that attacks or uses pejorative or discriminatory language with reference to a person or a group on the basis of who they are, in other words, based on their religion, ethnicity, nationality, race, color, descent, gender or other identity factor."[6] Individual identities are made up of multiple aspects, including Ethnicity, Politics, Religion, and Economic status. While this diversity is a cause for celebration, the multiple identities that people possess can cumulatively result in multiple levels of discrimination. This, in turn, can make an individual more vulnerable to hate crimes, that are motivated by discrimination against an individual's identity.[7] How do foreign countries regulate hate speech on the Internet? In many ways, the debates confronting courts, legislatures, and the public about how to reconcile the competing values of free expression and nondiscrimination have been around for a century or longer. Democracies have varied in their philosophical approaches to these questions, as rapidly changing

[2]https://www.state.gov/wp-content/uploads/2023/02/415610_ALBANIA-2022-HUMAN-RIGHTS-REPORT.pdf

[3] Çipa, A., President of the Union of Journalists of Albania, interview conducted for this paper, 4 October 2023.

[4] Fundo, E., founder of portal Cna.al, interview conducted for this paper, 1 October 2023.

5 UN Secretary-General António Guterres' remarks, as delivered, at the High-Level Special Event marking the International Day to Combat Islamophobia, in New York, 10 March 2023. https://press.un.org/en/2023/sgsm21719.doc.htm

[6] https://www.un.org/en/hate-speech/understanding-hate-speech/what-is-hate-speech#

[7] Mossie, Z., & Wang, J.-H. (2020). Vulnerable community identification using hate speech detection on social media. Information Processing & Management, https://doi.org/10.1016/j.ipm.2019.102087

communications technologies have raised technical challenges of monitoring and responding to incitement and dangerous disinformation.[8] In the United States, social media companies are granted a significant degree of autonomy in managing and moderating their content, which includes enforcing hate speech rules. This approach is primarily rooted in the First Amendment to the U.S. Constitution, which protects freedom of speech and expression. It's important to note that this stance has been the subject of ongoing debate and discussion, as it presents challenges related to the responsibility of social media platforms in addressing harmful content while balancing the principles of free speech and open dialogue. This approach differs from that of some other countries, such as those in the European Union, which have implemented more stringent regulations and laws aimed at combating hate speech and disinformation on social media platforms. Germany for example, can force companies to remove posts within certain time periods. In hate crimes around the world echo changes in the political climate, and social media can magnify discord. At their most extreme, rumors and invective disseminated online have contributed to violence ranging from lynchings to ethnic cleansing.[9] The giant 'Meta' on the official website maintains this stance about hate speech; We believe that people use their voice and connect more freely when they don't feel attacked on the basis of who they are. That is why we don't allow hate speech on Facebook. It creates an environment of intimidation and exclusion, and in some cases may promote offline violence.[10] While these advances are indeed encouraging, newer and more subtle forms of harmful content are inflicting the online world, which most often go unnoticed. One such form of malicious content is fear speech, which involves spreading fear about one or more target communities online and, eventually, the physical world. [11] Not only is "hate speech" a contested term in a definitional sense, but a focus on illegal hate speech risks conceptualizing racism on social media as something external to platforms that can be simply fought through technical fixes such as machine learning.[12]

3. Methodology

Firstly, the methodology used in this study is qualitative. Through qualitative interviews we will encounter the attitudes of the chief editors and founders of the five most important portals in Albania, in terms of longevity, clickability, and reputation: such as Elvi Fundo, portal founder of *CNA.al*, Enton Abilekaj, founder of *Dosja.al*, Leonard Bakillari, chief editor of *Boldnews.al*, Hysni Gurra the portal *Syri.net*, and Adi Shkembi, chief editor of *Balkanweb.com.* We will have an interview with the head

[8] Zachary Laub (2019). Hate Speech on Social Media: Global Comparisons https://indianstrategicknowledgeonline.com/web/Hate

[9] Zachary Laub (2019) Hate Speech on Social Media: Global Comparisons https://indianstrategicknowledgeonline.com/web/Hate

[10] https://transparency.fb.com/policies/community-standards/hate-speech/

[11] Punyajoy Saha Kiran Garimella, On the rise of fear speech in online social media Edited by Jeffrey Ullman, Stanford University (Retired), Stanford, CA; received July 22, 2022; accepted November 29, 2022. https://www.pnas.org/doi/epdf/10.1073/pnas.2212270120

[12] Matamoros-Fernández, A., & Farkas, J. (2021). Racism, hate speech, and social media: A systematic review and critique. Television & New Media, 22/2 https://journals.sagepub.com/doi/10.1177/1527476420982230

of the Union of Albanian Journalists, Aleksander Cipa, and with communication professor Zylyftar Bregu.

Secondly, the manifestation of discriminatory language also originates from the young generation, who are major users of technology. Therefore, we interviewed a focus group of 10 young people, to understand their point of view on this situation.

Thirdly, the paper is based on a combination of primary and secondary sources, articles, and different scientific reports, which create the theoretical basis of this manuscript.

The use of qualitative methodology in this study holds several important advantages, particularly for researching complex social issues like discriminatory language in online media outlets. Some of the reasons why this methodology is important:

- **In-Depth Understanding:** Qualitative research allows for a deeper and more nuanced understanding of the attitudes, perceptions, and experiences of individuals. By conducting interviews with chief editors, founders of online portals, a head of the Union of Albanian Journalists, and a communication professor insight is gained into their perspectives and opinions on the issue of discriminatory language in the Albanian media landscape.
- **Contextualization:** Qualitative research helps contextualize the problem. It allows us to explore the specific context of Albania, including the longevity, clickability, and reputation of online portals, which are important factors in understanding how and why discriminatory language may be used.
- **Subjective Insights:** Discriminatory language is a complex issue that involves not just the content but also the motivations, intentions, and beliefs of those who use it.
- **Diverse Perspectives:** The study involves a diverse set of participants, including chief editors, founders, journalists, communication professors, and young people. Qualitative research allows us to explore how different groups and generations perceive and interact with discriminatory language, providing a comprehensive view of the issue.

4. Results and Discussion

The government did not restrict or disrupt access to the internet or censor online content, and there were no credible reports the government monitored private online communications without appropriate legal authority.[13] According to Article 3.8 of the Albanian Law on Protection from Discrimination, hate speech is: "Any form of public expression, through any means, of the promotion, incitement of denigration, hatred or vilification, any harassment, insult, negative stereotyping, stigmatization or threat against a person or group of persons, as well as any justification of all forms of expression on the basis of a non-exhaustive list of grounds set forth in Article 1 of this law."[14] Hate speech in social networks has its own characteristics. These include the ease of anonymous publication of the content, the high speed of its distribution,

[13] The Report of the US Department of State, published in March 2023, "ALBANIA 2022 HUMAN RIGHTS REPORT"https://www.state.gov/wp-content/uploads/2023/02/415610_ALBANIA-2022-HUMAN-RIGHTS-REPORT.pdf

[14] Republic of Albania. The Assembly. Law on Protection from Discrimination No 10 221 dated 4.2.2010. Amended by law No 124/2020. p. 3. Available at https://rm.coe.int/lmd-updated-version-englishtranslation/1680a0c1fc

and the difficulty of bringing offenders to justice in accordance with the law. All this makes social networks the most dangerous channel for the spread of hate speech.[15] The results of the Albanian Media Institute's report on incitement to hatred state that, hatred and discriminatory language have been more prevalent against groups, individuals, and communities because of ethnicity (38.5%), gender (20.5%), and sexual orientation (12%). According to the sentimental analysis, the intensity of hate and discrimination speech reaches the average score of level 3. This means that the gravity of the discourse is intermediate and is characterized by insulting, offensive, but not violent narratives. However, this does not diminish the negative impact that these disruptive narratives have on individuals, groups, and affected communities, as well as on society as a whole[16]. According to the former head of the Audiovisual Media Agency, Gentian Sala, incitement to hatred is included in the Law on "Audiovisual Media", from which the Broadcasting Code derives. The Law contains two articles that strictly define obligations and limitations for broadcasters; Articles 32 and 76, according to which: *"Audiovisual media distribution operator does not broadcast programs with content that incites hatred against racial, gender, religious, ethnic, national and any other form of discrimination".* These bans are also well defined in the Broadcasting Code, whose "guardian" is the Complaints Council of the Audiovisual Media Agency in Albania.[17]

