

# **4th ACCESS**

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***Grasia Hotel Semarang, 13<sup>th</sup> May 2015***

## **CONFERENCE PROCEEDING**

**Organized by  
Faculty of Social Sciences, Semarang State University**

# 4<sup>th</sup> ICES

International Conference on Education & Social Sciences

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# PREFACE OF THE DIRECTOR

Assalamualaikum Wr. Wb.

Indonesia encounters several environmental and moral decadence issues. Some of those environmental issues are flood, landslides, forest fires, and others. In addition, the existence of drug abuse, promiscuity, binge-drinking, and corruption also shows that Indonesia faces the crisis of moral decadence. These problems must be solved with the right approach in order to gain precise solution. One approach that can be used is a "social conservation" approach.

Social conservation is viewed as a social perspective to the existing environmental and social issues. Social studies on conservation are essential to respond the environmental problems, poor implementation of environmental ethics, and public indifference toward environmental and moral issues. Social approach in responding the environmental and moral decadence problems which are summarized in social conservation has an important role to address the existing environmental and moral decadence issues because both issues are closely related to human involvement as the actors.

Social conservation aims to develop attitudes, behavior, and habituation within a loving community in maintaining, preserving, and implementing the values and norms of life which are believed to be true and accepted as a guide for the society and nation. The implementation of social conservation as an attempt to inculcate noble values is relevant to the efforts of national character development. Both aspects become an integral part because their existence reinforces each other. Therefore, the effort to strengthen social conservation is in accordance with the nation character building.

In this occasion I would like to thank to Erica Balasz, M.A. (USA), Katie Jones, M.Ed. (UK), Prof. Kiyoko Majima (Japan), Peter F. Walton (Canada), Prof. Takeshi Tsuchiya (Japan), Prof. Tri Marhaeni Pudji Astuti (Indonesia), and Prof. Udin S. Winataputra (Indonesia) who are willing to participate to the conference.

Wassalamualaikum Wr. Wb.

Prof. Dr. Maman Rachman, M.Sc.  
*Board of Director of 4<sup>th</sup> ICESS*

# PREFACE OF THE DEAN

Wassalamualaikum Wr. Wb.

All praise be to the Almighty that the 4<sup>th</sup> International Conference of Education and Social Sciences 2015 (ICESS 2015) has successfully convened at the Grasia Hotel Semarang, Central Java, Indonesia.

The conference's theme of Social Conservation based on Nation Character Building accommodates seven subthemes encompassing (1) Management of Environmental and Moral Decadence Issues in the Perspective of Social Sciences; (2) Best Practices in Character Building and Environmental Ethics; (3) Urgency of Social Sciences and Social Studies Education in Character Building and Environmental Ethics; (4) Role of Social Sciences and Social Studies Education in Creating Social Conservation; (5) Building Integrity for the Nation Development; (6) Socializing the Social and Political Sciences for Nation Development; (7) Woman Contribution on Character Building and Environmental Ethics.

This conference is aimed to analyzing several implementation practices (best practices) of character education in various countries as piloting models in Indonesia; Analyzing the character values that need to be internalized in response to various environmental and moral/character decadence issues; Facilitating the establishment of a forum for brainstorming and discussion on the national character building; Discussing various efforts to internalize the characters values in the context of social conservation; Discussing various efforts to address the environmental and moral decadence issues in the perspective of social sciences.

To end this preface, the ICESS 2015 committee are proud to congratulate and express warmest gratitude and thanks to the presenters, participants and to all individuals that has contributed directly as well as indirectly to the success of ICESS 2015.

May ICESS 2015 be truly beneficial and successful to all of you.

Wassalamualaikum Wr. Wb.

Dr. Subagyo, M.Pd.

