

Fathi Habashi

My trips in



2015

My Trips in Caucasus

Volume derived from



Fathi Habashi

Department of Mining, Metallurgy, and Materials Engineering
Laval University, Quebec City, Canada

2015

The Book

The present volume is derived from *De Re Metallica. A Metallurgist on the Move*, which is a diary of the trips the author has undertaken during his professional career. He visited many industries, universities, research centres, and museums and participated in many conferences. The book therefore reflects the state of extractive metallurgy since he left his home country Egypt and went to study in Vienna. *De Re Metallica* is in seven volumes fully illustrated mainly by coloured photographs. It includes a short history of the place visited and its main sightseeing sites. Volume 1 Egypt, Volume 2 Canada, Volume 3 United States, Volume 4 Latin America, Volume 5 Asia [in two parts], Volume 6 Europe [in two parts], and Volume 7 Russia & other countries. Total number of pages was 5500.

Since these volumes could not be separated and therefore they will not be available to many readers, I decided to split the book into selected 29 small units, each representing one country or a group of countries closely related geographically. The present volume is one of these volumes.



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*To Nadia,
Hani, and Hatem
with love*

Other Books by the Author

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Technical

- F. Habashi, *Principles of Extractive Metallurgy*:
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 - Volume 2: Hydrometallurgy (468 pages), 1970 (reprinted 1980) (out of print), Gordon & Breach Science Publishers.
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- F. Habashi, *De Re Metallica. A Metallurgist on the Move*, 7 volumes, 2015, 5523 pages.

Historical

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- F. Habashi, D. Hendricker, C. Gignac, *Mining and Metallurgy on Postage Stamps*, 1999, 335 pages.
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Preface

De Re Metallica. A Metallurgist on the Move is a diary of the trips the author has undertaken during his professional career. He visited many industries, universities, research centres, and museums and participated in many conferences. The book therefore reflects the state of extractive metallurgy since he left his home country Egypt and went to study in Vienna. The book is in seven volumes fully illustrated mainly by coloured photographs. It includes a short history of the place visited and its main sightseeing sites. Volume 1 Egypt, Volume 2 Canada, Volume 3 United States, Volume 4 Latin America, Volume 5 Asia [in two parts], Volume 6 Europe [in two parts], and Volume 7 Russia & other countries. Total number of pages was 5500.

Since these volumes could not be separated and therefore they will not be available to many readers, I decided to split the book into selected 28 small units each representing one country or a group of countries closely related geographically as shown below.

1 Arab Countries	Jordan, Kuwait, Morocco, Syria, Tunis
2 Austria	
3 Australia & Southeast Asia	Australia, Cambodia, Indonesia, Malaysia, Philippines, Thailand, Vietnam
4 Balkans	Albania, Bosnia, Bulgaria, Croatia, Greece, Romania, Serbia, Slovenia
5 Baltic Countries	Latvia, Lithuania, Poland
6 Brazil	
7 Canada	
8 Caribbean	Cuba, Puerto Rico, Venezuela
9 Caucasus	Armenia, Azerbaijan, Georgia
10 Central Asia	Afghanistan, Kazakhstan, Mongolia, Uzbekistan
11 Central Europe	Czech Republic, Slovakia, Hungary, Switzerland
12 Chile and Argentina	
13 China	
14 Egypt	
15 England and France	
16 Germany	
17 Iberian Peninsula	
18 India	
19 Italy and Vatican	
20 Japan and Korea	
21 Low Countries	

22	Mexico	
23	Middle East	Iran, Turkey
24	Peru and Bolivia	
25	Russia	
26	Scandinavia	
27	South Africa	
28	USA	

I hope in this way the book will available to a large number of readers.

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Chapter 1

Historical Introduction

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The Caucasus region is a mountain range lying between the Black Sea and the Caspian Sea (Figure 1.1). The entire region is regularly subjected to strong earthquakes. While the Greater Caucasus Mountains have a mainly folded sedimentary structure, the Lesser Caucasus Mountains are largely of volcanic origin. The highest peak in the Caucasus range is Mount Elbruz in the Greater Caucasus, which rises to a height of 5 642 metres above sea level. Azerbaijan on the southeast end of the mountains is the natural pass between the north and the south and was once the way of the Silk Road to Russia.

Under Ashurbanipal (669–627 BC), the boundaries of the Assyrian Empire reached as far as the Caucasus Mountains. In 95–55 BC, under the reign of Armenian king Tigranes the Great, the Kingdom of Armenia stretched from the Caucasian Mountains to Egypt and from the Mediterranean Sea to the Caspian Sea, and becoming the strongest in the region.

Throughout its history, the Caucasus was usually incorporated into Persia and Zoroastrianism was the dominant religion of the region. Owing to the wars between Persia and Rome, and later Byzantium, the latter would invade the region several times but was never able to hold it. Armenia was the first nation to adopt Christianity as state religion (in 301 AD), and Caucasian Albania and Georgia became Christian later. Christianity began to overtake Zoroastrianism.

With the Muslim conquest of Persia, the region came under the rule of the Arabs, and soon the Emirate of Armenia was formed. But after several rebellions in 884–885 AD, Kingdom of Armenia became independent, and several times crushed Arab armies. In the 12th century, the Georgian king David the Builder drove the Muslims out from Caucasus and made the Kingdom of Georgia a strong regional power. In 1194–1204 Georgian Queen Tamar's armies crushed new Turkish invasions. The region would later be conquered by the Ottomans and Mongols. Local kingdoms and khanates were formed.



Figure 1.1: The Caucasus Mountains separates Europe from Asia.

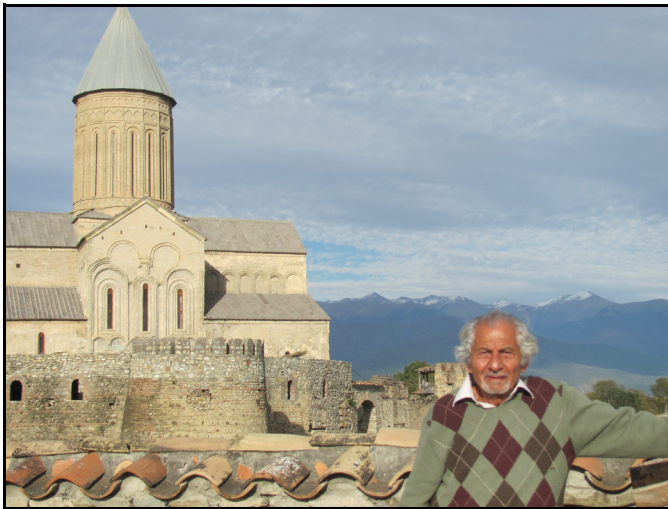


Figure 1.2: A visit to Monastery Akhali Shuamta in northern Georgia with the Caucasus Mountains in the background [photo by Nadia Habashi, 2014].

ETHNIC GROUPS

The Caucasus is the home of different ethnic groups (Figure 1.3). It is one of the most complex linguistic regions in the world, containing more than 60 languages from five distinct language families. This variation of languages lends the region one of its most cultural diversity. This ethno-linguistic segregation has been especially deep where there has been ethnic conflict, such as between Armenians and Azeris, Abkhaz and Georgians, and Ossetes and Georgians.



Figure 1.3: Caucasus ethnic groups.

CAUCASUS UNDER THE RUSSIANS AND SOVIETS

The Russian Empire conquered the area at the beginning of the 19th century. The region was unified as a single political entity twice: during the Russian Civil War (Transcaucasian Democratic Federative Republic) from 9 April 1918 to 26 May 1918, and under the Soviet rule (Transcaucasian SFSR) from 12 March 1922 to 5 December 1936. The whole region was part of the Soviet (Figure 1.4). During World War II, in the 1940s, the Chechens, along with the Kurds and many others, were deported to Central Asia and Siberia.



Figure 1.4: Soviet Caucasus.

INDEPENDENCE OF THE SOUTH

Following the end of the Soviet Union in 1991, the south of the Caucasus: Georgia, Azerbaijan, and Armenia became independent (Figure 1.5) while the Kabardino-Alkaria, Karachay-Cherkessia, North Ossetia, remained part of Russia. Since then the region has been subject to various territorial disputes. Russian remains the lingua franca but the current trend is for English language study to displace Russian. The South Caucasus is connected by highway and railways (Figure 1.6).



Figure 1.5: Caucasus today: North Caucasus (Russia) and the independent South Caucasus (Georgia, Azerbaijan, and Armenia).



Figure 1.6: Highway connecting the South Caucasus.

CULTURE

As a result of multi-ethnic groups the Caucasus has a unique mixed culture in dress and dancing (Figures 1.7–1.20).



Figure 1.7: Caucasian culture.



Figure 1.8: Caucasian culture.



Figure 1.9: Caucasian culture.



Figure 1.10: Caucasian culture.



Figure 1.11: Caucasian culture.



Figure 1.12: Caucasian culture.



Figure 1.13: Caucasian culture.



Figure 1.14: Caucasian culture.



Figure 1.15: Caucasian culture.



Figure 1.16: Caucasian culture.



Figure 1.17: Caucasian culture.



Figure 1.18: Caucasian culture.



Figure 1.19: Caucasian culture [photo by Nadia Habashi, 2014].



Figure 1.20: Caucasian culture [photo by Nadia Habashi, 2014].

Chapter 2

Armenia

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Figure 2.1: Flag of Armenia

INTRODUCTION

Armenia is a mountainous country over a thousand metres above sea level. The highest point in the Republic is Mount Ararat, which is 4 090 m. As a result of volcanic activity in the region over many thousand years, most of the territory is covered by volcanic rocks, many of which are used today as building materials. River Araks (or Araxes) is the present border with Turkey. The country is said to have derived the name Haikistan from Haik, the legendary founder of a dynasty which lasted until the third century AD. From one of Haik’s successors, Armenak, came the name Armenia recorded in the cuneiform inscription of Darius. The Armenians call their country Hayastan and not Armenia. The biblical designation of the country is “Ararat,” a name which is identical with “Urartu” of the cuneiform inscriptions. Mount Ararat (Figure 2.2) is now in Turkey; it can be seen after a short drive south from Yerevan.

Ancient Armenia was one of the largest states of the Near East. Over 3 000 years ago, a state known to the Assyrians as Urartu arose at the eastern extremity of Asia Minor. Uniting hitherto scattered tribes on the shores

of Lake Van, and spreading northeastward into Transcaucasia, it extended its settlements to the region of Mount Ararat, the valley of the Araks River and the mountainous shores of Lake Sevan. The Urartaeans are believed to have come from western Asia Minor and to have been related to the Hittites. Some centuries later the Van Kingdom was partly dominated by Indo-European Aryan tribes from the north, which while driving certain of the Urataeans toward the Black Sea and others into the mountains around Lake Sevan, united with the earlier inhabitants (to whom they gave their language) to form the historic Armenian people.



Figure 2.2: Ararat Mountain.

Under the ancient monarchy, the country while continuing to be governed by its own rulers, became tributary first to Assyria, then to the Persians, and eventually to Alexander the Great. Armenia subsequently became subject to the Seleucid Kingdom of Syria. When the Romans overthrew the Seleucids in 190 BC Armenia declared its independence. Thus began the national dynasty of the Arsacides which became famous under Tigranes the Great (140–55 BC) (Figure 2.3) who ruled from 95 BC until his death.

Tigranes became involved in a war with the Roman armies, during which he lost most of his empire, and eventually submitted to an alliance with Rome. From his death in 55 BC Armenia became for nearly seven centuries at one time a province of Rome, at another province of Persia, at another divided between the two.

From 885 AD to 1079 the Bagratians, a family of Jewish origin, ruled Armenia. When their dynasty came to an end, a member of their family founded in northern Cilicia, a kingdom which in time extended to the Mediterranean and gave help to the Crusaders. In the early 1200s the Mongols under Genghis Khan swept over Armenia and, in the late 1300s the armies of Timur. After the conquest of its greater part by the Turks in 1522 under

Selim I, the larger portion became Turkish, the remainder Persian, and so remained for nearly three centuries. In 1828, after the Russian–Persian War, Eastern Armenia was taken by Russia. During World War I, Western Armenia which was a part of the Ottoman Empire was subjected to genocide in 1915.



Figure 2.3: Tigranes the Great (140–55 BC).

Armenia became independent in 1918 after the Russian Revolution, a Soviet Republic in 1920 after the Bolsheviks took power in Russia, then declared its independence in 1991 after the collapse of the Soviet Union. Armenia is a small country but very rich in museums. It is still suffering from the terrible earthquake of 1988 that cost tens of thousands of lives in addition to the animosity with its neighbours that resulted in a war that broke up after the Perestroika.

THE ARMENIAN CHURCH

Christianity was declared the national or state religion in 301 AD during the reign of King Tiridates III Arshakuni, and through the efforts of St. Gregory “the Enlightener.” St. Gregory was the first Catholicos. The conversion to Christianity and the creation, one hundred years later, of the Armenian alphabet, were major events in Armenian history. During the six centuries which followed, the Armenians were persecuted for their Monophysite heresy by the Eastern Roman emperors until the fall of Constantinople in 1453. For almost five centuries more, the history of Armenia was a history of invasion and occupation by a succession of Islamic powers. Persecutions forced many Armenians to take up residence in foreign countries

(especially after the Genocide of 1915), thus creating the Armenian diaspora. The Church has since devoted herself to the service of Armenian communities and to the task of protecting and preserving national identity.

The Catholicos himself has followed his flock through the centuries, residing in many cities, only to return to Etchmiatzin in 1441. The modern Republic of Armenia recognizes the Armenian Apostolic Church as the national church, although the republic has separation of church and state.



Figure 2.4: Laval University delegation and guides at Etchmiatzin.
Photo by Nadia Habashi, 1995.