If the audiovisual media are controlled by law, here are the recommendations of the portal directors regarding online information chaos. The language of hatred is transmitted because of the lack of ethics, lack of experience, and what has already become a major problem for the Albanian media. Fines imposed, corruption by the large television media has come up to the portals, which have low costs to start working and anyone can have a portal and commence, write, blackmail, and impose fines to get money, which is a criminal act.[18] Regarding the censorship or not of online news, the portal editor of Syri.net Hyni Gurra admits that "*in our case the comments are moderate*". According to him, the media should put a barrier against hate speech. He lists that, the main causes of this discriminatory discourse are the high polarization of Albanian society by politics, the low cultural level, and the Balkan character.[19] The necessity to have a law that regulates online "media content" and the establishment of an Ethics Code would differentiate the media with a high professional level and valuable resources in the journalism market and rank the media producing false news, the language of hatred, fines, blackmail, which have already turned into a very disturbing phenomenon for Albanian society".[20] Online information should be censored, only in cases where honor and dignity are violated, or when information is published, that is not related to the subject of the written article. While this is an unregulated sector, measures should be taken to ensure that online information is based on clear and carefully defined rules, so as not to affect the real information and

[15] OSCE Presence in Albania, Toolkit on monitoring hate speech and genderbased discrimination in Albania (Tirana, 2021) https://www.osce.org/files/f/documents/6/8/511744.pdf

[16]https://www.institutemedia.org/wp-content/uploads/2022/07/Raport-Monitorimi-pe%CC%88r-gjuhe%CC%88n-e-urrejtjes-ne%CC%88-Shqipe%CC%88ri.pdf

[17] Report of AMA, Hate speech in audiovisual media, 11 November 2018. https://ama.gov.al/wp-content/uploads/2019/09/HATE-SPEECH-1.pdf

[18] Fundo, E., founder of the portal Cna.al, interview conducted for this paper, 1 October 2023.

[19] Gurra, H., chief editor of the portal Syri.net, interview conducted for this paper, 2 October 2023

[20] Fundo, E., founder of the portal Cna.al, interview conducted for this paper, 1 October 2023.

professional journalists' job. Therefore, this cannot be done by the government or its institutions, but requires broad consultation of all the actors involved in the media and information field".[21] A poor country produces hate speech on social networks. A small part of it is reflected in the portals, as representing an angry audience for personal failure. A country where politics is confrontational and dominant produces hate speech in the media and portals. Because the parties fight with each other by all means. A country where there is no fair competition in any field produces hate speech as the only way to compensate for the lack of competition. Moreover, in a country where school, social, and family education is bad, this reflects a language of hatred spread everywhere. [22] In Albania, the portals are divided into two categories, those that are financed to be such, that is like a 'gun in someone's hand' to hit someone, but there are also portals that use this language to attract attention, and consequently clicks.[23]

Some feedback from the young generation on the grounds of discriminatory speech in social networks.

"Being unsuccessful makes you address others with hate speech"
Edriola Preka, student 21 years old
Incitement to hatred arises from their dissatisfaction with the place where they live.
'Pamela Dervishi student 20 years old.
Social networks are seen as a way to empty out all the fluff
Ana Zeneli, student 19 years old
Anonymity and frustration from the past
Evita Tahiri, student 20 years old"
Lack of commitment to work and sport leaves room for long web browsing.
Amanda Dushku, student 21 years old

5. Conclusion

Hate speech is fueled by the law's absence. Strengthening the law and punishing by law would be better for journalism and freedom of expression, than imposing censorship on online information. Communication professor Zylyftar Bregu is against censorship of online information but is in favor of regulating the structure of media that publish online information. "By fixing this digital and media infrastructure, it is undeniable that improvement will be at high levels. The organization's guidelines, its improvement, and the detection of media organizations will lead to online information advancement.[24] Educating and respecting ethics from the portal itself is an essential contribution, which gives results in the long term. Online media should have a strong filter in this regard, where cases of defamation, and hatred, especially those of a nationalistic and religious character, should be addressed to the organs of justice. The best online information filter is the reader. He can tell the difference between true and false information. Any attempt to censor online information,

[21] Bakillari, L., chief editor of the portal Boldnew.al, interview conducted for this paper, 3 October 2023.
[22] Alibeaj, E., founder of the portal Dosja.al, interview conducted for this paper, 4 October 2023.
[23] Shkembi A., founder of the portal Balkanweb.com, interview conducted for this paper, 5 October 2023.
[24] Bregu, Z., professor of communication, interview conducted for this paper, 5 October 2023.

especially in today's times, when technology has advanced to an extraordinary level, would be impossible.

The debate on addressing hate speech online is multifaceted, involving discussions about the role of law, the responsibility of media organizations, and the importance of media literacy. While some advocate for strong legal frameworks to address online hate speech, others emphasize the need to balance regulation with freedom of expression and empower users to differentiate between credible and false information. The approach taken may vary by region and legal traditions, but it should be guided by a commitment to both addressing harmful content and preserving fundamental freedoms. Recent studies in the field of online hate speech have highlighted the importance of a multi-pronged approach that includes legal measures, self-regulation by media organizations, and educational initiatives to effectively combat hate speech while upholding freedom of expression.[25] Moreover, it is crucial to recognize the dynamic and evolving nature of online hate speech, requiring adaptive solutions that account for emerging forms of harmful content and the ever-changing digital landscape.[26]

References

Davidson, E., Vaast, E. (2010). "Digital Discrimination: The Case of Airbnb.com." Proceedings of the Thirty-First International Conference on Information Systems.

Matamoros-Fernández, A., & Farkas, J. (2021). Racism, *hate speech, and social media: A systematic review and critique. Television & New Media*, 22/2. https://journals.sagepub.com/doi/10.1177/1527476420982230

Mossie, Z., & Wang, J.-H. (2020). Vulnerable *community identification using hate speech detection on social media. Information Processing & Management* https://doi.org/10.1016/j.ipm.2019.102087

Punyajoy Saha Kiran Garimella, *On the rise of fear speech in online social media* Edited by Jeffrey Ullman, Stanford University (Retired), Stanford, CA; received July 22, 2022; accepted November 29, 2022. https://www.pnas.org/doi/epdf/10.1073/pnas.2212270120

Smith, J. (2020). "Online Hate Speech: A Multidisciplinary Perspective." International Journal of Communication, 14, 2861-2883.

Zachary Laub (2019) *Hate Speech on Social Media: Global Comparisons* https://indianstrategicknowledgeonline.com/web/Hate

Qualitative interviews

Abilekaj, E., founder of the portal *Dosja.al*, interview made for this newspaper, 4 October 2023.

Bakillari, L., chief editor of the portal *Boldnew.al*, interview conducted for this article, 3 October 2023

Bregu, Z., professor of communication, interview conducted for this article, 5 October 2023

Çipa, A., President of the Union of Journalists of Albania, interview conducted for this article, 10 October 2023

Fundo, E., founder of the portal *Cna.al*, interview conducted for this article, 1 October 2023.

Gurra, H., chief editor of the portal *Syri.net,* interview conducted for this article, 2 October 2023

[25] Smith, J. (2020). "Online Hate Speech: A Multidisciplinary Perspective." International Journal of Communication, 14, 2861-2883.

[26] Davidson, E., Vaast, E. (2010). "Digital Discrimination: The Case of Airbnb.com." Proceedings of the Thirty-First International Conference on Information Systems.

Shkembi A., chief editor of the portal *Balkanweb, com*, interview conducted for this article, 5 October 2023.

Monitoring Reports

The Report of the US Department of State, published in March 2023, "ALBANIA 2022 HUMAN RIGHTS REPORT" https://www.state.gov/wp-content/uploads/2023/02/415610_ALBANIA-2022-HUMAN-RIGHTS-REPORT.pdf
The Report of AMA, Hate speech in audiovisual media, 11 November 2018. https://ama.gov.al/wp-content/uploads/2019/09/HATE-SPEECH-1.pdf
Report published by OSCE Presence in Albania, Toolkit on monitoring hate speech and genderbased discrimination in Albania (Tirana, 2021) https://www.osce.org/files/f/documents/6/8/511744.pdf
Report of the Albanian Media Institute, Monitoring hate speech in Albania, January 2012 - April 2022. https://www.institutemedia.org/wp-content/uploads/2022/07/Raport-Monitorimi-pe%Ç%88r-gjuhe%Ç%88n-e-urrejtjes-ne%Ç%88-Shqipe%Ç%88ri.pdf

Links
https://www.osfa.al/sites/default/files/monitorimi_per_gjuhen_e_urrejtjes_ne_gazeta_dhe_media_online_3.pdf
https://politiko.al/e-tjera/voa-shqetesim-gjuha-e-urrejtjes-ne-politike-media-dhe-rrjetet-sociale-ne-i470558
https://knowledgecenter.ubt-uni.net/cgi/vieëcontent.cgi?article=2916&context=etd
https://rm.coe.int/lmd-updated-version-englishtranslation/1680a0c1fc
https://www.un.org/en/hate-speech/understanding-hate-speech/what-is-hate-speech#
https://transparency.fb.com/policies/community-standards/hate-speech/
https://www.un.org/en/hate-speech/understanding-hate-speech/what-is-hate-speech#