*Dean of Faculty of Social Sciences, Semarang State University*

# TABLE OF CONTENT

<b>PREFACE OF THE DIRECTOR</b>	iii
<b>PREFACE OF THE DEAN</b>	iv
<b>INVITED SPEAKER</b>	
CHARACTER EDUCATION IN USA Erica Balazs	1
EDUCATION, A CRITICAL TOOL FOR POSITIVE ACTION AND CHANGE Katie Jones	4
JAPAN'S FISCAL REHABILITATION AND TAX EDUCATION Kiyoko Majima	12
BUILDING INTEGRITY FOR NATIONAL DEVELOPMENT Peter F. Walton	18
MODERN ROLES OF HISTORY LEARNING IN SOCIAL STUDIES Takeshi Tsuchiya	21
THE POSITION OF WOMEN IN CHARACTER EDUCATION Tri Marhaeni Pudji Astuti	24
THE ROLE OF SOCIAL STUDIES IN STRENGTHENING SOCIAL CONSERVATION: PROFILING STUDENTS AS SOCIAL ACTORS Udin S. Winataputra & Riza Alrakhman	27
<b>PAPER PRESENTER</b>	
THE IMPORTANCE OF GUIDANCE AND COUNSELING IN FACILITATING THE STUDENT CHARACTER EDUCATION Abdul Kholiq	41
CURRICULUM OF THE HISTORY EDUCATION FOR THE NATION DEVELOPMENT: A CASE STUDY IN INDONESIA Abdul Syukur	48
THE STUDY OF BEST PRACTICE OF THE BANTAENG RESIDENCE GOVERNMENT INNOVATION: BRIGRADE SIAGA BENCANA Ainur Rofieq, Rahmat Nuryono	57
STATUS OF SOIL FERTILITY'S CARRYING CAPACITY FOR GREENING PLANTS IN UNNES BIODIVERSITY TRANGKIL SEKARAN PARK, SEMARANG Ananto Aji	63
AWARE ENVIRONMENTAL BEHAVIOR OF PEOPLE AROUND DAS KRIPIK Apik Budi Santoso	69
BUT IT ISN'T CORRUPTION, IS IT? LINKING UNDERGRADUATE-LEVEL TEACHING OF SOCIOLOGY OF CORRUPTION WITH ENVIRONMENTAL MISMANAGEMENT AND ENVIRONMENTAL ETHICS Astrida Fitri Nuryani	75

DIALOGUE OF HISTORY AND SOCIAL SCIENCES IN CONFLICT, CONVERGENCE AND CONSERVATION Bain	81
POLITICAL PARTICIPATION AND VIOLENT BEHAVIOR IN INDONESIA Buchory M Sukemi	87
BUILD CONCERN: THE PRO COMMUNITY DEVELOPMENT, MEASURING THE CITY OF SEMARANG IN GOVERNMENT POLICY PLANNING AND EMPOWERMENT OF STREET VENDORS Eko Handoyo	95
THE MOTHER'S ROLE IN BUILDING CHILDREN'S CHARACTER FOR THE FAMILY'S EDUCATION REVITALIZED Eko Purwanti	106
ROLE OF SOCIAL SCIENCE EDUCATION AND SOCIAL ENVIRONMENT IN NATIONAL CHARACTER BUILDING IN INDONESIA Elly Kismini	115
THE READINESS OF THE COMMUNITY IN FACING DISASTER LANDSLIDES IN GUNUNGPATI SEMARANG CITY Erni Suharini	121
COMMUNITY TRADITIONAL WISDOM OF THE SLOPE MURIA IN FOOD NEEDS FULFILLMENT Eva Banowati	126
EDUCATION MODEL AND FORMATION OF INDONESIA YOUTH CHARACTER THROUGH SCOUT MOVEMENT Farid Noor Romadlon, Erik Aditia Ismaya	131
DELEGATION OF AUTHORITY FROM REGENT TO DISTRICT (STUDY ON ENVIRONMENTAL AUTHORITY IN WEST BANDUNG REGENCY) Fernandes Simangunsong	138
THE ROLE OF GUIDANCE AND COUNSELLING MANAGEMENT IN DEALING WITH JUVENILE DELINQUENCY G. Rohastono Ajje	146
A STUDY OF SOCIO-CULTURAL IDENTITY CONSTRUCTION ON THE CHINATOWN COMMUNITY SEMARANG Hamdan Tri Atmaja	151
DIENG FACE THE WORLD (WELFARE ISSUES VS NATURE AND SOCIAL CONSERVATION) Hartati Sulisty Rini	156
SOCIAL INNOVATIVE LEARNING OF NATION BUILDING CHARACTER Hendri Purwito, Yuwanti Ariani Wirahayu	162
AN ANALYSIS ON THE CITY DWELLERS' URGENCY FOR IN RELATION TO THE GROWTH OF OPEN GREEN SPACE IN ORDER TO INCREASE A CONSERVATION-BASED OXIGEN OF CITY DEVELOPMENT IN PEKALONGAN Heri Tjahjono, Muh. Nur Setyawan	168