Professor Philippe Dubé of the History Department at Laval University was kind enough to invite the writer to take part in the mission to Armenia to evaluate the status of the museums, which are suffering as a result of the 1988 earthquake, the breakdown of the Soviet system, and the armed conflict with neighbouring Azerbaijan. The one-week stay in Armenia in May 1995 and transportation within Armenia were hosted by the Armenian Church. The mission was composed of four more members (Figure 2.4):

- Henri Dorion, Chief of Mission, President of the Commission on Toponymy. Government of Quebec, Adjunct Professor of Geography and International Law, Laval University, and a specialist on Russian affairs, and author of a large volume on toponymy in Quebec [fourth from right].
- Philippe Dubé, Professor of Museology, Department of History, Laval University, and in charge of the project [second from left].

- David Karel, Professor of History of Art, Laval University, and author of books on the history of art [fourth from left].
- François Tremblay, Director of International Exhibitions, Museum of Civilization, Quebec City [third from left].

The visit was made possible due to the efforts of Archbishop Hovnan Dardarian (Figure 2.5) at the Diocese of the Armenian Church in Montreal, who established contact with His Holiness Karekin I, Catholicos of All Armenians in Etchmiatzin.



Figure 2.5: Archbishop Hovnan Dardarian.

VISIT TO ARMENIA

Table 2.1: Visit in Armenia, May 1995.

Etchmiatzin	Seat of the Catholicos
Geghard	Monastery
Gyumri	The second largest city
Yerevan	The capital

Etchmiatzin

The Etchmiatzin Cathedral was originally built in 301–303 by Saint Gregory the Illuminator when Armenia became the first officially Christian country in the world. Gregory had converted King Tiridates III and members of his court. Echmiadzin, may be translated as “the place where the Only Begotten descended.”



Figure 2.6: Map of Armenia showing Etchmiatzin [Ejmiatsin] to the west of Yerevan.



Figure 2.7: Dinner with His Holiness Kaverkin I, Catholicos of All Armenians at the head table..



Figure 2.8: Coffee with His Holiness Kaverkin I, Catholicos of All Armenians. Right: Philippe Dubé, next to him is Henri Dorion. Photo by Nadia Habashi, 1995.



Figure 2.9: Etchmiatzin Cathedral.



Figure 2.10: Visiting the Museum.

A khatchkar is an Armenian word meaning cross-stone, is a carved, cross-bearing memorial stele covered with rosettes and other botanical motifs (Figures 2.11–2.14). Khachkars are characteristic of Medieval Christian Armenian art.



Figure 2.11: Khatchkars.



Figure 2.12: In front of the residence in Etchmiatzin.

Yerevan

Yerevan, the capital city was founded in 782 BC. During the excavations, archaeologists found a huge basalt stone with an inscription in cuneiform characters: “Argishti, a son of Menua, by the glory of God Khaldi, built this powerful fortress and gave it the name of Erebuni.” Later the name took on more familiar variants — Erevan and Yerevan. There are no ancient buildings in Yerevan — none survived. Located on the world’s trade routes, Armenia was constantly forced into long-lasting wars. During its history, Armenia had to change over a dozen capitals.

Erebuni fortress-museum is housed in the ancient citadel, the predecessor of the present-day Yerevan. Its display includes bronze and iron tools, earthenware, weapons, ornaments and other articles made by Urartu craftsmen which have been uncovered during excavations. A visit to the palace of King Argishti, the founder of Yerevan, is also a point of interest. Remains of fortress walls, temples, water ducts and other ancient structures have left their imprint on the land.

In the beginning of the year 1962, the monument of Stalin that was overlooking the city from the heights of one of Yerevan hills (Figure 2.15) was replaced by another monument, Mother Armenia (Figures 2.16–2.17).



Figure 2.13: Etchmiatzin Museum.



Figure 2.14: Etchmiatzin Museum.



Figure 2.15: The former statue of Stalin.



Figure 2.16: Mother Armenia.

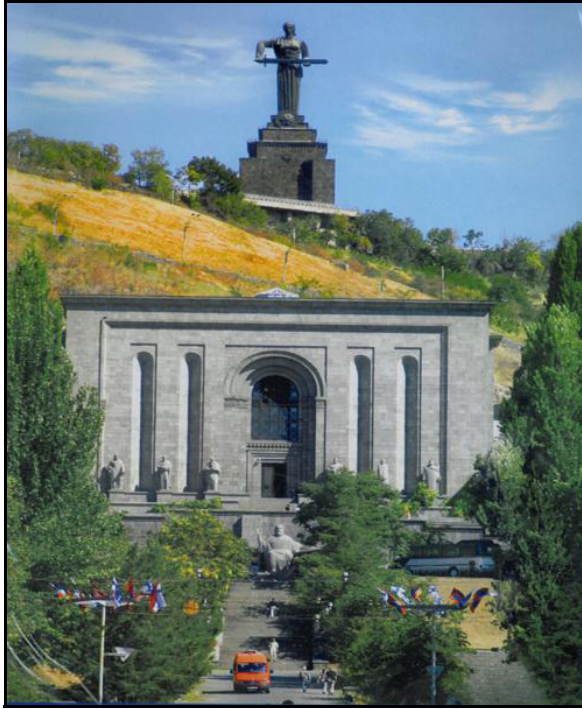


Figure 2.17: Mother Armenia overlooking Yerevan.



Figure 2.18: The former Lenin Square.



Figure 2.19: The former Lenin Square.



Figure 2.20: Opera.

Yerevan has many monuments and attractive buildings (Figures 2.20–2.21). David of Sassoun (Figure 2.22), hero of the national liberation war of the 5th century. Armenia poet Hovhannes Toumanian, Alexander Tamanian chief-architect of Yerevan.



Figure 2.21: Art gallery.



Figure 2.22: David of Sassoun monument in front of the railway station.

Martiros Saryan (1888–1972) studied in Moscow became a successful artist. His home in Yerevan is now a museum (Figures 2.23–2.24).



Figure 2.23: Martiros Saryan Museum.



Figure 2.24: Martiros Saryan Museum with one of Darayan's relatives as a guide. Photo by Nadia Habashi, 1995.

The distinguished composer Aram Khachaturian (1903–1973) was born in Tiflis in Georgia in an Armenian family. He studied at the Moscow Conservatory and was Communist Party member. His home in Yerevan was transformed into museum in 1982 (Figure 2.25).



Figure 2.25: Dr. Henri Dorion playing Khachaturian from memory on a Khachaturian piano.

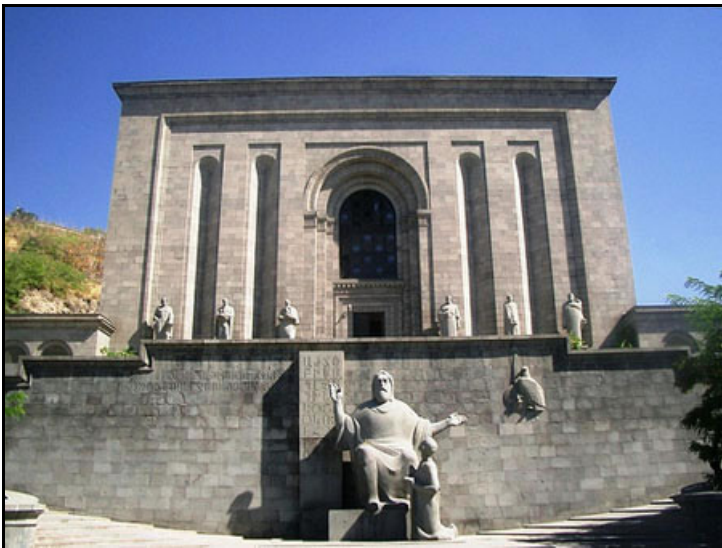


Figure 2.26: Matenadaran with Saint Mesrop Mashtots at the lower level.

Matenadaran. Matenadaran is Armenian for “repository of manuscripts.” It holds one of the world’s richest libraries of medieval manuscripts and books in Armenian and many other languages. The manuscripts are housed in a new building in 1962 named after Saint Mesrop Mashtots, the creator of the Armenian alphabet (Figures 2.26–2.27).



Figure 2.27: Entrance to Matenadaran.

ARMENIAN GENOCIDE

Armenian genocide took place by the Ottomans during and just after World War I. Total number of Armenian deaths is estimated to have been between 1 million and 1.5 million. Other ethnic groups were similarly attacked during this period. The expulsion of Muslims from the Balkans after the 1912 war also contributed to this wave of ethnic attacks. The Otto-

man Empire entered World War I on the side of the German Empire, the Austro-Hungarian Empire, and the Kingdom of Bulgaria against the United Kingdom, France, and the Russian Empire; later Italy. Japan, Belgium, Serbia, Montenegro, Greece, Romania and the Czechoslovak legion were minor members. Memorials to those perished were erected in Yerevan (Figures 2.29–2.30) as well as in other places.



Figure 2.28: Typical manuscripts on display.



Figure 2.29: Genocide memorial in Yerevan.



Figure 2.30: Genocide memorial in Yerevan.



Figure 2.31: Members of the delegation at Genocide memorial in Yerevan.



Figure 2.32: Academy of Sciences.

Musaler

The village of Musaler is about 10 km outside Yerevan. During World War I in 1915 the Ottoman army retreated at this location. The town was re-named in 1972 after Musa Ler the site of Armenian resistance in 1915. A monument commemorating this event was constructed there (Figure 2.33).



Figure 2.33: Monument at Musalar.

Sardarapat

During World War I, the Ottoman Army crossed in 1918 into Eastern Armenia and attacked Alexandropol (modern-day Gyumri) but was defeated at Sardarapat 40 km west of Yerevan. Fifty years after the heroic battle the Sardarapat Memorial Complex opened. At the entrance are two stone bulls, symbolizing the force and determination of the Armenian people united.



Figure 2.34: Entrance to the Sardarapat memorial complex.



Figure 2.35: Sardarapat memorial complex.

Gyumri

Gyumri is located about 120 km from Yerevan and is the second-largest city in Armenia. The name of the city has been changed from Kumayri or Gyumri, then Alexandropol (1840–1924), then Leninakan (1924–1990), then again as Gyumri after the collapse of the Soviet Union. The city suffered major damage during the 1988 earthquake. The Art Museum has interesting displays (Figure 2.36).

Geghard

The monastery of Geghard is partially carved out of the adjacent mountain, surrounded by cliffs (Figures 2.37–2.39). It is listed as a UNESCO World Heritage Site. The main chapel was built in 1215, the monastery complex was founded in the 4th century by Gregory the Illuminator at the site of a sacred spring inside a cave.



Figure 2.36: Gyumri Art Museum.



Figure 2.37: The monastery of Geghard.



Figure 2.38: The monastery of Geghard.



Figure 2.39: The monastery of Geghard.



Figure 2.40: With monks of the monastery. Photo by Nadia Habashi, 1995.

Chapter 3

Azerbaijan

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Figure 3.1: Flag of Azerbaijan.

INTRODUCTION

Azerbaijan (Figure 3.2) on the Caspian Sea, population 9 million in 2011, is the land of fire. Manuscripts of most Arabic and Persian authors, Marco Polo in the 13th century, and many 18th century European accounts of the Caucasus refer to Yanar Dag (“burning mountain”) (Figure 3.3). It is a natural gas fire which blazes continuously on a hillside near Baku. An ancient temple of fire was built by Zoroastrians to worship fire (Figure 3.4). Around 95% of the population are Muslims, mostly are Shia.



Figure 3.2: Azerbaijan.



Figure 3.3: Yanar Dag — land of fire on a hillside near Baku.



Figure 3.4: An ancient Zoroastrian temple near Baku.

HISTORY

Early settlements of the region included the Scythians in the 9th century BC then Iranian Medes came to dominate the area to the south of the Aras River. The Medes forged a vast empire between 900–700 BC. The area was conquered by the Achaemenids leading to the spread of Zoroastrianism. Later it became part of Alexander the Great's Empire and its successor, the Seleucid Empire. In the 7th century the Caucasian Albanian king Javanshir ruled (Figure 3.5). Despite numerous conquests by the Sassanids and Byzantines, Albania remained an entity in the region until the 9th century. At the beginning of the 11th century, the territory was gradually seized by waves of Turkic tribes from Central Asia. The area was ruled by the Iranian dynasties then self-ruling khanates till Russian occupation in 1812.

The first oil well was mechanically drilled in a suburb of Baku in 1846 though a number of hand-dug wells predate it. Large-scale oil exploration started in 1872 and Russian imperial authorities auctioned the oil-rich land around Baku to private investors. By the beginning of the 20th century almost half of world production was being extracted in Baku. After the collapse of the Russian Empire during World War I Azerbaijan, Armenia, and Georgia formed the Transcaucasian Democratic Federative Republic. After many battles the Red Army invaded Baku in 1920 and made it the capital of the Azerbaijan Soviet Socialist Republic.



Figure 3.5: A 7th-century sculpture of Caucasian Albanian king Javanshir found in Nakhchivan, National Museum of History of Azerbaijan.

MODERN HISTORY

Following the politics of glasnost and perestroika initiated by Mikhail Gorbachev, civil unrest and ethnic strife grew in various regions of the Soviet Union. Nagorno-Karabakh region (Figure 3.6) was mainly inhabited by Armenians and was made an autonomous oblast in Azerbaijan by Stalin in 1923. It did not want to remain within Azerbaijan. On January 9, 1990, the Supreme Soviet of the Armenian SSR voted to include this region in Armenia thus disregarding Soviet authority and Azerbaijani jurisdiction. This led to demonstrations anti-Armenian in Azerbaijan and called for independence from the Soviet Union. On January 13, 1990 massive anti-Armenian pogroms started which resulted in ninety deaths. On January 20 the Soviet Army invaded Baku and used excessive force that resulted in many casualties.

On October 18, 1991, the Azerbaijan parliament restored the country's independence. In 1993, the democratically elected president was overthrown by the military which resulted in the rise to power of Heydar Aliyev (Figure 3.7), the former leader of Soviet Azerbaijan. Other military coups took place and the country was reputed by corruption. Ilham Aliyev, the son of Heydar Aliyev, assumed the chairmanship of the New Azerbaijan Party as well as the office of presidency when his father passed away in 2003. He was re-elected to a third term as president in 2013 and launched a crackdown on opposition elements.

In January 2010 Memorial for Black January victims was erected in the Yasamal district of Baku (Figures 3.8–3.9).



Figure 3.6: Nagorno-Karabakh region.