A review on the construction joints in reinforced concrete structures

Enio Deneko
Polytechnic University of Tirana, Faculty of Civil Engineering, Tirana, Albania

Abstract

In very large volumes of concrete structure work, or when carrying out structural work in stages, something that is very important to pay attention to in reinforced concrete construction is the temporary stoppage that is likely to occur and cannot be avoided. This temporary downtime can last a day, overnight, or just half an hour. If the connection is followed by the concrete hardening process, then this connection will not get good results, so a connection construction, or what is usually called a joint, must be made. Connecting the concrete reference is something that is deemed necessary for temporarily stopping the continuity of casting the concrete reference namely by placing a connection system. In some occasions is needed to break the continuity concrete placing and to construct a joint for structural reasons. The connection system between the old concrete and the new one, the positioning and the type of the joints, depends on the purpose of the connection. With the right connection system, it will produce adequate connections.
This paper aims to provide a deep analysis of concrete joints, focusing on their types, design considerations, and implications on the overall performance and durability of concrete structures. By understanding these aspects, engineers can ensure the structural integrity and performance of concrete structures. A systematic understanding of the different types of concrete joints, their design considerations, and their implications during pouring is essential for ensuring long-term durability and minimizing potential issues such as cracking and differential settlement.

Keywords: Construction joint, expansion joint, concrete, vertical connections, horizontal connections, waterstop.

Introduction

When planning a connection between old concrete that has hardened or is in the process of hardening, with the new concrete, a good connection is attempted, so that the planner considers sufficient to overcome the occurrence of cracks. Concrete connections can be grouped into two groups:

- Do not allow concrete movement on the other side.
- Allows concrete movement on the other side.

The type of concrete connection joint mentioned previously aims to unite new concrete with old concrete which has undergone a hardening process so that the uniform appearance of the concrete appears unified and uniform throughout the joint. In practice, it is very difficult to get 100% unification. With the result that there is always weakening in the joint construction. Therefore, this weakening should be avoided wherever possible. Concrete pouring is stopped at appropriate places to create a construction joint so that uniform weakening can be achieved. Several types of concrete joints are:

1. Contraction joints. They provide the possibility of concrete shrinkage at the joint

surface which limits the relative movement of the other side of the surface.
2. Control joints (Dummy Contraction Joint). They work the same as contraction joints and are formed as a gap.
3. Expansion joints. The meeting of the two concrete surfaces provides sufficient expansion towards the joint surface. This type of joint allows shrinkage of the concrete, but can resist relative movement in other directions.
4. Isolation joints. They separate totally two converging concrete surfaces and allow complete freedom of relative movement.
Careful consideration needs to be given to the joint construction requirements for all types of concrete structures mentioned above. The placement and type of connection may at some point be influenced by the desired architectural and structural aspects and sometimes are made to block water (watertight joint). To ensure that the joint construction works well, good methods and careful attention must be paid to the details of design and implementation.

1. Construction joints

Construction joint is a way to connect the old concrete surface with the new concrete surface so that it adheres well and can withstand movement related to transverse forces in joint construction. An unplanned stop during the casting of the concrete form requires a construction joint. Several stops during continuous concrete casting can be seen in advance during planning or prioritized immediately at the start of the casting process, thus allowing the placement of several connection systems that can be planned in advance. Good planning will result in concreting stops in the right places to overcome shrinkage of the concrete and the possibility of selecting the use of other types of connections, to avoid making difficult joint constructions. If this type of connection is difficult to implement, then the construction of the connection must be planned for a position in the structure where the presence of weakening can be evenly distributed, resulting in less structural effect. Mistakes in making connections will weaken the structure and result in water penetration, worsening the concrete quality and appearance.
Construction joints must be placed in positions where the shear force is minimal. The joint must have a good angle to the axis so that axial compression forces acting perpendicular to the joint do not tend to cause sliding along weak planes.
Concrete joints for columns must be placed continuously with beams directly on the concrete surface which is still soft or in the process of hardening. On the surface to be connected, after two hours of casting a notch must be made around the column so that there is a perfect concrete column connection.
Horizontal joints are not made in the floor slab while various vertical joints are placed close to the middle of the slab. In large concrete works such as dams, continuous casting is not carried out from the bottom to the top. So for this reason the casting is carried out in sections or blocks (the area of each block is not more than 5 m^2 and not more than 1.5 m high, and each casting is done in 4 layers 35-40 cm high.
If the joint construction is made on a beam or slab, the end of the concrete form will

form a natural slope, and a soft surface will form and a wasp's nest will occur on the surface of the slope. Concreting stops vertically with boards or blocks so that vertical joints are formed. To help transfer transverse forces in joints in the vertical direction, one of the choices is to choose a wooden peg or cover that helps mechanical contact, which can be placed approximately in the middle of the slab gap. As a rule, it is recommended that the cut be approximately 15 cm deep. Steel reinforcement must not be cut at the joint. The timber cover can be removed after three days of concreting to expose the joint surfaces. After the joint cover scaffolding boards are dismantled, within four hours the concrete surface must be cleaned and the loose material roughened to remove the smooth surface. If the concrete surface is more than four hours old, a sandblaster can be used instead of a wire brush to reveal the coarse aggregate. All loose material must be washed off immediately before casting new concrete, a thin layer of mortar being sprinkled on the surface of the areas to be joined. Mortar must have the same composition as the concrete content, namely sand and cement in the same ratio but does not use coarse aggregate. New concrete must be compacted with a vibration tool so that the mortar can adhere.

Figure 1 Realization of construction joints during pouring of concrete

After casting the new concrete mold which is compacted at the top of the horizontal direction, a film and a porous layer appear on the concrete surface. Material found on these soft surfaces must be removed immediately before any type of connection is made. If the surfaces to be joined are less than four hours old when the joint is made, the loose material must be removed first, after which new concrete casting can be carried out. The concrete mixture, in order to fill parts of the old concrete surface must be compacted using a vibrator. If the new concrete mixture is too thick then perfect fusion will not occur, whereas if it is too liquid the material will separate and form a thick film layer. If joints are made in concrete that is generally more than 4 hours old, the surface must be cleaned first. If the concrete is less than three days old, it is generally still relatively easy to work on, namely by brushing it with a wire brush. A hammer or sandblaster is used to expose the concrete material without cutting the concrete. Before casting, the concrete surface is cleaned with water to remove loose material or material stuck to the surface. Mortar consisting of cement and sand with a size appropriate to the quality of the concrete must be layered, then casting is carried out while compacting.

For large concrete casting work, joints are often made in more than three days. So in this case it is necessary to use a hand tool or hydraulic machine to roughen the surface. On very large surfaces, it is necessary to use a Hydro Jet High Pressure Washer to clean the surface where the connection will be made. Then the casting

immediately takes place. If passes a long time since surface cleaning, contamination of the surface will occur by dirt, for example, dust, which cannot be cleaned with a Hydro Jet. It requires surface coverage. Immediately before the new concrete is poured, the surface needs to be sprinkled with mortar of a quality appropriate to the composition of the new concrete, and immediately the new concrete is poured, accompanied by compaction.

Waterproof Coating is especially necessary to hold water for waterproof purposes in construction working in water presence, especially regarding hydraulic pressure. For various conditions, vertical joints require an effective layer because this tends to open as well as due to concrete shrinkage. Generally, the construction of horizontal joints in walls is intended as a seal if the surface contact is really tight and ensures that the joints are watertight. There are two types of water stops that can be used as seals:

1. Metal Waterbars. This is usually 9" wide and increases in width as needed by connecting to the sides and forming a partition.

2. Flexible Waterstop. Can consist of solid rubber or PVC. It is flexible and can withstand forces acting on surfaces that are not flat.

Figure 3 Flexible waterstop joint

2. Types of joints

2.1 Contraction joints

This joint aims to give freedom to shrink on the surface, but the relative displacement on the surface is still restricted. Contraction joints are made in concrete structures to reduce the strain force produced when concrete compression occurs, otherwise,

cracks will occur when the concrete dries and shrinks. Concrete strains can be corrected with concrete reinforcement. Concrete reinforcement can withstand shrinkage movements and prevent large cracks creation. Contraction joints are also used to resist contractions that occur due to temperature drops during casting.