STRENGTHENING LANGUAGE ABILITY AND SOFT SKILL AS SLOW LEARNER EMPOWERING EFFORT: CASE STUDY ON STATE POLYTECHNIC OF JAKARTA Nur Hasyim, Ade Sukma Mulya, Sri Wahyono	257
THE CHARACTER EDUCATION DEVELOPMENT BASED CONSERVATION OF JAVANESS TRADITIONAL GAMES Nurul Fatimah	261
UNDERGROUND RIVER WATER MANAGEMENT MODEL IN KARTS REGION BASED ON LOCAL WISDOM Priyono, Arif Jauhari, Choirul Amin, Reksa Pambudi Rahman, Manzilina Nur Jannah, Wahyu Aji Wilyantoro	266
HOUSEHOLD LIVELIHOOD STRATEGIES BASED SOCIAL INTELLIGENCE FOR CONSERVATION THE SLOPE MERBABU GETASAN SUBDISTRICT , SEMARANG REGENCY Puji Hardati, R. Rijanta, Su Ritohardoyo	272
BUILDING MARKET, MAKING REGULARITY?: RELATION BETWEEN STATE AND MARKET IN SEMARANG MUNICIPALITY Putri Agus Wijayati	277
THE FALL OF "BOURGEOIS" MIDDLE CLASS TRADES MUSLIM IN JAVA R. Suharso	281
CONSERVATION POLICY ON SOCIETY; EVIDENCE FROM UNNES Retnoningrum Hidayah, Nurdian Susilowati, Lyna Latifah	288
SOCIAL CAPITAL IN SCHOOL AS ONE OF STRATEGY REVITALIZATION OF NATIONAL CHARACTER Rustinsyah	297
DEVELOPMENT OF TOURISM REGIONS MANDEH THROUGH RECONSTRUCTION OF LOCAL WOMEN'S WISDOM COASTAL, SOUTHERN COASTAL DISTRICT, WEST SUMATRA Siti Fatimah	303
INCREASING INDONESIAN PUBLIC DIPLOMACY THROUGH IACS (INDONESIAN ART & CULTURE SCHOLARSHIP) PROGRAM Sri Issundari & Iva Rachmawati	310
INTERNALIZATION OF CIVILIAN POLICE CHARACTER IN POLICE EDUCATION FROM HISTORICAL PERSPECTIVE Subagyo, Tsabit Azinar Ahmad	318
CONSERVATION SOCIAL DEVELOPMENT BASED NATION CHARACTER Suyahmo	328
INDIVIDUALISM AND COLLECTIVISM IN SUSTAINABLE ECONOMIC BEHAVIORS AMONG THE COMMUNITY MEMBERS OF SHIFTING CULTIVATORS IN THE DISTRICT OF LAMANDAU CENTRAL KALIMANTAN Tatik Upami	334
"SOCIALIZING" RURAL SOCIOLOGY: THE FUNCTION AND ROLE OF SOCIOLOGY IN RURAL SOCIETY Thriwaty Aرسال	344