Figure 3.7: A poster of Heydar Aliyev (1923–2003), right, leader of Soviet-era Azerbaijan from 1969 to 1982 and president from October 1993 to October 2003, and son Ilham Aliyev (born 1961) present President of Azerbaijan.



Figure 3.8: Memorial for Black January.



Figure 3.9: Memorial for Black January, 2014.

LANGUAGE

Two changes took place in the alphabet: from Perso-Arabic script to Latin in the 1920s (Figure 3.10) and from Latin to Cyrillic in the 1930s (Figure 3.11). Since independence, Azerbaijan disassociated itself from the

Soviet Union and adopted Latin alphabet to replace Cyrillic (Figure 3.12). Use of Azerbaijani language instead of Russian was emphasized.



Figure 3.10: A stamp in Perso-Arabic script.



Figure 3.11: A stamp in Cyrillic script.



Figure 3.12: A stamp in Latin script.



Figure 3.13: Monument to Nizami in Baku.

POETS AND WRITERS

Among the medieval authors born within the territory of modern Azerbaijani was the Persian poet Nizami (1141–1209) which was a pen name of Jamal ad-Din Abu Muhammad Ilyas ibn-Yusuf ibn-Zakki, He is famous for his “Leyli and Mejnun,” a poem based on the Arab legend of lovers. Qays fell in love with his cousin Layla, but was prevented from marrying her by Layla’s father. Qays became obsessed and started signing of his love in public. Meanwhile Layla was married against her will and died out of grief. She was buried in her bridal dress. Hearing this news, Qays rushed to her grave where he instantly died. They were buried side by side and their grave became a site of pilgrimage. A monument (Figure 3.13) and important street is named after Nizami in Baku.

Hüseyn Cavid (1882–1941) (Figures 3.14–3.15), a prominent Azerbaijani poet and playwright, studied in Tabriz in Iran then at İstanbul University. He worked as a teacher in Tiflis [Tbilisi] in Georgia, then came to Baku. In his works, he criticized any form of colonialism and oppression. He wrote during the time of Collectivization and Stalin purges in the Soviet Azerbaijan. He was arrested in 1937 on charges of plotting to overthrow the Soviet power and exiled to Magadan in Siberia. He was officially exonerated in 1956 and his remains were moved back to his homeland and reburied in a mausoleum built in his honour. Other poets and writers are honoured by statues (Figures 3.16–3.18).



Figure 3.14: Hüseyn Cavid (1882–1941).



Figure 3.15: Monument to Hüseyin Cavid (1882–1941) a prominent Azerbaijani poet and playwright, in a street named after him in Baku, 2014.



Figure 3.16: Statue of poet Aliagha Vahid in Baku, 2014.



Figure 3.17: Statue of a writer in Baku, 2014.



Figure 3.18: Statue of a writer in Baku, 2014.

CARPETS

The Azerbaijani carpet is a traditional handmade whose patterns are characteristic of many regions (Figure 3.19). A museum in Baku is devoted to carpets (Figure 3.20).



Figure 3.19: Typical Azerbaijani carpets.



Figure 3.20: Carpet Museum in Baku.

AZERBAIJAN AND EGYPT

President Heydar Aliyev visited Egypt in 1994 and met with President Husni Mubarak to discuss cooperation between the two countries. He was presented with ancient Egyptian statues to be erected in the Egyptian–Azerbaijani Friendship Park in Baku. Suzanne Mubarak Secondary School for Arabic Language was also to be erected in the park. Suzanne Mubarak was Egypt’s first lady at that time. Books for studying Arabic were also presented. The park was opened in a suburb of Baku in Absheron in 2007 and Susan Mubarak visited the park in 2008.

In recognition of this friendship, Azerbaijan erected a statue of Egypt’s president Mubarak in the park (Figure 3.21). A statue of Heydar Aliyev was also placed in Kanater near Cairo. President Ilham Aliyev visited Egypt in 2007 and met with President Mubarak and Rector of Al-Azhar University Sheik Mohammad Tantavi and other personalities. When the Egyptians removed Mubarak from power, support demonstrations took place in Baku and as a result the Mubarak statue was replaced by another one (Figure 3.22).

BAKU

Baku, known as Bakı in Azerbaijani, is the capital and largest city of Azerbaijan, about two million people. It is 28 m below sea level on the southern shore of the Absheron Peninsula (Figures 3.23–3.24). In the 1st century the Romans reached Baku. During the 8th century it was the realm of the Shirvanshahs. The city frequently came under assault of the Khazars. Between the 12th and 14th centuries, massive fortifications were under-

taken in Baku and the surrounding towns including the city walls. Shah Ismail I captured it in 1501 making it an integral part of his empire for the next centuries.



Figure 3.21: Statue of Mubarak removed in June 2011.

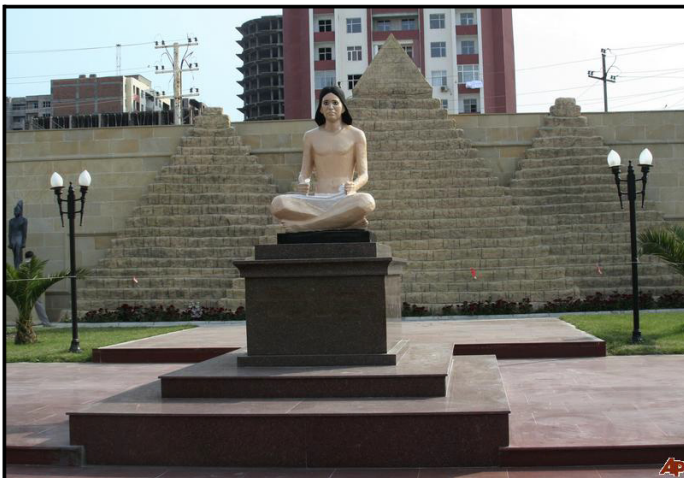


Figure 3.22: The statue that replaced Mubarak statue.



Figure 3.23: Baku and Absheron Peninsula.

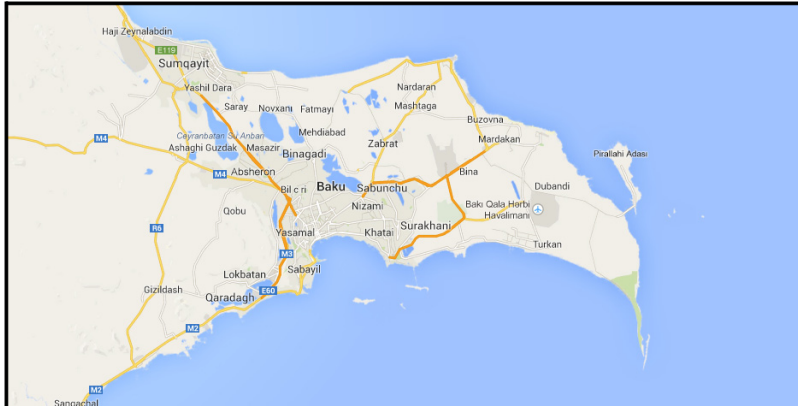


Figure 3.24: Absheron Peninsula.

In 1540 Baku was again captured by the Safavid troops. In 1578 the Ottomans captured Baku and held it till 1603, when it was again put under Persian control. The fall of the Iranian Safavids gave rise to the various Azerbaijani khanates. In 1813, the North and South Caucasus was conquered by Imperial Russia. It survived the World War II without falling to the Germans which was a Nazi aim at that time.

Old Town

The Old Town “Icheri shekher” (Figures 3.25–3.27) refers to the ancient Baku settlement which is surrounded by an ancient wall (Figures 3.28–3.30). It has narrow alleys, ancient buildings, and cobbled streets. It includes the Palace of the Shirvanshahs, the baths, and many mosques.

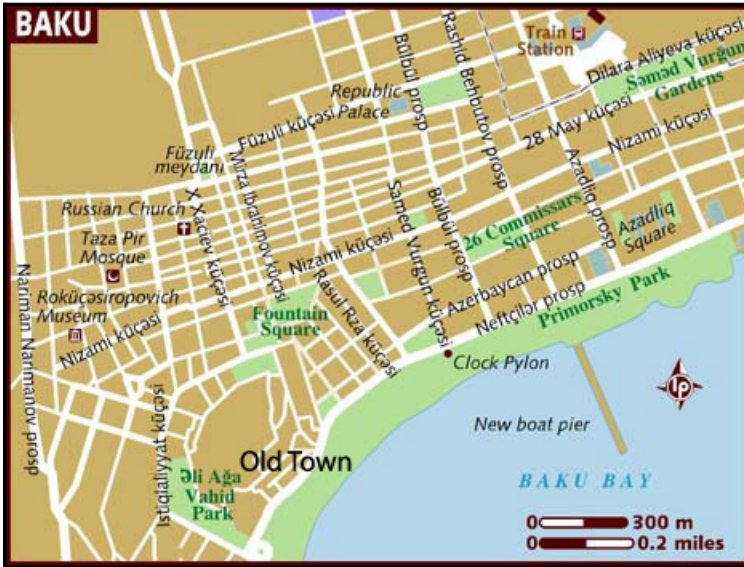


Figure 3.25: Map of Baku and the Old Town “Icheri shekher.”



Figure 3.26: Baku Bay [Caspian Sea].



Figure 3.27: Old Town [Icheri shekher].



Figure 3.28: The walls of Icheri shekher [photo by Nadia Habashi 2014].



Figure 3.29: The walls of Icheri shekher [photo by Nadia Habashi 2014].



Figure 3.30: Old Town at night.

The Maiden Tower (Figures 3.31–3.34) was built in the 12th century, now houses a museum which presents the story of the city. The site was believed to have been used as a Zoroastrian temple and as an observatory. It is a cylindrical eight story structure 29.5 m high. The thickness of the walls

varies from 5 m at the base tapering to 3.2 m at the top floors. All floors are lighted by narrow windows. It is said that the king wanted to force his daughter to marry a man she did not love and committed suicide by jumping from the top of the tower. This has been the subject of many Azerbaijani poems and plays.



Figure 3.31: Maiden Tower, 2014.



Figure 3.32: The Maiden Tower in Old Baku is a UNESCO World Heritage Site built in the 11th–12th century.



Figure 3.33: Entrance to the tower.

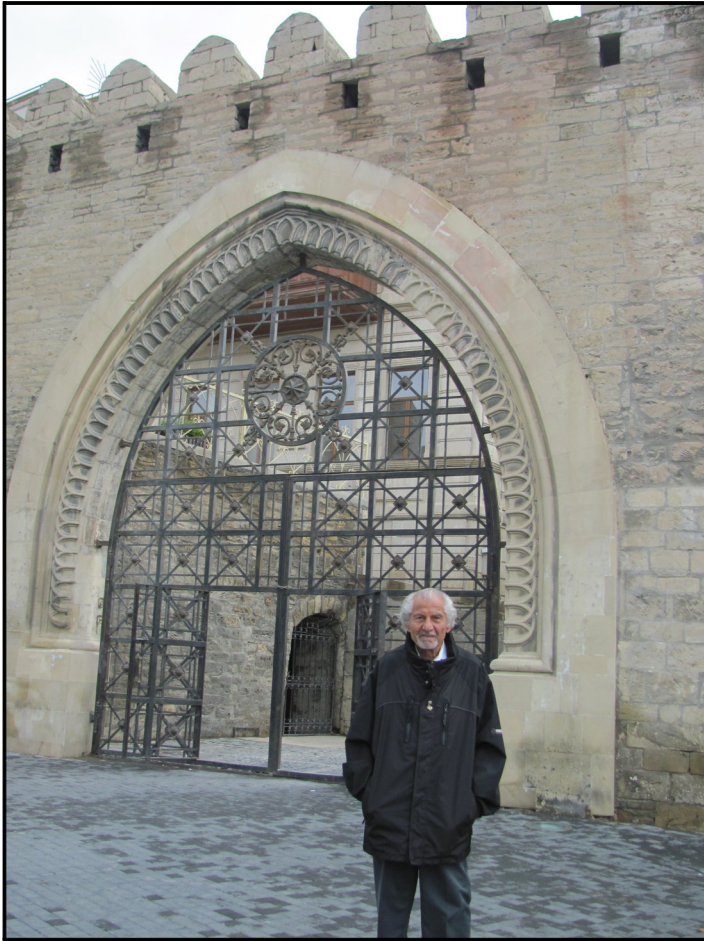


Figure 3.34: A view in the Old Town.

Palace of the Shirvanshahs (Figures 3.35–3.36) contains the burial-vaults, the mosque, mausoleums, and the remnants of the bath-house.

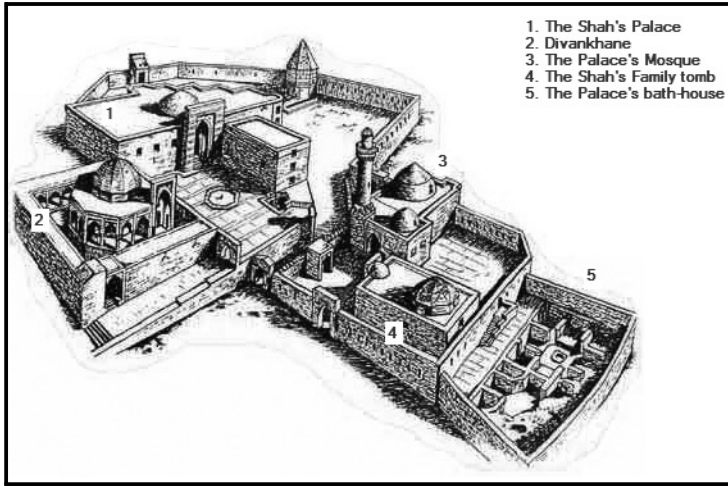


Figure 3.35: Palace of the Shirvanshahs in Old Town.



Figure 3.36: Ruins of Palace of the Shirvanshahs.

Modern Baku

Baku today is characterized by broad streets, beautiful buildings which are illuminated by night, elegant boutiques, shopping centres, and hotels (Figures 3.37–3.45). The Flame Towers (Figures 3.46–3.48) have a height of 190 m, consist of apartments, a hotel, and office blocks completed in 2012.