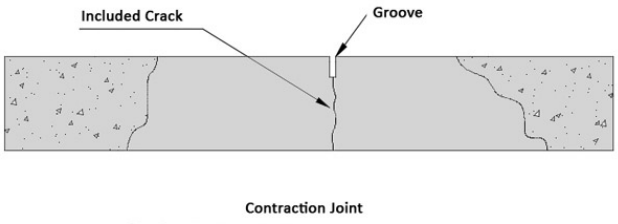


Figure 4 Sawed contraction joint

Contraction joints must be placed where the force concentration caused by concrete shrinkage occurs, especially in:
1. Where there is a steep change in the cross-section.
2. Where there are irregular surfaces of floors or slabs.
3. In long structures such as walls, and road pavement, where the reinforcement is not sufficient to prevent the formation of cracks due to shrinkage.
4. In large pavement areas, for example in thin foundation plates and underground slabs. Contraction joint spacing is generally indicated by the planner or engineering supervisor.
Maximum joint distance for concrete pavement (based on the coarse aggregate used), are given in Table 1.

Table 1. Maximum joint distance for concrete pavement.

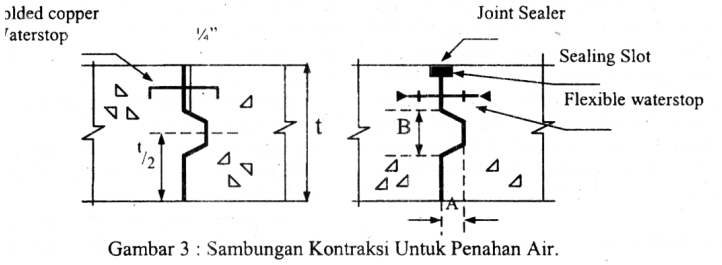
Concrete (coarse aggregate)	Distance between joints (m)
Crushed granite	7.60
Crushed limestone	6.00
Calcareous gravel	6.00
Siliceous gravel	4.50
Gravel less than 20mm diameter	4.50

Large concrete surfaces must be divided into squares that means there are contraction joints corresponding to the planned casting stops. Contraction joints are required only in structures under pressure. If concrete is not under pressure then shrinkage will not cause cracks. In structures such as water reservoirs and water tanks, water-retaining contraction joints need to be considered in construction. Figure 4 shows water-retaining contraction joint, using either a metal waterbar or a flexible waterstop to prevent water penetration. The dimensions of the contraction joints for watertight

structures such as slabs on the ground, pavements, retaining walls are given in figure 4 and table 2.

Table 2: Dimensions of contraction joints

Dimensions of contraction joints (mm)		
Slab depth (t)	Thickness (A)	Height (B)
130	19.0	38
150	19.0	44.5
180	25.5	51
200	32	57
230	38	63.5



Gambar 3 : Sambungan Kontraksi Untuk Penahan Air.

Figure 4: Contraction joints for watertight structures

Contraction joints are placed in weak vertical planes in a slab or wall. This is usually formed as a locking connection to control vertical movement, however, the opposite end of the post is covered with a joint sealer so that it can be easily inserted into the gap and is also used to control the shear force. The protrusions between the old concrete and the new concrete must be removed by coating the surface using emulsified asphalt.

2.2 Control joints

The control joint (dummy contraction joint), is a soft flat plate made for a structure that needs a gap. This joint works as a contraction joint, which serves to concentrate shrinkage stress on a weak section, and will localize the crack below the gap. Mechanical filling of irregular cracks provides displacement of transverse joint loads and protects the relative motion of the joint surfaces.
As long as this joint is an alternative to functioning as a contraction joint, the location and placement of the contraction joint are as follows: The main control joint is used

in slab layers that are too thin and can be easily formed with gap-making equipment. For plates that have a thickness 5 cm to 8 cm and the subgrade is not good, cracks tend to occur. On this type of pavement, control joints are usually placed at intervals of 90 cm to 120 cm.
Control joints can be made in three ways, during casting:
1. Control joints can be made at the side when the cast button is inserted into the gap-making metal plate. The width of the gap can be taken to be l/8 or can be widened to l/4 or l/3 of the slab depth.
2. After the concrete mixture has been poured and finished, the joints can be made using a gap tool.
3. After the concrete mix has hardened, sawcut control joints can be made. This connection must be made as soon as possible, especially to avoid shrinkage, mainly during rising temperatures. This is usually done in the morning after the concrete is poured. An electric sawcut joint maker can be used to get straight joint lines. If the concrete has hardened, a diamond knife is used to scrape. The width of this joint is usually 3 mm to 6 mm, and the depth should be at least l/5 of the slab depth and not less than the size of the largest aggregate. Immediately after abrading the gap, the joint should be sprayed with water to remove any remaining dirt.

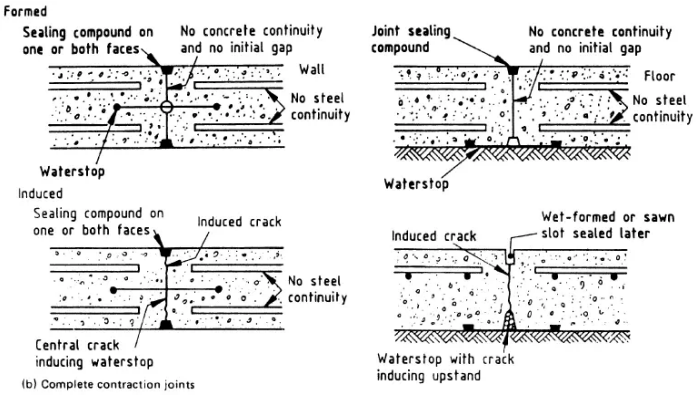
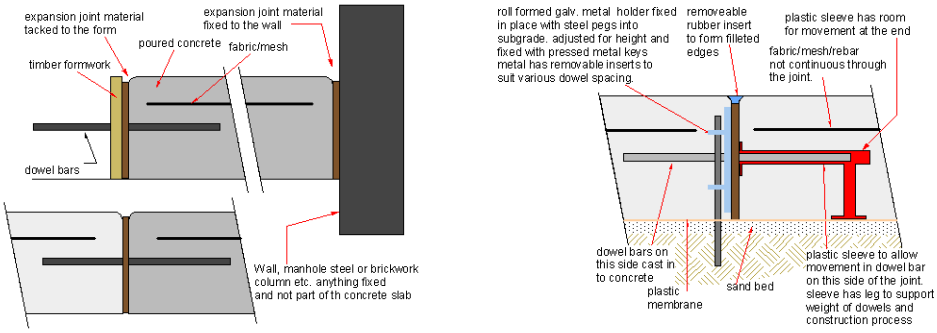


Figure 5 Realization of sawed control joint

2.3 Expansion joints

Expansion joints create a gap between two surfaces that meet each other. Gaps are usually filled with compacted filler material. In this way, all movement on the joint surface can be eliminated. Making expansion joints can be expensive, so a designer must be careful in determining a structure regarding whether or not to use a connection with an expansion joint system, as well as about the connection distance. Most signs of expansion occur during the hot months, especially if the temperature rises above the temperature of the concrete during casting. A crack that occurs in an expansion joint is always caused by an increase in temperature. This crack must be protected by using a good filling seal to close the gap. As for the contraction joints, reinforcement must be terminated near expansion joints.
Many situations will influence the planner to incorporate joints in a structure. Some

of them include:
1. Reinforced concrete structures to be expanded and not equipped with contraction joints.
2. The structure consists of contraction joints, but shrinkage is retained by the overall reinforcement.
3. The structure is intended to withstand temperature increases before shrinkage occurs.
4. The structure is intended to remain within a temperature range, such as the temperature of viscosity. For example, in Australian weather conditions the maximum normal temperature throughout the year is close to 21° F. This means that thermal displacement in the joints does not exceed 1.2 cm per 30m of concrete (0.0004%). So when it is determined to place expansion joints at 30 m intervals, they must be 1.2 cm wide. If the joint is made 2 cm wide at average temperature, the gap is filled with material for expansion joints, which can withstand a displacement of 1.2 cm and increases for a a displacement of 2.5 cm. The distance between expansion joints is designed to be more than 30 m, without including expansion or insulating joints on floors, columns, and beams. In buildings, for lengths of more than 90 m without expansion joints, shifts due to temperature will occur, especially in flexible columns. Expansion joints are usually used in L, T, U, and H shapes on the floor surface.
In road pavement, the distance between expansion joints depends on the thickness of the pavement, the reinforcement and the project.
Expansion joints do not have the reinforcing steel running through them. A break is always made in the rebar. This should be a minimum of 50 cm from the joint. However is used to o have some sort of dowelled or keyed joint to provide some connection to each side of the joint to stop vertical movement. These are usually specified by the engineer.
The traditional and the modern method of making a concrete expansion joint are given in the figure below.
The main benefit of modern expansion joints is to do a longer and enormous concrete pour in one day, with savings on labour and machine hire. The main cons is that they are more expensive and left inside the concrete, with the possibility of rust overtime.



Picture 6 (a) A traditional expansion joint. (b) A modern expansion joint for continuous pour

Because expansion joints are designed to open and close with temperature changes, various water barriers are used to protect the joints which allow the water barriers to adapt to the movement of the concrete. A suitable water stop can be chosen, namely a covering strip with a center fold or a flexible water stop in the form of a balloon type.