BANTAR TRADITIONAL GAME AS LEARNING MODEL OF SOCIAL SCIENCE EDUCATION IN SOUTH KALIMANTAN Henry Perda Nugroho Putro	176
NATION CHARACTER BUILDING THROUGH THE LEARNING OF HISTORY: IMITATION LEADERSHIP OF MOHAMMAD NATSIR Insan Fahmi Siregar	184
CORPORATE SOCIAL RESPONSIBILITY (CSR), A CONTRIBUTION FROM BUSINESS TOWARDS ENVIRONMENT AND SOCIETY Jariyah, Badingatus Solihah	190
PLURALISM IN TEACHING ECONOMICS TO STRENGTHEN THE INDONESIAN PLURAL SOCIETY Khasan Setiaji, Sandy Arief, Ade Rustiana	196
STRATEGIC MANAGEMENT OF ENVIRONMENTAL IN IMPLEMENTING GREEN INDUSTRY: IN PERSPECTIVE OF SOCIAL SCIENCE M. Harun Alrasyid	203
MANAGEMENT OF THE SCHOOL CULTURE SUPPORTING THE SUCCESS OF CHARACTER EDUCATION M.Th.S.R. Retnaningdyastuti	210
STRENGTHENING OF CHARACTER, ETHICS AND CARE FOR THE ENVIRONMENT THROUGH OPTIMIZATION OF CHARACTER HERMITAGE Maman Rachman, Moh. Aris Munandar	215
GENDER EQUALITY IN REALIZING GOOD, FAIR AND EQUIVALENTS DEMOCRATIC GOVERNANCE Martien Herna S	222
IMPLEMENTATION OF CONSERVATION OF SOCIAL STUDY IN LEARNING IPS ELEMENTARY SCHOOL AS STOCK STUDENT TEACHERS BEING PGSD Masitah	228
DEVELOPING STUDENT CHARACTER BASED ON CONSERVATION VALUE (CASE STUDY AT SEMARANG STATE UNIVERSITY) Masrukhi	232
THINK SMART, ACT DECISIVE, AND NOBLE MORAL: IMPROVING THE GOOD CHARACTER BUILDING IN FOREST MANAGEMENT IN TUBAN REGION, EAST JAVA Mohammad Adib	236
THE EVALUATION OF QIBLA DIRECTION IN MOSQUES USING QIBLA 1.0 APPLICATION IN BANDULAN AND SUKUN VILLAGE OF SUKUN SUB-DISTRICT IN MALANG Mustofa, Adib Sauqi	243
PERSONALITY CHARACTERISTICS AS THE APPEAL OF JOKOWI'S LEADERSHIP IN THE PRINTED AND ELECTRONIC MEDIA PERSPECTIVES Nugroho	249
LEARNING SOCIAL STUDIES TO GROWTH UP NASIONALISM THROUGH PICTURE MEDIA FOR DEAF STUDENTS IN SDLB PURWOSARI KUDUS Nur Farjie, Imaniar Purbasari	253



THE INTEGRATIVE CHARACTER EDUCATION CURRICULUM MANAGEMENT IN INSTITUTE OF EDUCATION PERSONNEL Titik Haryati, Joko Widodo	349
THE POTENTIAL OF TOURIST ATTRACTION IN THE COASTAL OF KENDAL REGENCY Tjaturahono Budi Sanjoto, Wahid Akhsin Budi Nur Sidiq, Satya Budi Nugraha	357
THE MEANING OF ANIMAL RELIEF AT CANDI FOR NATION AND CHARACTER BUILDING Ufi Saraswati	363
LEARNING DANCE ART MANAGEMENT BASED ON SCIENTIFIC APPROACH IN CHARACTER BUILDING OF THE STUDENTS IN ELEMENTARY SCHOOL Wahira	369
ROLE OF SOCIAL SCIENCE EDUCATION IN CREATING THE CONSERVATION OF SOCIAL Yulia Hb Djahir, Agus Wahyudi	374
THE ROLE OF GOVERNMENT AND NGO'S ON POVERTY REDUCING 2005-2010 YYFR Sunarjan	378
<b>SCHEDULE OF 4<sup>th</sup> ICESS</b>	387

# THE EVALUATION OF QIBLA DIRECTION IN MOSQUES USING QIBLA 1.0 APPLICATION IN BANDULAN AND SUKUN VILLAGE OF SUKUN SUB-DISTRICT IN MALANG

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## ABSTRACT

Facing the Qibla is an absolute requirement in doing prayers as well as Sunnah prayers. Indonesia lies on the Eurasian Plate that moves  $\pm 1$  cm to the south every year, while the Kaaba (Mecca) lies on the Arabic Plate that moves  $\pm 1$  cm to the north every year. As the result, the Qibla direction shifts slowly in on certain time period. The purpose of this study is to describe the characteristics of mosque committees in finding out the Qibla direction and the method used in determining the Qibla direction. The method of this study is descriptive qualitative using surveys to collect the data. The population in this study is mosques in Bandulan and Sukun Sukun village in the sub-district in Malang. The Data were collected using field measurement, interviews, and documentation. The Data were Analyzed using tabulation measurement. Qibla direction in Bandulan and Sukun village is in 294.2 o. However, there are still some mosques roomates Qibla Reviews directions are Inaccurate. The result of the study Showed the Qibla direction of mosques in Bandulan village; 1 mosque was accurate, one mosque was accurate enough, seven mosques were a little accurate, three mosques were less accurate, and three mosques were Inaccurate. While in Sukun village; 1 mosque was accurate, 2 mosques were accurate enough, five mosques were a little accurate, three mosques were less accurate, and three mosques were Inaccurate. Most of the mosque committee compass used in measuring the Qibla direction.