Figure 3.37: Baku by night showing the Flames Towers on the right.



Figure 3.38: An illuminated building at night.



Figure 3.39: An illuminated building at night.



Figure 3.40: Nizami Street at night.



Figure 3.41: Four Seasons Hotel.



Figure 3.42: Hilton Hotel.



Figure 3.43: A view in Baku.



Figure 3.44: In front of a beautiful gate, 2014.



Figure 3.45: Art shown on a building [Nadia Habashi, 2014].



Figure 3.46: View of Baku and Flame Towers, 2014.



Figure 3.47: View of Baku and Flame Towers, 2014.



Figure 3.48: Baku Fountain.

Crystal Hall. The Crystal Hall (Figure 3.49) is an indoor arena opened in 2012 to host the Eurovision Song Contest 2012.



Figure 3.49: Crystal Hall.

Heydar Aliyev Cultural Centre. The Heydar Aliyev Centre (Figure 3.50) is a conference hall, an art gallery, and a museum designed by Iraqi-British architect Zaha Hadid named for Heydar Aliyev, past President of Azerbaijan, opened in 2012.



Figure 3.50: Heydar Aliyev Cultural Centre.

SOCAR Tower. SOCAR Tower (Figure 3.51) is the headquarters of the State Oil Company of Azerbaijan Republic Designed by Heerim Architects from South Korea, 209 m tall and 42 floors, completed in 2014.

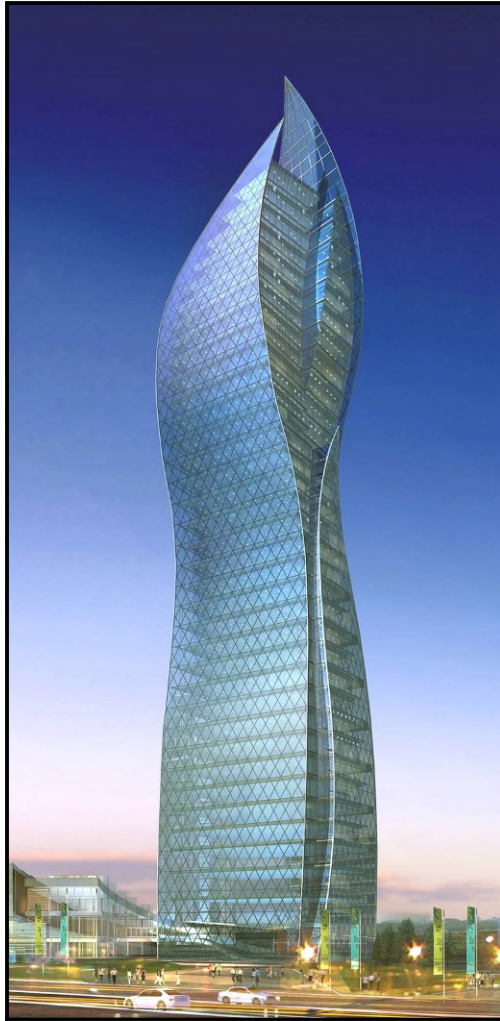


Figure 3.51: SOCAR Tower.

Baku State University. Baku State University (Figure 3.52) was opened in 1919 by the government of the Azerbaijan Democratic Republic. In the early years of the Soviet era, Baku already had Azerbaijan State Oil Academy, Azerbaijan Medical University and Azerbaijan State Economic University. In the post-WWII period, a few more universities were established such as Azerbaijan Technical University, Azerbaijan University of Languages and the Azerbaijan Architecture and Construction University. After 1991 when Azerbaijan gained independence from the Soviet Union, the fall

of communism led to the development of a number of private institutions, including Qafqaz University and Khazar University.



Figure 3.52: Baku State University.

The Azerbaijan National Academy of Sciences (Figure 3.53) is the main state research organization in Azerbaijan.

Nizami Museum of Azerbaijan Literature. Baku has numerous libraries, many of which contain vast collections of historic documents from the Roman, Byzantine, Ottoman, and Soviet periods, as well as from other civilisations of the past. The National museum of Azerbaijan literature, named after Nizami Ganjavi (Figure 3.54), was established in 1939. It is one of the richest treasuries of Azerbaijani culture. The sculptures of the eminent Azerbaijani poets and writers were placed on the façade of the museum.



Figure 3.53: Academy building, 2014.



Figure 3.54: Nizami Museum of Azerbaijan Literature.

Baku Metro. The Baku Metro, opened in 1967 has two lines which cross each other in the centre of the city at the Baku Railway Station (Figures 3.55–3.57). It is characterized by deep stations and exquisite decorations that blend traditional Azerbaijani national motifs with Soviet ideology.

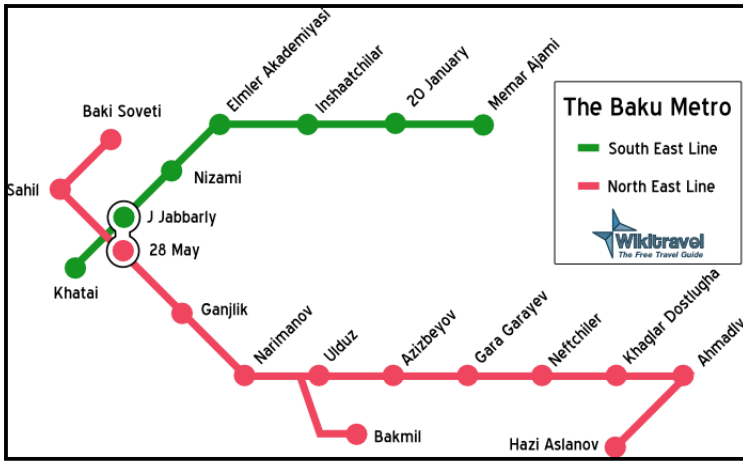


Figure 3.55: The Baku Metro.



Figure 3.56: The Baku Metro.

Bibi-Heybat Mosque. Bibi-Heybat Mosque (Figure 3.58) was built in the 1990s, a recreation of the mosque with the same name built in the 13th century and was destroyed by the Bolsheviks in 1936. Today it is the spiritual centre for the Muslims of the region.



Figure 3.57: Baku Railway Station.



Figure 3.58: Bibi-Heybat Mosque.

THE PETROLEUM INDUSTRY IN AZERBAIJAN

Azerbaijan drilled an oil well using a primitive drilling mechanism (Figure 3.59) more than a decade before an oil well was drilled in North America. In 1901, it produced more than half of the world's oil. Today, it produces about 800 000 barrels per day and 1 billion cubic metres of gas per year, which is low as compared with other producing countries (Figures 3.60–3.61). The country shows prosperity and development.



Figure 3.59: Workers in Baku using primitive drilling methods.

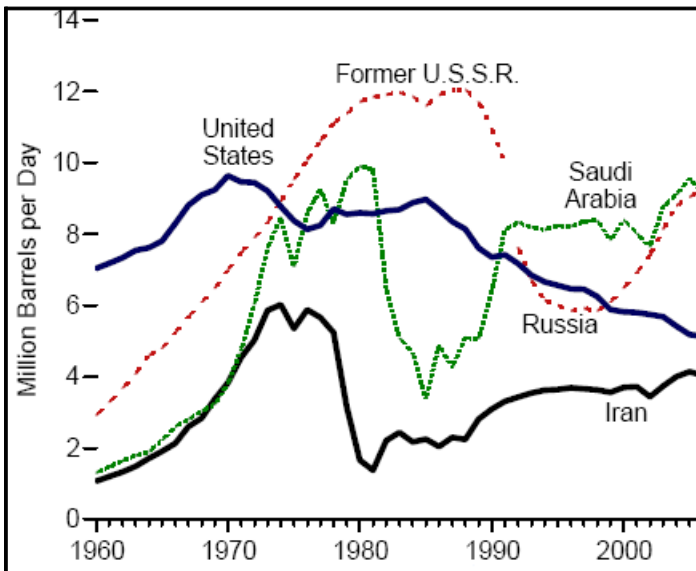


Figure 3.60: Major producers of crude oil.

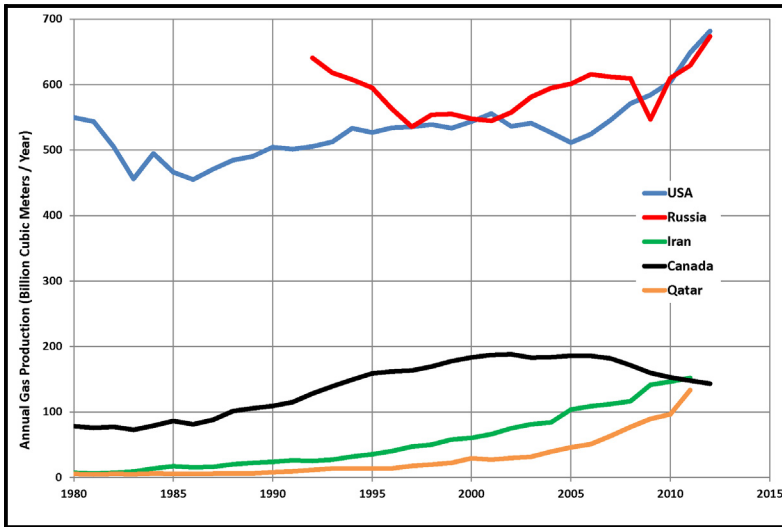


Figure 3.61: Major producers of natural gas.

In 1806, the Russian Empire occupied Baku Khanate and controlled oil production. Later exclusive rights to produce oil were given to individuals. In 1846 a small kerosene factory was built. Whisky barrels were used to collect and store the oil. To date, oil is measured and sold per barrel. Interestingly, after crude oil was processed, one of the by-products (gasoline) at that time was simply dumped or used as solvent. In the second half of the 19th century Baku turned into the biggest oil region of Russia (Figure 3.62).



Figure 3.62: Oil in Baku in the second half of the 19th century.

Kerosene

Kerosene was widely used in households cooking in Primus stoves invented in 1892 (Figure 3.63) and lighting fuel in lamps and lanterns (Fig-

ures 3.64–3.65) before electrical distribution became available. Its name is derived from Greek κηρός meaning wax, which was registered as a trademark in 1854. Kerosene burned longer and with a brighter light than other oils.

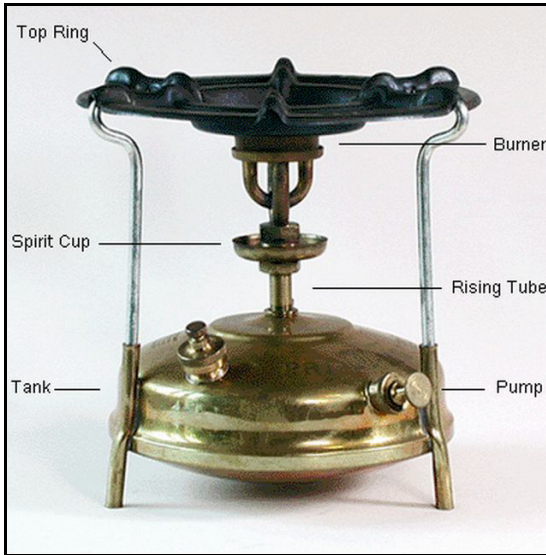


Figure 3.63: Kerosene cooking in portable stoves.



Figure 3.64: Kerosene lamps.



Figure 3.65: Kerosene lantern.

Kerosene is a clear liquid obtained from the fractional distillation of petroleum between 150 °C and 275 °C. The widespread availability of cheaper kerosene was the principal factor in the decline in the whaling industry in the late 19th century, as the leading product of whaling was oil for lamps. Kerosene also replaced turpentine obtained from the distillation of wood as a fuel. Kerosene stoves have replaced traditional wood-based cooking appliances. Kerosene was sold in some filling stations or in tank cars (Figure 3.66). The vast Russian empire needed more of the new light than anyone else as St. Petersburg, the capital, barely had six hours of daylight in the winter.



Figure 3.66: Selling kerosene from a tank cars.

Today, kerosene is mainly used in fuel for jet engines in several grades. One form is burned with liquid oxygen as rocket fuel. Kerosene is used to store active metals that react with air or water such as potassium, sodium, lithium, etc. It also used a pesticide.

Mendeleev in Baku 1863

Dmitri Ivanovich Mendeleev (1834–1907) (Figure 3.67) was 29 years old when he was invited by the Russian oil businessman Vasily Alexandrovich Kokorev (1817–1889) (Figure 3.68) to visit his oil refinery in Baku constructed in the 1850s and make recommendation since it had become less profitable. Mendeleev at that time was professor at Saint Petersburg University, just returned from Heidelberg in Germany where he was sent by the Russian Government in 1859 to 1861 to study. Apparently he became

known to Kokorev through Germans who supplied him with some equipment.

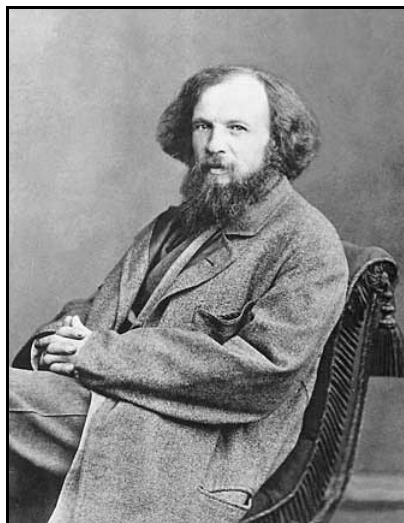


Figure 3.67: Dmitri Ivanovich Mendeleev (1834–1907).



Figure 3.68: Vasily Alexandrovich Kokorev (1817–1889).

Mendeleev left for Baku on September 6, 1863, stayed in Moscow at Kokorev's mansion across the Moscow River from the Kremlin. He then left to Nizhniy Novgorod and onwards aboard a ship along the Volga then to Baku. He returned on October 8.