2.4 Isolation joints

Isolation joints separate interconnected concrete surfaces in such a way that each surface is completely free in its movement. The separator is usually clay filler. Asphalt-impregnated fiberboard, plastic, cork, rubber, and neoprene can also be used. The isolation joint should go all the way to the depth of the slab or other structural elements. Concrete slabs can be separated from columns or walls. This isolator can isolate the entire floor plate, or part of the building from the other frames.
These isolation joints allow not only expansion and contraction movements, but vertical movements resulting from the difference in vertical movement (settlement) and movements due to shocks caused by lateral forces. The structure should be assessed to see where settlement differences are accepted, where containment is needed, and where cracks may occur. Where the difference in vertical movement can be as large as the horizontal movement of an isolating joint is usually the correct answer.

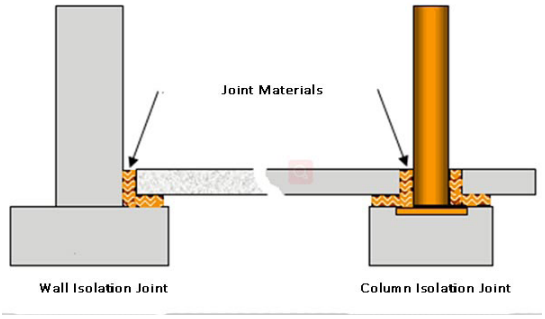


Figure 7 Isolation joints in the basements

During isolation, joints must be completely free and must not be connected transversely using reinforcement. The basement floor slab must be isolated from the square column with a box which can be seen in Figure 7. The square rectangular box is placed so that the corner points are located at the junction of the contractions along the column. This is desirable because it eliminates plate corner notches which can be caused by cracks in the diagonal direction, insulating joints can be made around the column. A good way to isolate parts of a frame structure is to use two beams and a column at the isolation joint. Figure 8 shows how beams and columns can be split to follow differences in movement with parts of the frame structure.

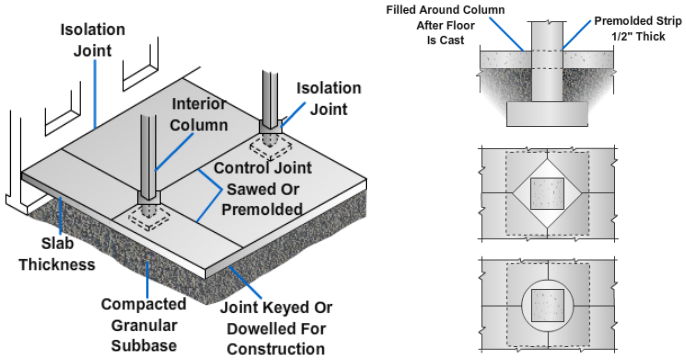


Figure 7 Isolation joints at columns and walls.

Isolation connections are often made to retain water, and waterstop material is used to prevent water seepage. This water barrier can use: covering strips, wrapping to resist movement, or flexible rubber or PVC waterstop. A flexible waterstop can increase corrosion resistance.

2.5 Filling and repairing of joints

Construction joints: The filling is done to the full depth of the joint. The filler material must have enough compressive strength to support the edges of the joint from stresses imposed by surrounding structural elements.
Contraction joints: They are generally filled with100% solids epoxy resinr polyurethane padding.
Expansion joints: They are generally filled with a compressible fiberboard material.
Isolation joints: In order to have a cleaner isolation joint, the top part of the joint material is removed and filled with an elastomeric sealant.
A damaged joint can be repaired by following these steps:

- Prepare the surface using the grinder to abrade the edges of the joint
- All the dust and debris should be removed
- Abrade the edges again with a pole sander
- Put a wooden piece in the longitudinal direction of the joint.
- Cement- sand grouting is prepared
- A latex bonding agent is mixed with cement sand grout and spread on the surface.
- An epoxy bonding agent is placed on the surface of existing concrete
- After the grout is dried, the wooden piece is removed

Lastly, the joint is rubbed with a pole sander again to have a smooth surface.

3. Conclusions

When implementing building structures with large volumes of concrete pouring, it is always necessary to temporarily stop pouring the concrete mix. Connecting old

concrete with new concrete will never come together perfectly. So there needs to be a way to unite the two surfaces, thus, there is a need for connection construction. The use of a connection system depends on the purpose of the connection.

To conclude, several types of joints are used during the casting of concrete, which can serve both structural and aesthetic purposes. A wide range of joint making technologies are available starting from saw-cutting devices, to grooves and joint molds. At the end, joints can be filled with materials like plastics, rubbers, epoxies, and even fiberboards.

Careful supervision is required in making connections.

References

Control of Cracking in Concrete Structures, reported by committee 224 ACI Publ. So-20, ppl-17, 1968.

Design Control and Characteristics Of Concrete, Cement And Concrete Association Of Australia, Australia, 1977. George Winter, Arthur H. Nilson, Reinforced Concrete Structure Planning, PT. Pradnya Paramita, Jakarta, 1993.

George Winter, Arthur H. Nilson, Reinforced Concrete Structure Planning, PT. Pradnya Paramita, Jakarta, 1993.

LA. Litz, Crack Control Factor Bundled Bars and for Bars of Different Sizes, J. ACI, vol 71, zero, paragraphs 9-10, 1974.

Fintel M., "Joints in Buildings", Handbook of Concrete Engineering, 2nd Edition, pp.121, 1985.

ACI Committee Report 224.3R-95"Joints in Concrete Construction", pp.1- 44, 1995.

Ismail A.K., "Flexural Behavior of Reinforced Concrete Beams having Horizontal Construction Joints", M.Sc. Thesis, University of Technology, April 2005.

Abass, Zena Waleed, "Effect of construction joints on the performance of reinforced concrete beams". Al-Khwarizmi Engineering Journal, vol.8 no.1, p.p.48-64, 2012.

Variational Autoencoder for Face Expression Classification

Viola Bakiasi (Shtino)
Computer Science Department, Faculty of Information Technology "Aleksander Moisiu", University of Durres, Albania

Markela Muça
Department of Applied Mathematics, Faculty of Natyral Science, University of Tirana, Albania

Abstract

Variational autoencoders (VAEs) have gained significant attention in recent years due to their ability to learn meaningful representations of high-dimensional data. In this paper, we use VAEs for face expression classification. Facial expression classification is a challenging task that involves understanding and categorizing human emotions based on facial images. Our proposed approach leverages the power of VAEs to learn a compact and expressive latent space representation of facial expressions. By training the VAE on a large dataset of labeled facial images, we can capture the underlying structure and variability of different expressions. The VAE consists of an encoder network that maps the input facial image to a low-dimensional latent space, and a decoder network that reconstructs the input image from the latent representation. Once the VAE is trained, we can perform face expression classification by using the learned latent representation as input to a classifier. In the second step, this latent space representation of each sample is fed into a classification model, like a Gaussian Mixture Model (GMM) or a Support Vector Classifier (SVC). The dataset that we are using for this task is Affectnet. Software used for conducting the experiments is Python.
By leveraging the power of VAEs to learn meaningful representations, we can improve the accuracy and interpretability of facial expression classification tasks. Our approach has the potential to be applied in various domains, such as human-computer interaction, affective computing, and virtual reality.

Keywords: Variational autoencoders, Facial expression, Image reconnstruction, Latent space representation, Gaussian Mixture Model, Support Vector Classifier.

1. Introduction

Facial expressions play a crucial role in human communication, conveying a wide range of emotions and intentions. Understanding and accurately classifying facial expressions have significant implications in various domains, including psychology, human-computer interaction, and affective computing. In recent years, deep learning techniques have shown promising results in various computer vision tasks, including image classification and generation. One such technique is the variational autoencoder (VAE), a generative model that learns a compact and expressive latent space representation of high-dimensional data.
Our goal is to develop a Variational Autoencoder architecture that is able to face expression emotions. The dataset that we are using for this task is Affectnet. AffectNet is a large facial expression dataset with around 4 million images

manually labeled for the presence of eight (neutral, happy, angry, sad, fear, surprise, disgust, contempt) facial expressions along with the intensity of valence and arousal. It can be found online through this link https://paperswithcode.com/dataset/affectnet. Due to memory and computation constraints, we use a restricted dataset of 29042 samples, divided into 23233 trainingsamples and 5809 validation samples. We do not need test data for the Variational Autoencoder modelas it is not subject to test, only the final GMM model is subject to testing. And for that GMM model,we just fit the model using training data, and directly evaluate it using the validation data.
Overall, this research aims to contribute to the advancement of facial expression classification techniques by leveraging the power of variational autoencoders.