Keywords: Qibla Direction, Method, Measurement

## INTRODUCTION

Islam entered into Indonesia Archipelago on 7th century AD. The Preachers who came to Indonesia comes from the Arabian peninsula that has been adapted to the nation of India (Gujarat). Most also are preachers who have adapted to the Chinese nation. Once they come to Indonesia *dakwah* began to explore the coastal archipelago. The teachings of Islam can thrive and adapt well among indigenous communities so that Indonesia would eventually become the country with the largest Muslim population in the world. The Majority adherents of Islam in Indonesia can be found in the western regions such as in Java and Sumatra. While in the eastern region of Indonesia, the percentage of adherents are not as big as in the western region.

Malang is the second largest city in East Java with a population of 756 982 peoples. Of these populations, 569 047 peoples are Muslim, 46 261 peoples are Christian, 38 486 peoples are Catholic, Hindu 19 922 peoples, and 5,922 are Buddhist (BPS Malang, 2012). In Sub-district Sukun Malang there are 156 720 Muslim peoples (BPS Malang, 2012).

The information data from Religious Affairs Office Sub-district of Sukun Malang 2014, recorded 11 mosques spreaded at 11 villages with distribution: Cipto Mulyo 4, Gadang 7, Kebonsari 10, Banjorejosari 29, Sukun 14, Tanjungejo 18, Pisang Candi 17, Bandulan 17, Karang Besuki 7, Mulyorejo 17 and Bakalan Krajan 6.

Implementation of all worship obligatory in Islam predetermined time, as is done in the month of Ramadhan, shiyam are done in the month of Ramadhan, zakat fitrah are done at the end of Ramadhan, so often do in a day and night are obligatory prayers five times has been timed, ie Subuh, Zuhur, Asr, Maghrib, and Isha'. Prayers in Islam occupies a position that can not be matched by any of worship.

In implementing praying, there are some legitimate requirement that if not done, then the prayer will be canceled. One of the legitimate requirements of prayer is facing the Qiblah. In determining of Qiblah there are contained the meaning of the assertion and teaching procedures and manners (ethic). Allah SWT chose Qiblah as a way-out to achieve unity and solidarity of Muslims. At first the Prophet facing Baitul Maqdis (Masjid al-Aqsa). However, after that Allah sent Prophet command to confront to the Grand Mosque in Makkah as the Word

*"Turn your face in to the Sacred Mosque. And wherever you are, turn to him "(QS. Al Baqarah verse 150)*

Basically facing the Qiblah in view of fiqh is a legitimate requirement that prayer can not be negotiated. Determination Qiblah direction will not be a problem for those who were near the Kaaba. If a Muslim has always lived around the Ka'bah, then he will not find it difficult to determine the direction of Qib-

la. However, when a person is frequently traveling away, he began to realize that it is not easy to determine the direction of Qibla.

As for people who are far away from the Kaaba (the Ka'bah are not shown) such as Indonesia she must face the qiblah precisely. To achieve the right direction needed *ijtihad*. People who are far from the Ka'bah shall facing the Kaaba, while those who can not watch it, they should obligate to face him. (Sayyid Sabiq, 2006: 181)

Qiblah influenced by the azimuth, ie the distance from the northern point of the vertical circle through a celestial body or through somewhere measured along the horizon circle in a clockwise direction of rotation. (A. Jamil, 2011: 109). It has become a consensus among scholars that facing the Qiblah during worship could affect his legal requirement prayer.

The majority of people use as a guide for the westward facing the Qiblah. They believe that the direction of their Qibla are correct. This is because the position of Indonesia is located to the east of Mecca.

There are problems in terms of the direction of Qibla in Sub-district Sukun Malang. The majority of the Islamic community took apathy and consider concessions conferred by law *syar'i* confirmed that simply uses the rules in *Dzani qibla* (alleged) only. Incompatibility Qiblah direction would be the result that would occur due to in accordance of Qiblah direction to Kaaba only measuring 12 meters x 15 meters and distances from Indonesia around 8000 km, then the difference between the direction would cause a shift of 140 kilometers in the north or south of Mecca. (Rukyatul Hilal Indonesia, 2010: 10)

The most fundamental reasons why evaluation Qiblah direction mosque in Indonesia, especially in Malang, because of the movement of tectonic plates. Earth's plates will always have movement and change.