After the visit, Mendeleev proposed building a pipeline for oil transportation from wells to the sea, where oil was to be stored in reservoirs then transported across the Caspian Sea by tanker till Volga and from there till Nizhniy Novgorod where a factory for processing oil to various products should be built (Figure 3.69). He argued further that Cheleken, then part of Turkmenistan [now known as Hazar] (Figure 3.70), would be occupied by the Russian military for exploitation of its oil resources. The project did not appear to have gone ahead. Incidentally Turkmenistan was annexed by Russia in 1881 but became independent in 1991.

Kokorev suggested that Mendeleev become technical director of the new refinery to be built near Nizhniy Novgorod. Mendeleev tempted to give up his low-paying academic position in order to work full-time in the oil industry for much more money but he declined the offer because his wife did not like the idea. He was even offered later to become a co-owner of the refinery but after much thought he declined. Six years later Mendeleev became famous for formulating the Periodic Table.

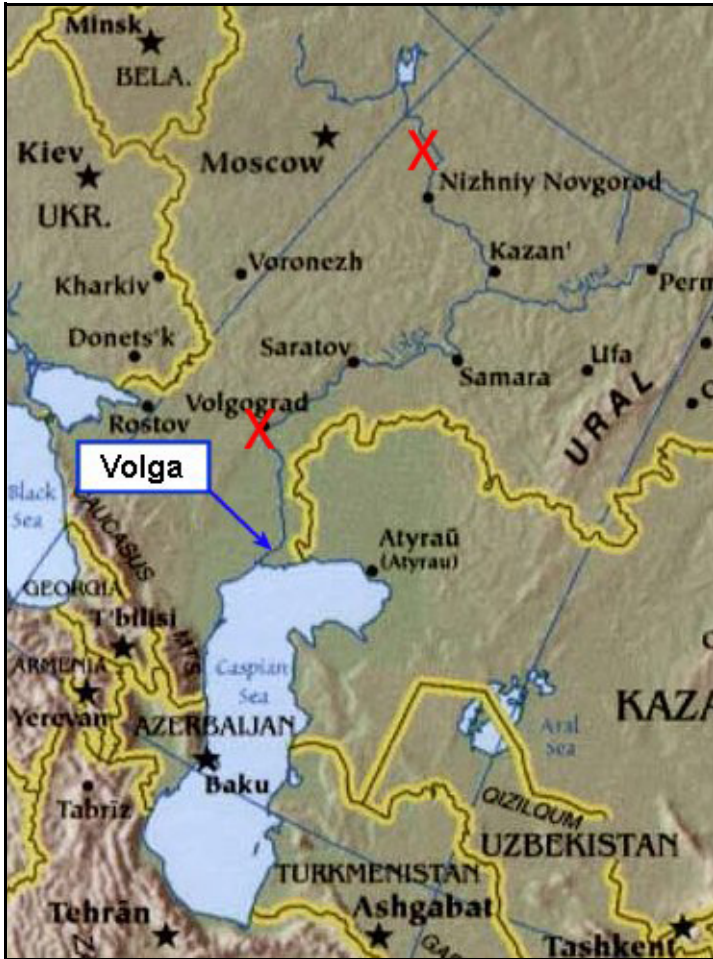


Figure 3.69: Map showing Baku on the Caspian Sea and Nizhniy Novgorod and Volgograd, formerly Tsaritsyn (1589–1925), and Stalin-grad (1925–1991) on the Volga, X.



Figure 3.70: Map showing Baku and Cheleken, X.

Transportation of oil

The refineries around Baku moved their oil from the wells to Baku in wooden barrels on carts, which was inefficient. Manufacturing barrels was made worse by the lack of wood in the region. The barrels were prone to leaking. Oil was shipped by boat up the Volga. In order to improve efficiency, refiners asked the Caucasus and Mercury Shipping Company owned by Kokorev to install cisterns so that oil could be shipped along the Volga in bulk but the company refused.

Mendeleev in France 1867

In 1867, Princes I. K. Romanovskii, and F. Leiktenbergskii invited Mendeleev to take part in the Russian delegation for the Paris World Fair as an expert on chemistry. Mendeleev left St. Petersburg on March 3, 1867, stopped in Hamburg for few days then arrived in Paris on March 12; he returned on May 13. Soon after settling in he set-off to examine the exhibition. One evening he talked with the then famous Ivan Sergeyeovich Turgenev (1818–1883) who left Russia to live in Paris. He also visited a glass factory, perhaps recalling his youth and his mother.

Mendeleev was impressed with the efficient method of transporting oil and its by-products that was on display at the American exhibit. In his report he stated that North America sends to Europe a million puds¹ of oil and kerosene. He advocated that the Russian oil industry should be privately owned to attract the capital needed and not leased by the government to businessmen for a period of four years.

Government commissions 1868

In 1868, two government commissions were formed — one in Tbilisi and one in St. Petersburg. The Tbilisi commission noted that the United States, which was not tied by a leasing system, experienced growth. In Russia the oilmen did not open up new wells because of the leasing system. As a result it was impossible for modernization. The St. Petersburg commission found the need to end the leasing system.

Periodic Table

In 1869, Mendeleev discovered the Table of Elements (Figure 3.71).

Government commission in 1875

In 1875, America made some huge oil discoveries and in the absence of any taxes, the price of oil fell. The threat of the influx of cheap American kerosene was taken seriously and a commission was created to examine the question of taxes on oil. As a result the Russian Government decided to send Mendeleev to examine the American system.

¹ A pud equals 16.4 kg.

Reihen	Gruppe I. — R ⁰	Gruppe II. — R ⁰	Gruppe III. — R ⁰ ^a	Gruppe IV. RH ^a R ⁰ ^a	Gruppe V. RH ^a R ⁰ ^a	Gruppe VI. RH ^a R ⁰ ^a	Gruppe VII. RH R ⁰	Gruppe VIII. — R ⁰ ^a
1	H=1							
2	Li=7	Be=9,4	B=11	C=12	N=14	O=16	F=19	
3	Na=23	Mg=24	Al=27,3	Si=28	P=31	S=32	Cl=35,5	
4	K=39	Ca=40	—=44	Ti=48	V=51	Cr=52	Mn=55	Fe=56, Co=59, Ni=59, Cu=63.
5	(Cu=63)	Zn=65	—=68	—=72	As=75	So=78	Br=80	
6	Rb=85	Sr=87	?Yt=88	Zr=90	Nb=94	Mo=96	—=100	Ru=104, Rh=104, Pd=106, Ag=108.
7	(Ag=108)	Cd=112	In=113	Su=118	Sb=122	Te=125	J=127	
8	Cs=133	Ba=137	?Di=138	?Ce=140	—	—	—	—
9	(—)	—	—	—	—	—	—	—
10	—	—	?Er=178	?La=180	Ta=182	W=184	—	Os=195, Ir=197, Pt=198, Au=199.
11	(Au=199)	Hg=200	Tl=204	Pb=207	Bi=208	—	—	—
12	—	—	—	Th=231	—	U=240	—	—

Figure 3.71: The Periodic Table of Mendeleev, 1869.

Mendeleev in America 1876

Mendeleev departed from St. Petersburg on May 30, 1876 with his English speaking assistant, and returned September 11. The trip was sponsored by the Minister of Finance to understand the modern technology of the oil business in America, the tax policy on oil, and to understand the reasons for the lowering of kerosene prices.

Mendeleev went to America a few years after the Civil War [1861–1865]. He observed that the liberation of the serfs in Russia in 1861 was accomplished without such a tragedy. His visit coincided with the George Custer and Little Big Horn Battle, which occurred June 25–26, 1876 and was the subject of great discussion in American society. In this battle 268 died including Custer and 55 were injured by the Sioux Indians in Chayenne. As a result, Mendeleev discussed the causes surrounding the massacre and tried to explain American race relations.

Mendeleev visited the oil fields in Pennsylvania and the Philadelphia World Fair to examine the oil display. He took a trip to Niagara Falls and visited the meteorological centre in Washington. Meteorology was a subject which he would later study for the Russian Government.

Recommendations. On his return, Mendeleev wrote to the Minister of Finance, *Memorandum regarding the abolition of lighting oil taxes*. He mentioned the necessity of cancelling the petroleum tax. American oil started to decrease when taxes on crude oil and its refining were abolished. The result was an increase in use. Mendeleev discussed fire hazards and kerosene, dangers of its transportation and storage, refining of oil by-products, oil pipelines, how to attract capital to the Russian oil industry, and how to encourage its growth. Furthermore, because there was insufficient technical

information on Russian oil, it was necessary that a study of the industry be undertaken including the heavy oil, its uses and its marketing. He argued that the refineries should not only be in Baku but along the Volga and in the centre of use, close to those places where barrels are cheap. Mendeleev wrote that it was necessary that different people do the construction, sales, give technical advice, drilling, construction of reservoirs and other apparatus¹. He also commented on the state of the bureaucracy and the employment of women in America, and the arrival of the first gas piston engine in America.

Mendeleev noted that only half of America's kerosene was consumed at home while the rest was exported. He observed that America used three times kerosene per capita as Europe while Russia was using less than Europe. America's economic strengths, was the result of the quality of their oil, which produced much greater quantities of kerosene than Russia's. American oil gave 75% kerosene and 15% residue while Russian oil produced 33% kerosene and 60% residue. He was also perplexed by America's lead in oil production when it was such a backward country.

Mendeleev believed that the Baku oil fields could compete with the American product if the Russian government similarly abolished the taxes it assessed on the industry. Once Russian kerosene was plentiful and reached a low price then Russia, should export to Europe by using pipelines, special barges, and wagons.

Mendeleev believed that America was devoid of art and poetry. Science was practically non-existent especially in regards to oil production. The concern was how to get the most now and not about the future. He concluded that there are no economic lessons to be learnt from America. The memorandum was quickly followed up by the publication of a short essay, "The American Oil Industry and its Relations to the Russian Oil Industry in the Caucasus," intended for a scientific audience.

Nobels in Baku

The Petroleum Production Company Nobel Brothers was set up by Ludvig Nobel (1831–1888) (Figure 3.72) and Baron Peter von Bilderling (1844–1900) in 1876 in Baku. It was headquartered in St. Petersburg and became one of the largest oil companies in the world producing 50% of the world's oil. Ludvig Nobel was an engineer and a businessman. The Nobel family was from Sweden but lived many years in Saint Petersburg. The company had been facing financial difficulties since the end of the Crimean War in 1856 due to a severe cut in the military budget ordered by the new Tsar Alexander II, and eventually, in 1862, the firm was sold.

¹ In 1880, Ludwig Nobel would prove him wrong.

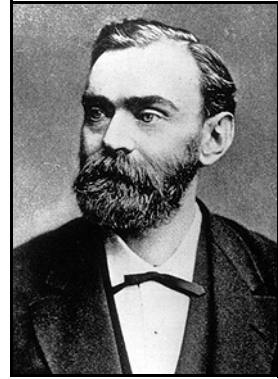
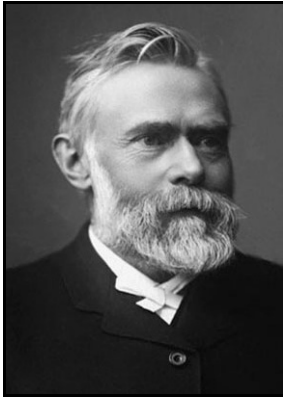


Figure 3.72: Ludvig Nobel (1831–1888). **Figure 3.73:** Robert Nobel (1829–1896). **Figure 3.74:** Alfred Nobel (1833–1896).

With some funds he had managed to save, Ludvig opened a new firm, the Machine-Building Factory. Initially producing cast-iron shells, the factory became in a few years one of the largest producers of gun carriages of Russia. When his brother Robert (1829–1896) (Figure 3.73) bought a refinery in Baku, Ludvig invested in refinery modernization. He established technical chemical research labs employing dozens of scientists, finding ways to treat oil, developing new uses for oil, and developing new products derived from oil. By 1876, the Nobel brothers established themselves as the most competent refiner in Baku and sent the first shipment of illuminating oil to St. Petersburg. By 1879, Ludvig turned the business into a shareholding company, Branobel, of with brothers Robert and Alfred (1833–1896) (Figure 3.74) and others.

Improvement in the Azerbaijan oil industry

Great changes were introduced in the area of oil storage, for example, iron reservoirs were used. In 1877, construction of the first oil pipeline linking Surakhany oil field and refinery in Baku was completed. By 1890, there were more than 25 pipelines. The Nobel Brothers were the first to introduce railway tanks (cisterns) for oil transportation in 1883. In 1884, the oil producers in Baku established the Oil Extractors Congress Council under the direction of Ludvig Nobel. They created the magazine, *Neftyanoe Delo* (Oil Business). Ludvig and Robert Nobel built Villa Petrolea which received on October 9, 1888 Emperor Alexander III of Russia with his family. Currently functions as a museum.

Ludvig Nobel invented oil tankers; the world's first tanker was *Zoroaster* (Figure 3.75) designed in Sweden in 1878 and made its first trip from Baku

to Astrakhan. By 1890, 345 tankers, including 133 steam vessels and 212 sailing vessels were sailing on the Caspian Sea. The oil-saturated earth in Baku was covered by fertile soil and fresh water was imported from the Volga on ships travelling from Astrakhan which used it as ballast instead of sacks of sand. Large companies started to employ geologists to describe and map prospective structures. By early 20th century, innovation started to improve the backward well drilling practices.



Figure 3.75: The world's first oil tanker Zoroaster, 1878.

Tankers played an important role in shipping fuel. For example, on July 22, 1892 the first tanker sailed from Britain to Batum to be filled with kerosene, subsequently passed through the Suez Canal [opened in 1869] on August 23 for the Far East.

Mendeleev's other trips to Baku

Mendeleev made a second trip to Caucasus in 1880 and was befriended with Azerbaijani oil industrialist Haji Zeynalabdin Taghiyev (1821?–1924) (Figure 3.76). In 1884 (October 26–November 8) he took an active part in the Congress of Baku Oil Industrialists. In May 1886 he made another trip to Baku and gave speeches about the conditions of development of oil business. On March 1887 he presented a report to the minister of state properties about the issue of oil and kerosene pipelines.

Chicago 1893

Upon the request of the Russian finance minister, in 1893, Mendeleev prepared a detailed article entitled "Manufacturing Industry and Trade of Russia" for visitors of International Exhibition in Chicago on the occasion of the 400th anniversary of the discovery of America. This article presented a full historical review of development of Russian oil industry.