2. Methodology for Variational Autoencoder

2.1. General idea

The general idea of autoencoders is pretty simple and consists in setting an encoder and a decoder as neural networks and to learn the best encoding-decoding scheme using an iterative optimisation process. It consists of an encoder network that compresses the input data into a lower-dimensional representation (latent space) and a decoder network that attempts to reconstruct the original data from this representation.So, at each iteration we feed the autoencoder architecture (the encoder followed by the decoder) with some data, we compare the encoded-decoded output with the initial data and backpropagate the error through the architecture to update the weights of the networks. One of the main problems is that the regularity of the latent space for autoencoders is a difficult point that depends on the distribution ofthe data in the initial space, the dimension of the latent space and the architecture of the encoder.So, it is pretty difficult (if not impossible) to ensure, a priori, that the encoder will organize the latent space in a smart way compatible with the generative process we just described. On the other hand,a variational autoencoder can be defined as being an autoencoder whose training is regularised to avoid overfitting and ensure that the latent space has good properties that enable generative process. We need this generative ability so that we can use the latent space representation of new samples to judge about its similarity with the latent space representation of different classes.

2.2. Mathematical details of VAEs

Variational autoencoder uses KL-divergence as its loss function, the goal of this is to minimize the difference between a supposed distribution and original distribution of dataset.
We denote by x the variable that represents our data and assume that x is generated from a latent variable z (the encoded representation) that is not directly observed. Thus, for each data point, the following two steps generative process is assumed:

- first, a latent representation z is sampled from the prior distribution p(z)
- second, the data x is sampled from the conditional likelihood distribution p(x|z)

The "probabilistic decoder" is naturally defined by p(x|z), that describes the

distribution of the decoded variable given the encoded one, whereas the "probabilistic encoder" is defined by p(z|x), that describes the distribution of the encoded variable given the decoded one.
Encoded representations z in the latent space are indeed assumed to follow the prior distribution p(z). Otherwise, we can also remind the the well-known **Bayes theorem**

$$p(z|x) = \frac{p(x|z)p(z)}{p(x)} \qquad p(x) = \int p(x|z)\,p(z)\,dz$$

To better approximate p(z|x) to q(z|x), we will minimize the KL-divergence loss which calculates how similar two distributions are:

$$\min KL\left(q(z|x)\,||p(z|x)\right)$$

By simplifying, the above minimization problem is equivalent to the following maximization problem :

$$E_{q(z|x)} \log p(x|z) - KL\left(q(z|x)\,||p(z)\right)$$

The first term represents the reconstruction likelihood and the other term ensures that our learned distribution q is similar to the true prior distribution p.

Thus our total loss consists of two terms, one is reconstruction error and other is KL-divergence loss:

$$Loss = L(x,\hat{x}) + \sum_j KL\left(q_j(z|x)\,||p(z)\right)$$

Gaussian encoder: Due to its stable statical property and simplicity in sampling, we choose multivariate gaussian as the encoder output distribution. q(z|x) = $\mathcal{N}(\mathbf{z};\boldsymbol{\mu},\boldsymbol{\sigma}^2\mathbf{I})$

Loss function: For simplicity, we set the prior $p(\mathbf{z})$ as the normal distribution $\mathcal{N}(\mathbf{0},\ \mathbf{I})$. The distribution of the probabilistic encoder is $\mathcal{N}(\mathbf{z};\boldsymbol{\mu},\boldsymbol{\sigma}^2\mathbf{I})$, where $\boldsymbol{\mu} \in \mathbb{R}^J$, $\boldsymbol{\sigma}^2 \in \mathbb{R}^J$ and μ_j, σ_j^2 is the j-th component of the mean/var vector respectively. The KL divergence term is:

$$KL\left(q(\mathbf{z}|\mathbf{x}^{(i)})\ ||\ p(\mathbf{z})\right) = \frac{1}{2}\sum_{j=1}^{J}(1 + 2\log\sigma_j - \mu_j^2 - \sigma_j^2)$$

The full loss function (negative ELBO) can be obtained by combining the KL and MC estimate terms:

$$\mathcal{L}(\phi,\theta,\mathbf{x}^{(\mathbf{i})}) = \frac{1}{2}\sum_{j=1}^{J}(1 + 2\log\sigma_j - \mu_j^2 - \sigma_j^2) - \log p(\mathbf{x}^{(i)}|\mathbf{z}^{(i,1)})$$

$$\mathbf{z}^{(i,1)} = \mu + \sigma \odot \epsilon$$

$$\epsilon \sim \mathcal{N}(\mathbf{0},\mathbf{I})$$

that makes the link between the prior p(z), the likelihood p(x|z), and the posterior

2.3. Network architecture

The overall autoencoder architecture (encoder+decoder) creates a bottleneck for data that ensures only the main structured part of the information can go through and be reconstructed. Looking at our general framework, the family E of considered encoders is defined by the encoder network architecture,the family D of considered decoders is defined by the decoder network architecture and the searchof encoder and decoder that minimise the reconstruction error is done by gradient descent over the parameters of these networks (figure 1).

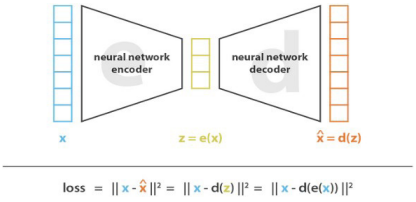


Figure 1: The general architecture of the autoencoder with its loss function.

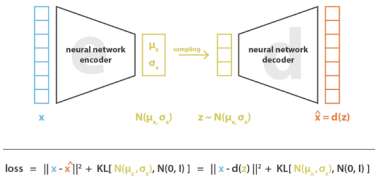


Figure 2: The general architecture of the variational autoencoder with its loss function.

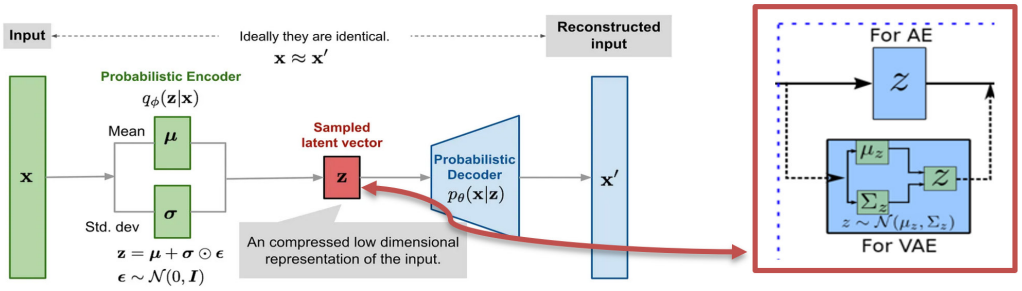


Figure 3: Architectures AE and VAE based on the bottleneck architecture. The decoder part work as a generative model during inference.

The variational autoencoder beside the reconstruction loss of the images, aims to regularize the latent space introducing the Kullback-Leibler loss function. So, it is assume that the latent space repre- sentation z, follows a Gaussian distribution. We predict the mean and variance of this latent variable through the encoder network (figure 2). Using the KL loss function we force the latent space representation to follow a Gaussian distribution with mean 0 and variance 1. The reason to do this is to force **con-tinuity** (two close points in the latent space should not give two completely different contents once decoded) and **completeness** (for a chosen distribution, a point sampled from the latent space should give "meaningful" content once decoded) in the latent space. In our case, to have more accurate pre- dictions we included a fully connected layer from the latent space to class prediction in order to create a Conditional Variational Autoencoder. The reason to do this is to force the latent space represen- tations