Figure 3.76: Haji Zeynalabdin Taghiyev (1821?–1924).

Pipelines

In 1880, Mendeleev proposed the construction of Baku–Batum pipeline to transport oil to the world market (Figure 3.77). The project was postponed as premature, and the construction started only in 1896 and finished in 1906. The first pipeline was kerosene pipeline. It was at that time the longest pipeline in the world. It was Alfred Nobel's dynamite that helped build the pipeline through the mountains. Other pipelines were later constructed.



Figure 3.77: Baku–Batum pipeline [Sangachal–Supsa], 1906.

Rothschild Brothers in Baku

In 1883 the Caspian–Black Sea Oil Industry & Trade Society was established by Alphonse Rothschild (1827–1905) (Figure 3.78) the son of Paris banker James Rothschild (1792–1868). After his father's death, Alphonse took on the management of the Paris banking business. Alphonse Rothschild opened branches of his company in many cities in the Volga area, in the Baltic States, in Belorussia, and in and Poland. After his death his younger brother Baron Edmond Rothschild (1845–1934) (Figure 3.79) took over. The construction of the Transcaucasia railway (Figure 3.80) connecting Baku and Batumi was finished in 1883 thanks to a Rothschild loan.

In the early 1900s, the Nobel Brothers and the Rothschilds concluded an agreement to prevent the American Standard Oil from entering the Caucasus.

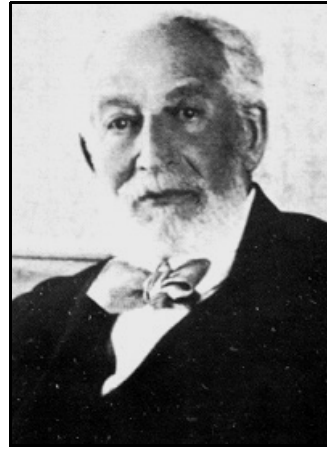


Figure 3.78: Baron Alphonse Rothschild (1827–1905). **Figure 3.79:** Baron Edmond Rothschild (1845–1934).



Figure 3.80: Transcaucasia railway connecting Baku and Batumi.

World War I

On the eve of the World War I, the Russian General Oil Company, Royal Dutch Shell, and Partnership of Nobel Brothers controlled 60% of oil production. In 1912, Anglo-Dutch firm Shell obtained 80% shares of Caspian-Black Sea Society Mazut, which had belonged to Rothschilds. After the Russian Revolution, nationalization of the industry was decreed by the Baku commune in June 1918. As a result of World War I no oil export was possible, oil storage facilities were damaged, and wells were idle. The government of Democratic Republic of Azerbaijan was unable to restore the damage done to the oil industry. On 28 April 1920, the Bolsheviks seized power in Baku and confiscated and nationalized the industry. They formed Azneft State Company. Scientific exchange started with the USA and engineers from Baku visited the oil fields in Pennsylvania, Oklahoma, California, and Texas. The Azerbaijan State Oil Academy was established in 1920 to train oil specialists.

World War II

By World War II, the Nazis were determined to capture the oil fields of the Caucasus. Their defeat at Stalingrad forced a retreat.

Offshore exploration

Oil production from the existing fields started to decline after World War II, as a result of over-production. In the early 1930s, engineers constructed the first offshore wells and in 1949 important discoveries were made. In 1957 several large oil and gas fields were discovered and put into production. After gaining independence Azerbaijan the Baku–Tbilisi–Ceyhan pipeline was opened in 2006 to transport crude oil (Figure 3.81). It is the second longest oil pipeline in the world — the longest being the Druzhba pipeline from Russia to central Europe.



Figure 3.81: Baku–Tbilisi–Ceyhan pipeline, 2006.

Nobel Heritage Fund

In 1994 a postage stamp was issued in Azerbaijan honouring the Nobels (Figure 3.82). In 2004, the Baku Nobel Heritage Fund was established. In 2008, it opened its doors as the Nobel Brothers Museum. In 2010, Ludvig Nobel's great-grandson Filip Nobel established the Nobel International Fraternity Fund aimed at the development of sciences in Azerbaijan. A street in Baku is named after Nobel.



Figure 3.82: Azerbaijan stamp honouring the Nobels and their partner Baron Peter von Bilderling.

ACKNOWLEDGEMENT

I am indebted to our friends Elvin Malikov at the Chemistry Department at the University in Baku and his sister Turkan for being our guides in the city (Figure 3.83).



Figure 3.83: Our friends in Baku: Elvin Malikov and his sister Turkan, 2014.

Chapter 4

Georgia

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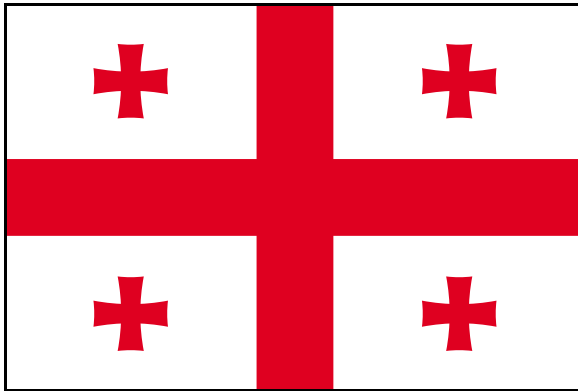


Figure 4.1: Flag of Georgia.



Figure 4.2: Historic map of Georgia: Kingdom of Colchis.

INTRODUCTION

If the Caucasus region was composed of small kingdoms in ancient times, Georgia was fragmented further into small principalities. Georgia, also known in ancient times as Colchis (Figure 4.2), was one of the first places where the metallurgy of iron was practiced, estimated to be about 1500 BC, and became intensive in the 7th or 6th centuries BC. Gold was extensively worked out also during this period. Copper alloys containing up to 20% antimony were found in artefacts dating from the 15th and 14th century BC. The land was always contested between the Romans and the Sassanides' rulers in Persia; finally, the Romans won the battle of Nissibin (Nisibis) in 248 AD. The name Georgia is mistakenly believed to come from the country's patron saint Saint George. Actually it is derived from the name *Kurj* or *Gurj*, by which they are known to the Arabs and modern Persians.

GOLDEN FLEECE

According to Greek mythology, Georgia is supposed to be the land of the *Golden Fleece*. The story goes as follows: In very ancient times, there lived in Thessaly a king and queen named Athamas and Nephele. They had two children, a boy and a girl. After a time, Athamas grew indifferent to his wife, put her away, and took another. Nephele suspected danger to her children from the influence of the stepmother, and took measures to send them out of her reach. Mercury assisted her, and gave her a ram with a Golden Fleece, on which she set the two children, trusting that the ram would convey them to a place of safety. The ram leaped into the air with the children on his back, taking his course to the East, till when crossing the strait that

divides Europe and Asia, the girl fell from his back into the Dardanelles. The ram continued his career till he reached the kingdom of Colchis, on the eastern shore of the Black Sea, where he safely landed the boy who was hospitably received by the king of the country. The boy then gave the *Golden Fleece* to the king, who placed it in a consecrated grove, under the care of a sleepless dragon.

There was another kingdom in Thessaly near to that of Athamas, and ruled over by a relative of his. The king Æson, being tired of the cares of government, surrendered his crown to his brother on condition that he should hold it only during the minority of Jason, the son of Æson. When Jason was grown up and came to demand the crown from his uncle, he pretended to be willing to yield it, but at the same time suggested to the young man the glorious adventure of going in quest of the Golden Fleece, which it was well known was in the kingdom of Colchis, and was, as the uncle pretended, the rightful property of their family.

Jason was pleased with the thought and made preparations for the expedition. Jason employed Argus to build him a vessel capable of containing fifty men. The vessel named "Argo," from the name of the builder. Jason sent his invitation to all the adventurous young men of Greece, and soon found himself at the head of a band of bold youths, many of whom afterwards were renowned among the heroes of Greece. They are called the Argonauts, from the name of their vessel.

The "Argo" with her crew of heroes left the shores of Thessaly and thence to Thrace and finally landed at the kingdom of Colchis. Jason made known his message to the Colchian king who consented to give up the Golden Fleece under very severe conditions. Jason accepted and succeeded in seizing the fleece with the help of Medea, the king's daughter. Jason with his friends, and together with Medea, then hastened to their vessel and made their way back home safely. Jason delivered the fleece to his uncle. What became of the fleece afterwards is not known but perhaps it was not worth the trouble it had cost to procure it.

It is rather surprising that the myth of the Golden Fleece is widely publicized in art and literature, not only in ancient Greece but also in modern times. Further, the Order of the Golden Fleece was founded by Duke Philip the Good during his marriage celebrations in 1430. The order was presented to the most distinguished members of his realm. The Order (Figure 4.3) has been prized by many emperors.



Figure 4.3: The Order of Golden Fleece.

CHRISTIANITY IN GEORGIA

Christianity came to Georgia in 337 AD. The Bible was also translated into Georgian in the 5th century, as the Georgian alphabet was developed for that purpose. The Christian church in Georgia was crucial to the development of a written language, and most of the earliest written works were religious texts. The Georgians' new faith replaced pagan beliefs and Zoroastrianism. Georgians remained mostly Christian despite repeated invasions by Muslim powers, and long episodes of foreign domination.

FOREIGN INVASION

From 570–580, the Persians took over Tbilisi and ruled it for about a decade. In the year 627, Tbilisi was sacked by the Byzantine/Khazar armies and later, in 736–738, Arab armies entered the town under Marwan II Ibn-Muhammad. After this point, the Arabs established an emirate centred in Tbilisi. In 764, Tbilisi was sacked by the Khazars. In 853, the armies of Arab leader Bugha Al-Turki invaded Tbilisi in order to enforce its return to Abbasid allegiance. The Arab domination of Tbilisi continued until about 1050. In 1068, the city was once again sacked by the Seljuk Turks.

BAGRATIONI DYNASTY

In 1122, the troops of David the Builder also known as David II (1073 – 1125) (Figure 4.4), of the Bagrationi dynasty, was a king of Georgia from 1089 until his death. He succeeded in driving the Seljuk Turks out of the country and made Tbilisi the capital of a unified Georgia. His reforms of the army and administration enabled him to re-unite the country and bring most of the lands of the Caucasus under Georgia's control.



Figure 4.4: David II (1073–1125).

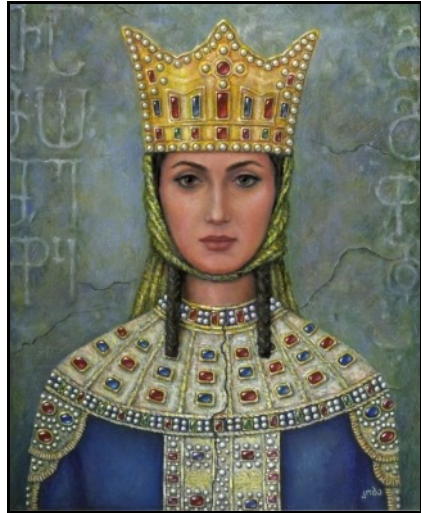


Figure 4.5: Tamar the Great (ca.1160–1213).

Tamar the Great (ca. 1160 –1213) (Figure 4.5) of the Bagrationi dynasty, daughter of George III, was Queen of Georgia from 1184 to 1213. Upon her ascension to the throne after her father's death she embarked on an energetic foreign policy and a unique Georgian Christian culture flourished. Her rule was considered the Golden Age of Georgia. However, two decades after her death, the Mongol attacked the country.

ALLIANCE WITH RUSSIA

Convinced that his isolated Christian kingdom could not hold out against the Moslem enemies surrounding his country, Herekle II (1720–1798) (Figure 4.6) of the Bagrationi Dynasty, signed in 1783 an alliance with Catherine the Great of Russia. However, in 1801, Tsar Alexander I (1777–1825) annexed the country. After the Russian Revolution, in 1917, there was an attempt to declare independence but it was without success. On April 28, 1920, the Red Army marched into Baku and on February 25 they were in Tiflisi (Tbilisi). Between 1922 and 1936 Georgia was part of a single Transcaucasian Republic — one of the 15 republics of the Soviet Union, the dividing line between Europe and Asia.



Figure 4.6: Herekle II (1720–1798).

MODERN GEORGIA

In 1991 after the collapse of the Soviet Union, Georgia tried to abolish South Ossetian autonomy (Figure 4.7). Similar autonomy issues also exist in Abkhazia and Chechen. In 2008 Georgian military attacked the South Ossetian capital of Tskhinvali which resulted in intervention of Russia. The Ossetians are an Iranian ethnic group of the Caucasus Mountains, mostly Eastern Orthodox Christian, with a Muslim minority. They descend from the Alans, a Sarmatian tribe. Forced out of their medieval homeland (south of the River Don in present-day Russia) during Mongol rule, Alans migrated towards and over the Caucasus mountains.



Figure 4.7: Contested region of Ossetia.



Figure 4.8: Georgia and her neighbours.

The first visit to Georgia was a result of an invitation received on the occasion of the 90th anniversary of the foundation of Georgian Technical University (Figure 4.9).