to be grouped according to class labels. In our case, the network parameters are as specified in figure 4. The class-aware Variational Autoencoder serves as the first part of the solution, in the sense that it produces latent values for each image. The **Bayesian approach** in this case is included in estimating the distribution of the latent variable (mean and variance), rather than a fixed point estimate. The second and final part of the solution involves the Gaussian Mixture Model (GMM) to predict class values given a new image. Initially we create as many Gaussian Mixture Models as the number of classes by feeding the latent variables for each sample of that class in the training data. Thus, each class' GMM will learn a distribution for that class' latent variables. Then in the validation data, we predict the class value for each sample using all GMMs and assign that sample to the class for which the corresponding GMM produced the highest probability. The GMM model has an accuracy of 60.15%, which is validated by using the SVM model on the same dataset. Support Vector Classifier (SVC) has an accuracy of 64.24% which is explained by the fact that the latent space variables are easily separable by hyperplanes according to each class. We should mention that the random accuracy for this prediction model is 12.5% (100% divided by 8 classes), and the state of the art models have an accuracy of around 65%. Also, these results might be improved by expanding the dataset size and creating a larger network architecture.

```
==========================================================================================
Layer (type:depth-idx)                   Output Shape              Param #
==========================================================================================
├─Encoder: 1-1                          [-1, 128]                 --
|    └─ConvBlock: 2-1                   [-1, 128, 96, 96]         --
|    |    └─Conv2d: 3-1                 [-1, 128, 96, 96]         3,584
|    |    └─BatchNorm2d: 3-2            [-1, 128, 96, 96]         256
|    |    └─ReLU: 3-3                   [-1, 128, 96, 96]         --
|    └─ConvBlock: 2-2                   [-1, 128, 96, 96]         --
|    |    └─Conv2d: 3-4                 [-1, 128, 96, 96]         147,584
|    |    └─BatchNorm2d: 3-5            [-1, 128, 96, 96]         256
|    |    └─ReLU: 3-6                   [-1, 128, 96, 96]         --
|    └─ConvBlock: 2-3                   [-1, 64, 96, 96]          --
|    |    └─Conv2d: 3-7                 [-1, 64, 96, 96]          73,792
|    |    └─BatchNorm2d: 3-8            [-1, 64, 96, 96]          128
|    |    └─ReLU: 3-9                   [-1, 64, 96, 96]          --
|    └─MaxPool2d: 2-4                   [-1, 64, 48, 48]          --
|    └─ConvBlock: 2-5                   [-1, 32, 48, 48]          --
|    |    └─Conv2d: 3-10                [-1, 32, 48, 48]          18,464
|    |    └─BatchNorm2d: 3-11           [-1, 32, 48, 48]          64
|    |    └─ReLU: 3-12                  [-1, 32, 48, 48]          --
|    └─ConvBlock: 2-6                   [-1, 32, 48, 48]          --
|    |    └─Conv2d: 3-13                [-1, 32, 48, 48]          9,248
|    |    └─BatchNorm2d: 3-14           [-1, 32, 48, 48]          64
|    |    └─ReLU: 3-15                  [-1, 32, 48, 48]          --
|    └─MaxPool2d: 2-7                   [-1, 32, 24, 24]          --
|    └─ConvBlock: 2-8                   [-1, 16, 24, 24]          --
|    |    └─Conv2d: 3-16                [-1, 16, 24, 24]          4,624
|    |    └─BatchNorm2d: 3-17           [-1, 16, 24, 24]          32
|    |    └─ReLU: 3-18                  [-1, 16, 24, 24]          --
|    └─ConvBlock: 2-9                   [-1, 16, 24, 24]          --
|    |    └─Conv2d: 3-19                [-1, 16, 24, 24]          2,320
|    |    └─BatchNorm2d: 3-20           [-1, 16, 24, 24]          32
|    |    └─ReLU: 3-21                  [-1, 16, 24, 24]          --
|    └─MaxPool2d: 2-10                  [-1, 16, 12, 12]          --
|    └─Linear: 2-11                     [-1, 256]                 590,080
|    └─Linear: 2-12                     [-1, 128]                 32,896
|    └─Linear: 2-13                     [-1, 128]                 32,896
├─Decoder: 1-2                          [-1, 3, 96, 96]           --
|    └─Linear: 2-14                     [-1, 256]                 33,024
|    └─Linear: 2-15                     [-1, 2304]                592,128
|    └─Upsample: 2-16                   [-1, 16, 24, 24]          --
|    └─ConvBlock: 2-17                  [-1, 16, 24, 24]          --
|    |    └─Conv2d: 3-22                [-1, 16, 24, 24]          2,320
|    |    └─BatchNorm2d: 3-23           [-1, 16, 24, 24]          32
|    |    └─ReLU: 3-24                  [-1, 16, 24, 24]          --
|    └─ConvBlock: 2-18                  [-1, 32, 24, 24]          --
|    |    └─Conv2d: 3-25                [-1, 32, 24, 24]          4,640
|    |    └─BatchNorm2d: 3-26           [-1, 32, 24, 24]          64
|    |    └─ReLU: 3-27                  [-1, 32, 24, 24]          --
|    └─Upsample: 2-19                   [-1, 32, 48, 48]          --
|    └─ConvBlock: 2-20                  [-1, 32, 48, 48]          --
|    |    └─Conv2d: 3-28                [-1, 32, 48, 48]          9,248
|    |    └─BatchNorm2d: 3-29           [-1, 32, 48, 48]          64
|    |    └─ReLU: 3-30                  [-1, 32, 48, 48]          --
|    └─ConvBlock: 2-21                  [-1, 64, 48, 48]          --
|    |    └─Conv2d: 3-31                [-1, 64, 48, 48]          18,496
|    |    └─BatchNorm2d: 3-32           [-1, 64, 48, 48]          128
|    |    └─ReLU: 3-33                  [-1, 64, 48, 48]          --
|    └─Upsample: 2-22                   [-1, 64, 96, 96]          --
|    └─ConvBlock: 2-23                  [-1, 128, 96, 96]         --
|    |    └─Conv2d: 3-34                [-1, 128, 96, 96]         73,856
|    |    └─BatchNorm2d: 3-35           [-1, 128, 96, 96]         256
|    |    └─ReLU: 3-36                  [-1, 128, 96, 96]         --
|    └─ConvBlock: 2-24                  [-1, 128, 96, 96]         --
|    |    └─Conv2d: 3-37                [-1, 128, 96, 96]         147,584
|    |    └─BatchNorm2d: 3-38           [-1, 128, 96, 96]         256
|    |    └─ReLU: 3-39                  [-1, 128, 96, 96]         --
|    └─ConvBlock: 2-25                  [-1, 3, 96, 96]           --
|    |    └─Conv2d: 3-40                [-1, 3, 96, 96]           3,459
|    |    └─BatchNorm2d: 3-41           [-1, 3, 96, 96]           6
├─Sequential: 1-3                       [-1, 8]                   --
|    └─Linear: 2-26                     [-1, 128]                 16,512
|    └─ReLU: 2-27                       [-1, 128]                 --
|    └─Linear: 2-28                     [-1, 64]                  8,256
|    └─ReLU: 2-29                       [-1, 64]                  --
|    └─Linear: 2-30                     [-1, 8]                   520
==========================================================================================
Total params: 1,827,169
Trainable params: 1,827,169
Non-trainable params: 0
Total mult-adds (G): 4.28
==========================================================================================
Input size (MB): 0.11
Forward/backward pass size (MB): 87.77
Params size (MB): 6.97
Estimated Total Size (MB): 94.85
==========================================================================================
```

Figure 4: Network architecture summary.

The network has a total of 1,827,169 parameters, which is a moderate number compared to deeperarchitectures. Also, after the training process is finished, the decoder is not used anymore. So, during inference time, a new sample is fed in the encoder to get as output the latent representation for that sample. Then this representation is used as input to the classification algorithm, which in this case is a Gaussian Mixture Model (GMM) or Support Vector Classifier (SVC). In that sense, the decoder is partof the architecture to use the reconstruction error to create 'meaningful' latent space representation.

3. Experimental results

- The dataset that we are using for this task is **Affectnet**.
- Software used for conducting the experiments is **Python**.

We run the model on the Affectnet dataset and observe the loss function on the latent space (KL loss) and the reconstruction loss. Also, we measure the classification loss on the class label, as we add a Fully Connected Network from latent space to the number of classes. The reason to do this is to help the latent space organization by forcing class aware information into the network. The corresponding graphics are shown in figures 5, 6 and 7 respectively.

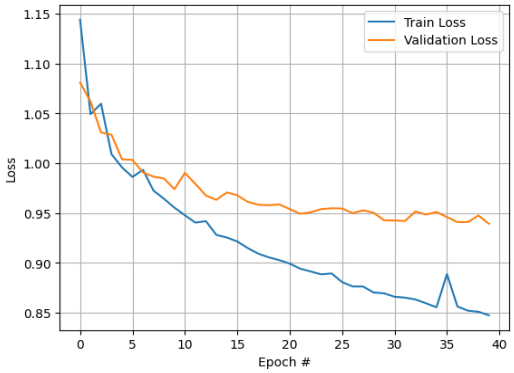


Figure 5: Loss function value for each training epoch.

The loss function is a combination of:

- reconstruction loss (Mean Squared Error) between the input image and the reconstructed image
- L1 loss
- classification loss
- Kullback Leibler divergence between the Gaussian distribution (mean 0, variance 1) and thelatent space distribution.

The loss in the training dataset as expected is less than the validation loss, because the network is not aware of the validation data, meanwhile it uses its training data to learn.

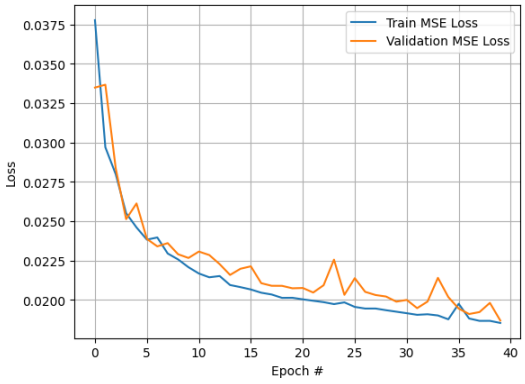


Figure 6: MSE of image reconstruction for each training epoch.

On figure 6 only the reconstruction loss (MSE) is shown, which indicates that as the overall loss is decreasing, the network is also learning to reconstruct the input images. This approach assures that the reconstruction error is backpropagating through the network to also help in organizing the latent space.

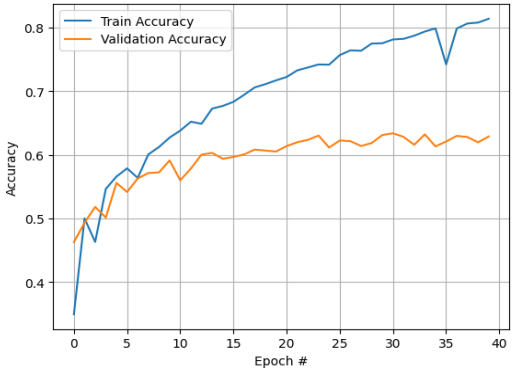


Figure 7: Accuracy for each training epoch.

As loss is only an indicator that the network is learning, what really matters is the classification accuracy. As mentioned, we have included a classification loss in our overall network by creating a Fully Connected Network that maps the latent space to a classification head. The reason to do this is to introduce some class awareness in the latent space, so that the organization is also based on sample class. During inference, this Fully Connected Network is also discarded. The validation accuracy goes around 62% in the end of the training process. That said, this is not the final accuracy, it is just an indicator that the network is able to tell the class by using the latent space representation. There is a gap between the training accuracy and the validation accuracy which might be used as an indicator that the model is overfitting, but even when we add regularization the validation loss is not improved. To check the distribution of the predicted labels for each class, the confusion matrix is shown in figure 8 for the Support Vector

Classifier model.

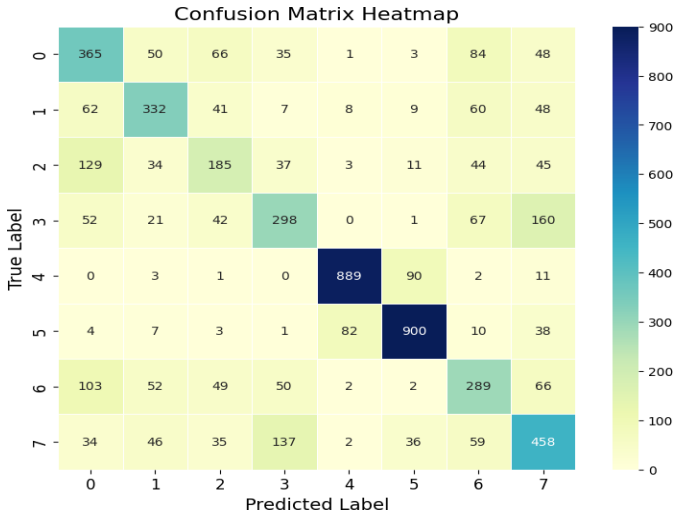


Figure 8: Confusion matrix for the Support Vector Classifier.

To visualize the latent space, we use the PCA algorithm for dimensionality reduction, respectively to 2 and 3 dimensions and plot the mean values for each class. The results are shown in figures 9 and 10. In our case the latent space is a vector of length 128, so basically we project that vector in a new vector of length 2 and 3, on the directions that explain the maximum variance, i.e. that hold maximum information.

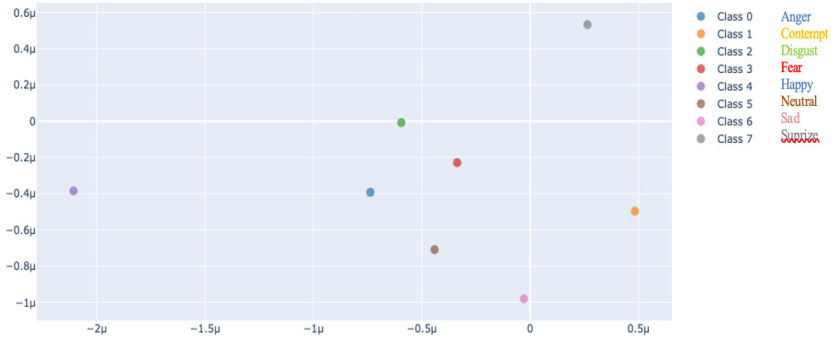


Figure 9: PCA projection in 2 dimensions for the latent space of each class.

As we can see, the latent space mean values for each class are well separated which means that the latent space representation holds enough information for the respective class even in 2 dimensions. The same argument is valid for the 3-dimensional projection shown below.

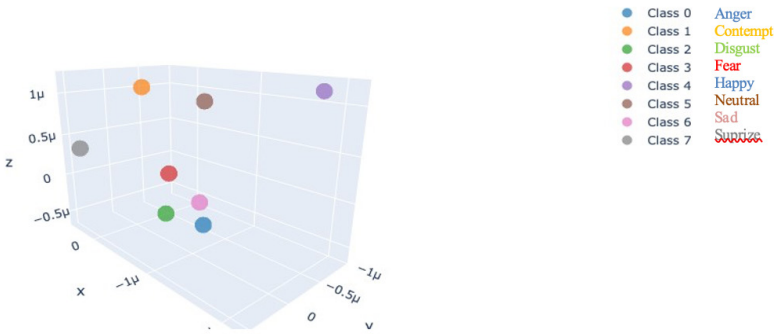


Figure 10: PCA projection in 3 dimensions for the latent space of each class.

- ***Visualization***

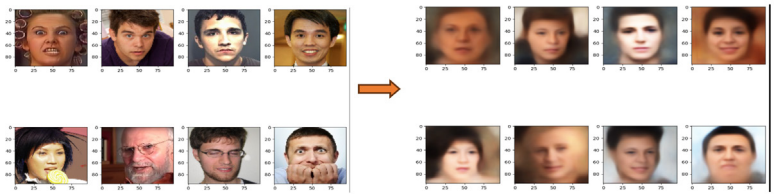


Figure 11: Image original Image reconnstruction

4. Conclusions

The proposed VAE-based approach for face expression classification shows promising results and opens up new possibilities for more accurate and interpretable facial expression analysis. The key advantage of our approach is the ability to learn a compact and expressive latent space representation of facial expressions, eliminating the need for handcrafted features and complex classifiers. This not only reduces the computational complexity but also improves the generalization to unseen data.

We have used a 2-step solution for the face expression classification problem. The first part is the variational autoencoder (VAE) architecture to learn complete and continuous representation for the latent space of each sample. This architecture aims to project the input image in a lower representationvector that ideally should hold enough information to reconstruct the image. In the second step, this latent space representation of each sample is fed into a classification model, like a Gaussian Mixture Model (GMM) or a Support Vector Classifier (SVC). The first step incorporates the Bayesian approachin the sense that the latent representation is not a fixed point, but a Gaussian distribution with a predicted mean and variance. Since the learned representation are well separated for each class, the SVC model performs better with an accuracy of 63.96%. Meanwhile the GMM model has a lower accuracy of 60.15%, which are in the range of the state-of-the-art models for the AffectNet dataset. **Future work** can

focus on further improving the performance of the VAE-based approach by exploring different network architectures, regularization techniques, and loss functions.

References

[1] Kingma, D. P., & Welling, M. (2013). Auto-Encoding Variational Bayes. arXiv preprint arXiv:1312.6114.

[2] Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning. MIT Press.

[3] Ekman, P., & Friesen, W. V. (1971). Constants across cultures in the face and emotion. Journal of Personality and Social Psychology, 17(2), 124-129.

[4] Liu, M., Zhang, D., & Zhang, L. (2014). A survey of content-based face image retrieval with text information. Pattern Recognition, 47(1), 361-378.

[5] Liu, M., Zhang, D., Zhang, L., & Shen, L. (2017). Deep coding network for image coding. IEEE Transactions on Image Processing, 26(9), 4406-4417.

[6] Kingma, D. P., & Welling, M. (2013). Auto-Encoding Variational Bayes. arXiv preprint arXiv:1312.6114.

[7] Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning. MIT Press.

[8] David M. Blei, Michael I Jordan, and John W Paisley. Variational Bayesian inference with Stochastic Search. In Proceedings of the 29th International Conference on Ma- chine Learning (ICML-12), pages 1367–1374, 2012.

[9] https://data-science-blog.com/blog/2022/04/19/variational-autoencoders/

[10] https://towardsdatascience.com/understanding-variational-autoencoders-vaes-f70510919f73

[11] https://www.geeksforgeeks.org/variational-autoencoders/