<p>არასამაგისტრო (არასამაგისტრო) ორგანიზაციის პირი</p>		<p>NON-PROFIT (NON-COMMERCIAL) ORGANIZATION</p>
<p>სამართლებრივი ტექნიკური უნივერსიტეტი</p>		<p>GEORGIAN TECHNICAL UNIVERSITY</p>
<p>76-01-1418/0123 „08“ 06 2012</p>		
<p>Tbilisi, 8 June 2012 Subject: 90th Anniversary of Georgian Technical University Prof. Dr. Fathi Habashi Emeritus Professor of the Laval University Dear Prof. Dr. Habashi,</p>		
<p>On behalf of Georgian Technical University it is my great pleasure and honour to cordially invite you to attend the most significant events organized in honour of the 90th Anniversary of Georgian Technical University (GTU) –Jubilee Conference (19 -20 September, 2012) and the Jubilee Ceremony (21 September, 2012).</p>		
<p>Established in 1922, Georgian Technical University is one of the biggest educational and scientific institutions in the South Caucasian region and traditionally represents a leading engineering higher educational institution and powerful Scientific Center.</p>		
<p>We will be taking care of you during the days of Celebration, which will include visits to major cultural sights, guided tours through Tbilisi and Mtskheta. Hotel accommodation in Tbilisi will be provided for by the University during the above mentioned period (3 nights).</p>		
<p>As our distinguished guest, you are warmly welcomed to celebrate this unique event with us. I kindly invite you to favorably consider our invitation and to reserve the time from 18 to 21 September, 2012, to participate in celebration of the 90th Anniversary of the Georgian Technical University.</p>		
<p>Should you wish to participate in the Jubilee International Scientific Conference “Basic Paradigm in Science and Technology Development for the 21st Century”, summaries must be submitted by June 15, 2012, to organizing committee, by e-mail: kajaja.tamriko@gmail.com.</p>		
<p>Detailed information about the Jubilee Conference can be found on the Conference web site at: http://gesj.internet-academy.org/ge/conf_gtu90/en/index_en.php</p>		
<p>The organizing committee sincerely asks you to confirm your participation in the Celebration by 15 June, 2012, by e-mail: pr@gtu.ge.</p>		
<p>Yours sincerely, Archil Prangishvili  Rector</p>		
<p>☎ საქართველო, 0175, თბილისი, კოსტავას 77 ☎ (095 32) 2365362 🌐 www.gtu.ge ✉ E-mail: rectoroffice@gtu.ge</p>	<p>☎ 77, Kostava Str, 0175, Tbilisi, Georgia ☎ (095 32) 2365362 🌐 www.gtu.ge ✉ E-mail: rectoroffice@gtu.ge</p>	

Figure 4.9: Invitation.

VISITS TO GEORGIA

Table 4.1: Visits to Georgia.

September 16–23, 2012	Tbilisi	Georgian Technical University
	Telavi	The main city of Kakheti Province. The fortress
	Mtskheta	One of the oldest cities in Georgia
October 18–25, 2014	Tbilisi	Rustaveli Avenue, Old Town
	Caucasus Mountains	Ujarmas Fortress, Akhali Shuamta

Tbilisi

In 1122, after heavy fighting with the Seljuks the troops of the King of Georgia David the Builder entered Tbilisi (Figures 4.10–4.17). He moved his residence from Kutaisi (Western Georgia) to Tbilisi, making it the capital of a unified Georgian State. From 12–13th centuries, Tbilisi became a dominant regional power with a thriving economy. Queen Tamar’s reign is often referred to as Georgia’s Golden Age which lasted for more than a century. In 1226, Tbilisi was captured by Khwarezmian Shah and in 1236 by the Mongols. In the 17th and 18th centuries, Tbilisi once again became the object of rivalry between the Ottoman Turks and Persia. In 1801, the Georgian kingdom of Kartl-Kakheti joined the Russian Empire.



Figure 4.10: Airport.

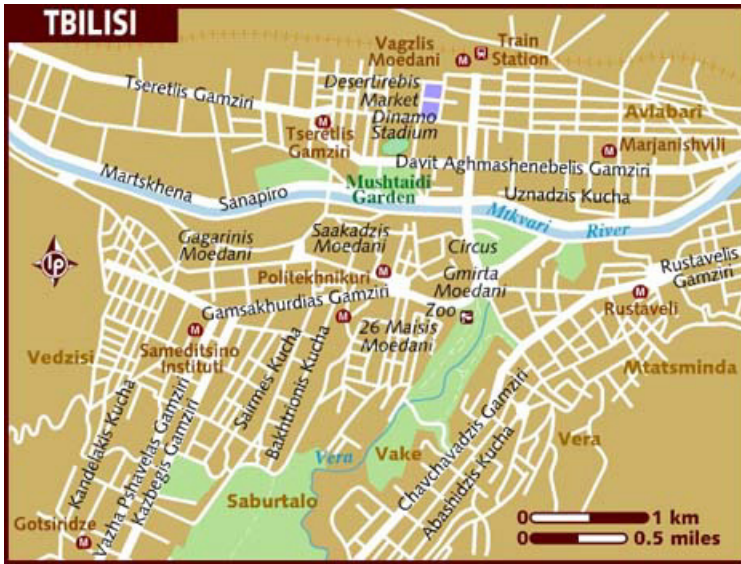


Figure 4.11: Tbilisi on Mtkvari River.



Figure 4.12: Castle overlooking the city.



Figure 4.13: Tbilisi.



Figure 4.14: New bridge across Mtkvari River.



Figure 4.15: View of Tbilisi from hotel room.



Figure 4.16: Rustaveli Street named after Georgian poet Shota Rustaveli (1172–1216).



Figure 4.17: Theatre on Rustaveli Street.

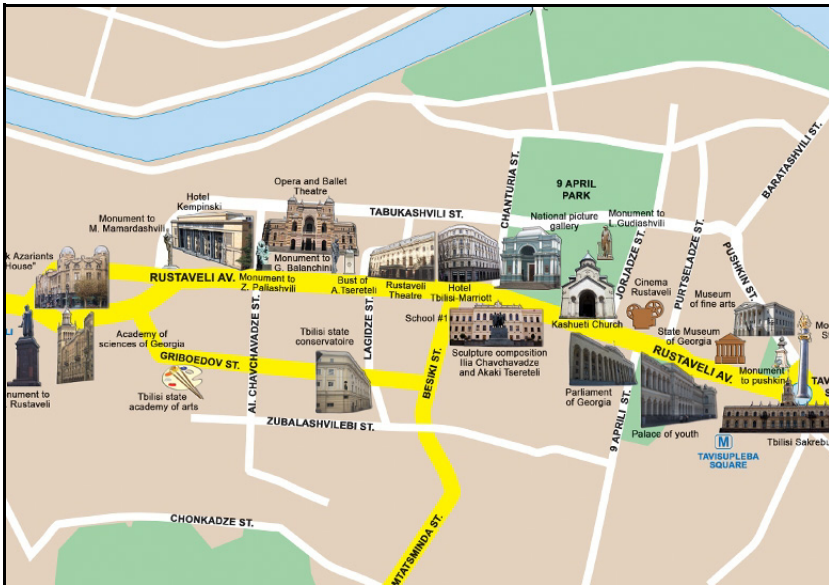


Figure 4.18: Rustaveli Avenue leading to Freedom Square at the extreme right.

RUSTAVELI

Shota Rustaveli (1172–1216) was a 12th-century poet and a minister of Queen Tamar who reigned from 1184 to 1213. His works have been translated into many languages and was first printed in 1712. Main avenue and a Metro Station in Tbilisi are named after him as well as a monument was erected and stamps were issued in his honour (Figures 4.18–4.32).



Figure 4.19: Russian stamps honouring Rustaveli.



Figure 4.20: Rustaveli Metro Station.



Figure 4.21: Monument to Rustaveli.



Figure 4.22: Details of Rustaveli monument.



Figure 4.23: Details of Rustaveli monument.



Figure 4.24: In front of Concert House on Rustaveli Square.



Figure 4.25: Unidentified statue in Rustaveli Square.



Figure 4.26: Revolution monument in Rustaveli Avenue.



Figure 4.27: Art in Rustaveli Avenue.



Figure 4.28: Georgian House of Parliament on Rustaveli Avenue.



Figure 4.29: Art Mueum on Rustaveli Avenue.



Figure 4.30: Opera House on Rustaveli Avenue.



Figure 4.31: Academy of Science on Rustaveli Avenue.



Figure 4.32: Unidentified statue.

OLD TOWN

The sulfur bath district in the Old Town is on the south side of the Metekhi bridge. It has small domes on ground level containing several small baths (Figures 4.33–4.41).



Figure 4.33: Old Town.



Figure 4.34: Sulfur baths in Old Town.



Figure 4.35: Sulfur baths in Old Town.



Figure 4.36: Remains of city wall in Old Town.



Figure 4.37: Remains of city wall in Old Town.



Figure 4.38: City wall in Old Town.



Figure 4.39: Remains of city wall in Old Town.



Figure 4.40: Old Town.



Figure 4.41: Old Town.

NANOTECHNOLOGIES CONFERENCE 2014

The conference was organized by the Georgian Technical University in Tbilisi. Chairman was Archil Prangishvili, Rector of the University. The conference took place at the Physics Department of the University on Rustaveli Avenue. Participants were about one hundred mainly from the Georgia, Russia, and the former Soviet Union satellites such as Armenia, Azerbaijan, Ukraine, Belarus, Poland, German Democratic Republic, Hungary, Slovenia, Lithuania, and well as few from Turkey, Iran, Canada, and

USA. The papers summarized recent progress achieved in synthesizing nano-materials, studying their physical and chemical properties, and predicting new possibilities of applications. The conference included a dinner with Georgian folk dances and trips to the Caucasus Mountains and Georgia historic sites. Plenary paper presented: "A New Look at the Periodic Table." Photos from the conference are shown in Figures 4.42–4.54.

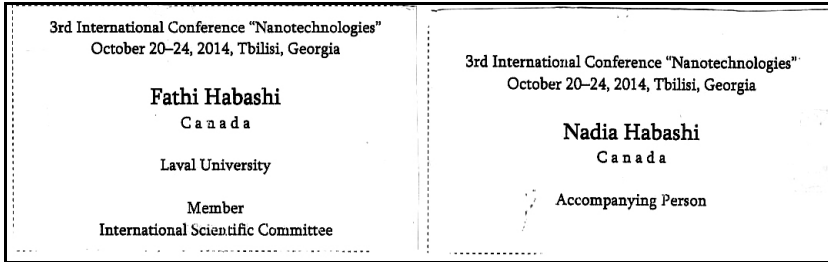


Figure 4.42: Badges of the conference.



Figure 4.43: Prof. Levan Chkhartishvili, one of the organizers and editor of *Nano Sciences*, welcoming the participants.



Figure 4.44: The Organizing Committee were students from the University.



Figure 4.45: Chairing a session with Dr. Viktor Prof. Victor Mordkovich, Institute of Microelectronics, Russian Academy of Sciences, Moscow.



Figure 4.46: Prof. Hrant Yeritsyan and his family physicists from the University of Yerevan in Armenia participating in the conference.



Figure 4.47: Dr. Klaus Thiessen, Photovoltaics, Berlin-Adlershof.



Figure 4.48: From left: Dr. Lina Sartinska [Institute of Materials Science, Kiev, Ukraine], Prof. Haldun Kurama [Eskişehir Osmangazi University, and Director of Boron Institute, Turkey], Fathi Habashi, Dr. László Kótai [Hungarian Academy of Science and Editor-in-Chief, *European Chemical Bulletin*, Budapest]. Photo by Nadia Habashi, 2014.



Figure 4.49: Conference lunch.



Figure 4.50: Dr. Sergey Kidalov, Russian Academy of Science and family from Saint Petersburg.



Figure 4.51: Conference excursion.



Figure 4.52: In Rooms Inn, Tbilisi.



Figure 4.53: In Rooms Inn, Tbilisi.



Figure 4.54: Georgian art in restaurant.

UJARMAS FORTRESS

Ujarmas fortress was built by King Gorgasal (who founded Tbilisi) in the 6th century. It is about an hour drive from Tbilisi. The fortress sits on a cliff about 700 m high (Figures 4.55–4.56). Vakhtang I Gorgasali (c. 439 or 522), was a king of Iberia, known as Kartli (eastern Georgia) in the second half of the 5th century. He allied with the Byzantine Empire, into a lengthy struggle against Sassanid Iranians, which ended in his defeat and weakening of the kingdom of Iberia. He has been canonized by the Georgian Orthodox Church.



Figure 4.55: Ujarmas fortress.



Figure 4.56: Ujarmas fortress.

AKHALI SHUAMTA

Akhali Shuamta Monastery (Figures 4.57–4.58), in eastern Georgia, was built in the 16th century by the Kakhetin Queen Tina, who married prince Levan. About 154 km northeast from Tbilisi. Shuamta meaning “a place between the mountains.” From the early 16th century till the early 19th century, Kakheti came under Persian rule. In 1616, Shah Abbas deported hundreds of thousands of the ethnic Kakheti Georgian to Iran and destroyed the region during his punitive campaign against Teimuraz I. In 1762, the Kakhetian Kingdom was united with the neighbouring Georgian Kingdom of Kartli. Following the sack of Tbilisi by Agha Mohammad Khan, in 1801 the Kingdom of Kartl-Kakheti was annexed to the Tsarist Russian Empire.



Figure 4.57: Akhali Shuamta Monastery.



Figure 4.58: Akhali Shuamta Monastery. In the background is the Caucasus Mountains.

Kartlis Deda

Kartlis Deda or Mother of Kartli (Figures 4.59–4.60) , symbol of Tbilisi, erected on the top of Sololaki hill in 1958, the year Tbilisi celebrated its 1500th anniversary. A 20-m aluminum figure of a woman in Georgian national dress. In her left hand she holds a bowl of wine to greet those who come as friends, and in her right hand is a sword for those who come as enemies. Kartli is a historical region in central-to-eastern Georgia traversed by the river Mtkvari (Kura).



Figure 4.59: Kartlis Deda on top of the hill.



Figure 4.60: Kartlis Deda on top of the hill.



Figure 4.61: Freedom square.



Figure 4.62: In Freedom Square, Tbilisi.



Figure 4.63: Georgia patron, Saint George, in Freedom square.

Georgian Technical University

Georgian Technical University was founded in 1922 as a polytechnic faculty of the Tbilisi State University. In 1928 it was transformed into an independent Georgian Polytechnical Institute then it achieved University status in 1990 (Figure 4.64). In 2012 Rector Archil Prangishvili celebrated the 90th anniversary of its foundation (Figure 4.65).



Figure 4.64: Georgian Technical University.



Figure 4.65: Rector Archil Prangishvili.

The International Scientific Conference dedicated to the 90-th anniversary of Georgian Technical University	
"Basic Paradigms in Science and Technology Development for the 21st Century"	
Georgian Technical University, Tbilisi, Georgia, September 19-21, 2012	
PROGRAM	
Wednesday, September 19, 2012	
10:00 – 10:30	Registration (GTU, the Administrative Building, III floor)
10:30 – 11:00	Opening of the conference (GTU, the Administrative Building, Hall of G. Nikoladze) Chairman: A. Prangishvili (Rector of GTU, Georgia)
Speakers:	Prof. Dr. A. Prangishvili N. Surguladze (Deputy Minister, Ministry of Education and Science of Georgia) Akad. prof. M. Salukvadze (Academician, National Academy of Science, Georgia) Prof. Dr. H. Ströher (Jülich, Germany) Prof. Dr. S. Bielecki (Lodz, Poland)
11:00 – 14:00	Keynote reports (GTU, the Administrative Building, Hall of G. Nikoladze)
11:00 – 11:30	Prof. Dr. Hans Ströher (Jülich, Germany) GRAND CHALLENGES IN BASIC SCIENCES: HOW TO UNDERSTAND OUR WORLD, AND GEORGIA'S (POSSIBLE) ROLE IN THIS QUEST
11:30 – 12:00	Prof. Dr. L. Ribickis, G. Revalde, U. Skukovskis. (Riga, Latvia) DEVELOPMENT OF AN INTEGRATED UNIVERSITY MANAGEMENT AND STUDENT RECORDING PLATFORM TO SUPPORT INTERNAL QUALITY ASSURANCE SYSTEM
12:00 – 12:30	Coffee- break
12:30 – 13:00	Prof. Dr. A. Kavokin, I. Shelykh, T. Taylor, M. Glazov, K. Kavokin. (Saint- Petersburg, Russia) VERTICAL CAVITY SURFACE EMITTING TERAHERTZ LASERS
13:00 – 13:30	Prof. Dr. F. Habashi. (Quebec City, Canada) THE BEGINNINGS OF MINING AND METALLURGICAL EDUCATION
13:30 – 14:00	Prof. Dr. Onuralp YÜCEL. (Istanbul, Turkey) THE JOURNEY FROM MACRO TO NANO
14:00 – 15:00	Lunch
14:00 – 18:00	Section reports
15:00	Excursion (Tbilisi)
19:00	Diner
Thursday, September 20, 2012	
10:00 – 17:00	Section reports
12:00 – 12:30	Coffee- break
11:00	Excursion (Kaxeti)
14:00 – 15:00	Lunch
19:00	Diner

Figure 4.66: Conference program.



Figure 4.67: Host Prof. Levan Chkhartishvili [left].



Figure 4.68: Conference poster.



Figure 4.69: Excursion with Prof. Tamar Lominadze.



Figure 4.70: Excursion.



Figure 4.71: Excursion.



Figure 4.72: Saint Nino Cathedral.

Saint Nino Cathedral

Saint Nino (ca. 296–ca. 338) was a woman from Cappadocia and relative of Saint George, who preached Christianity in Georgia. The Cathedral was built in her honour (Figures 4.72–4.74).

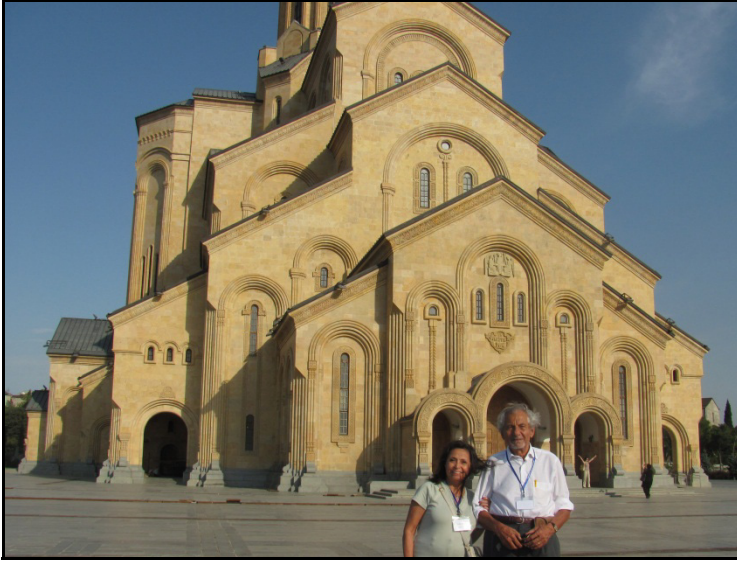


Figure 4.73: Saint Nino Cathedral.



Figure 4.74: With the guide at Saint Nino Cathedral.

Kakheti

Telavi is the main city and administrative center of Georgia's eastern province of Kakheti. The old walls of the fortress of the first Kakhetian kings of the 9–10th centuries AD are still preserved (Figures 4.75–4.76).



Figure 4.75: The old walls of the fortress of the first Kakhetian kings of the 9–10th centuries AD.

Jvari Monastery (Figure 4.77) stands on the rocky mountaintop at the confluence of the Mtkvari and Aragvi rivers, overlooking the town of Mtskheta, which was formerly the capital of the Kingdom of Iberia. Christianity was brought to Mtskheta in the 4th century by St Nino, and became the official state religion in 334.

Mtskheta one of the oldest cities in Georgia (in Kartli province of Eastern Georgia), is located about 20 km north of Tbilisi at the confluence of the Aragvi and Kura rivers (Figures 4.78–4.81). The city is now the administrative centre of the Mtskheta–Mtianeti region. Due to its historical significance and numerous ancient monuments, it became a UNESCO World Heritage Site in 1994.



Figure 4.76: The old walls of the fortress of the first Kakhetian kings of the 9–10th centuries AD.



Figure 4.77: The church of Holy Cross the first church in Georgia.



Figure 4.78: Mtskheta at the confluence of the Aragvi and Kura rivers.



Figure 4.79: Mtskheta at the confluence of the Aragvi and Kura rivers.



Figure 4.80: Mtskheta at the confluence of the Aragvi and Kura rivers.

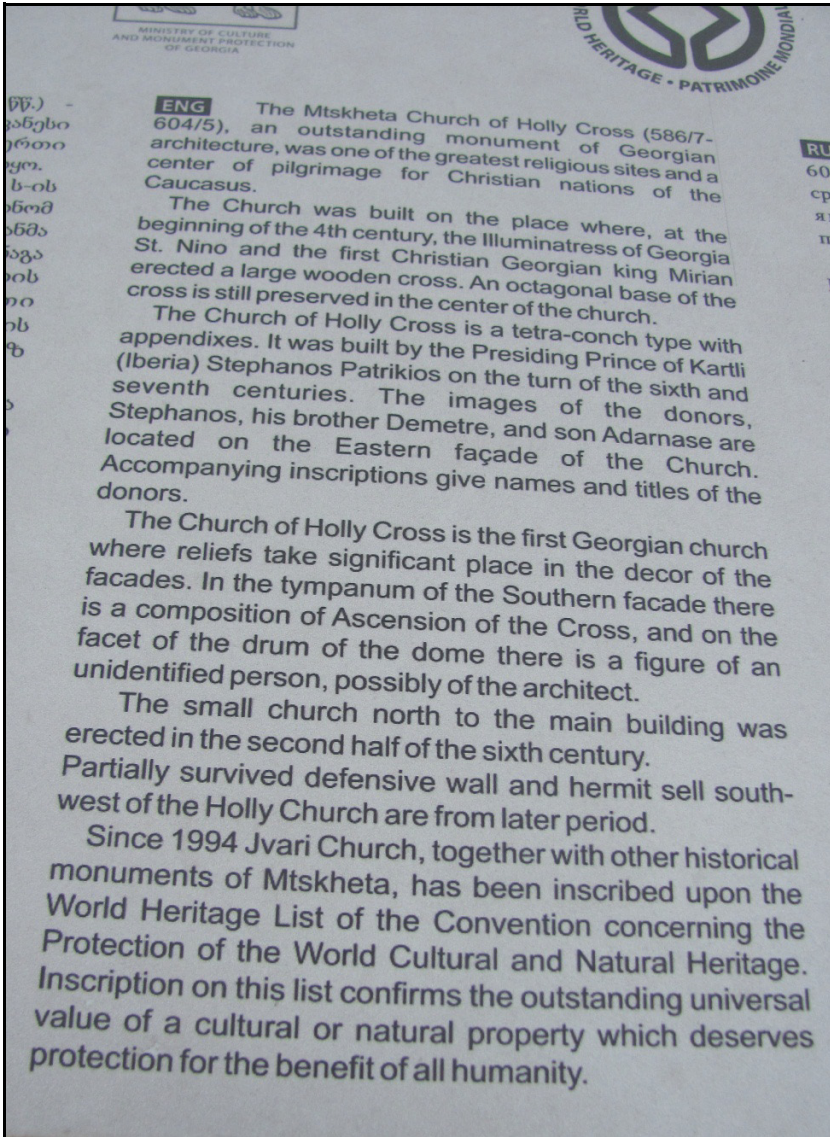


Figure 4.81: Plaque describing the site.

GEORGIAN COGNAC

In 1880, David Sarajishvili (1848–1911) (Figures 4.82–4.83) studied in St. Petersburg University then in 1871 he obtained a doctorate in chemistry

from the University of Heidelberg. In 1878 he continued studying agricultural science in France where he specialized in wine-making. After returning to Georgia he founded a cognac factory in Tbilisi. He became wealthy and donated much to universities and archaeological research. There is a monument for him in the Riqe neighbourhood in Tbilisi (Figures 4.84–4.89).



Figure 4.82: David Sarajishvili (1848–1911), founder of cognac industry in Georgia.



Figure 4.83: David Saradjishvili (1848–1911), founder of cognac industry in Georgia.



Figure 4.84: The cognac distillery in Tbilisi.



Figure 4.85: Cognac in wooden barrels.



Figure 4.86: Cognac in wooden barrels.



Figure 4.87: Tasting Georgian brandy.



Figure 4.88: Reception.

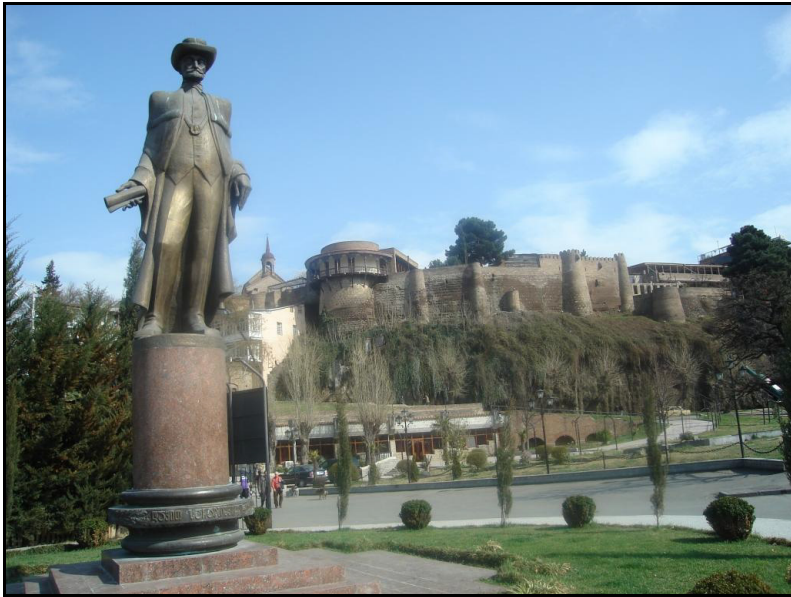


Figure 4.89: Monument for David Sarajishvili in Tbilisi.

The origin of cognac is due to the town of Cognac in the French region of Charente which was an exporter of wine in the 17th century. The wine was distilled as a way to make it easier to transport and to lessen the tax which was assessed by volume. Water would be added to the brandy shortly before consumption. It took 9 litres of wine to make one litre of cognac containing 35–60% alcohol by volume. It was discovered by the merchants importing the wine that after having been stored in wooden casks, the resulting product had improved taste over the original wine due to the tannin and vanillin present in the wood. As a result cognac became a popular drink.

PRINCE ALEXANDER CHAVCHAVADZE

Prince Alexander Chavchavadze (1786–1846) (Figure 4.90) was a Georgian poet and a General in the Imperial Russian Army. Aged 18, he joined Prince Parnaoz, the member of the dispossessed royal family, in the 1804 rebellion in the mountainous Georgian province of Mtiuleti against Russian rule. Following the suppression of the uprising, he was briefly put in prison where he composed his first literary works. He was also the first Georgian noble to produce and bottle Georgian wine according to European methods. His vineyard is still cultivated to this day at Tsinandali a village in Kakheti, situated in the district of Telavi, 79 km east of Tbilisi and his palace is a museum (Figures 4.91–4.92).



Figure 4.90: Prince Alexander Chavchavadze (1786–1846).



Figure 4.91: Chavchavadze Tsinandali palace museum.

PYOTR ROMANOVICH BAGRATIONI

It was the work of Pyotr Romanovich Bagrationi (1818–1876) (Figure 4.93) in 1843 that paved the way for developing the cyanidation process for treating gold-bearing ore in 1887. While conducting galvanic experiments at the Laboratory of Physics of the St. Petersburg Academy of Sciences (now Russian Academy of Sciences), Pyotr Romanovich left a saturated solution

of potassium cyanide in a gold-plated cup and after one week he noticed that gold completely dissolved from the cup. He then prepared gold powder and found that the powder dissolved fast in the cyanide solution.



Figure 4.92: Group photo by Nadia Habashi.



Figure 4.93: Pyotr Romanovich Bagrationi (1818–1876).

Prince Pyotr Romanovich Bagrationi was a descendant of the Georgian kings. Most of Georgian nobility went into Russian military service and among them was Pyotr's father and his uncle. Pyotr graduated from the Military School in St. Petersburg. He invented the first dry galvanic cell in 1843 that was employed for power supply of the first telegraph line between St. Petersburg and Tsarskoe Selo. In 1844 he was sent to Germany, France, and England to study galvanic current for engineering purpose. In 1862 he was made Governor of Tver province and in 1870 he was assigned as Governor in Baltic countries: Courland, Livonia, and Estonia. In 1876 he took a business trip to St. Petersburg where he died suddenly at the young age of 58.

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