Qiblah direction in Indonesia will change continuously. The change is a natural thing because it follows the pattern of shifting tectonic plates. Location of the Kaaba is geologically, gentleness of the Arabian Plate. The plate is moving northward, colliding with the Eurasian Plate. According to the research results Rukieh (2004) Arabian Plate movement speed between 0.5 to 1 cm per year. Indonesia is geologically, is above the Eurasian Plate (Indo-Eurasia). The plates move toward the South and collide with the Australian Plate. According to the research results Shao Zhen Huang in 1997 (quoted in the article Elert, 2010) the velocity of Indo-Eurasian approaching 0.95 cm per year. The difference in the direction and velocity of the two plates that cause elevation angle Qibla direction will always be shifted continuously. If you want accuracy Qibla direction (not just *jihadul Qiblah*), then Muslims in Indonesia should take risks to evaluate the direction of the Qibla of the mosque periodically

## THE DEFINITION OF QIBLAD DIRECTION

Qibla from Arabic which means it is the direction that refers to building the Kaaba at the Masjid al-Haram Mosque, Makkah, Saudi Arabia. Kaaba is also often referred to by the *Baitullah* (Rukyatul Hilal Indonesia, 2009: 01). Facing the Qiblah this obligation applies to all Muslims all over the Earth, and not blocked by space and time.

Qiblah originally had understanding *wijhah* meaningful way. Qibla in the sense of having a synonym *wijhah Syatrah* sometimes referred to as As-SIMT in Latin called Azimut, which is the precise measured angle somewhere along the horizon from north east at a point in a clockwise direction until the point of intersection between the vertical circle passing through the place the horizon circle. (Syamsuri, 2006: 13)

Qiblah direction also means the shortest distance along the direction or great circle passing through the city of Mecca (Ka'bah) with a city concerned. Therefore not justified, for example, Muslims in Indonesia to pray facing east direction oblique to the south, although when the direction that will eventually be passed on to also to Mecca. For directions or the nearest distance to Mecca for people in Indonesia oblique to the north west direction. Distance from Jakarta to Mecca with the direction oblique to the north west about 7,900 km whereas the reverse direction is oblique to the south east is about 32 141 km.

In this context Ka'ba is the Qibla of Muslims. Referring to the definition of etymologically, Kaaba always surrounded all times by human, especially during the pilgrimage season. Millions of Muslims from around the world flocked to the Qibla and approached them. They swarmed around the qibla, the Ka'bah *Bait Allah* (House of Allah), both during prayer and *tawaaf*.

According to Ali Syari'ati (2009: 89), the Ka'bah is the symbol of monotheism, the Ka'bah is the symbol of constancy (provision) while human worship around the Ka'bah is the lack of constant symbols. In this context Ali Syari'ati wanted to show that the law of Allah is fixed. Acquisition and exploration of the laws of Allah that should be explored by humans to achieve progress.

## QIBLA DIRECTION MEASUREMENT METHOD

The times and the support of science and technology today, it is easy to find out quickly towards a place on this earth. The development impact and positive implications in various social life of mankind (social and economic problems) and for the benefit of the vertical relationship to Allah. (Matters of worship). As a concrete form in terms of worship, has experienced Muslims that determine the direction of Qibla is not difficult in this day and age, and the result is scientifically and convincing. Some ways to determine the direction of Qibla is used for this: is the calculation spherical triangle, compass, knowing geography of a place (to know the longitude and latitude), the help of the wind, guide the stars in the sky, shadows and shadow stick Qiblah direction, the use of tools theodolite, and *Rubbu Muayyab* (counter tools Qiblah direction).

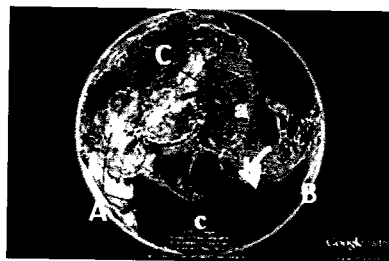
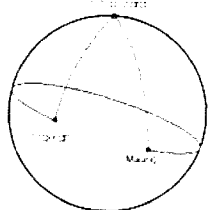
### FOUR WAYS TO DETERMINE THE DIRECTION

#### Triangle Ball

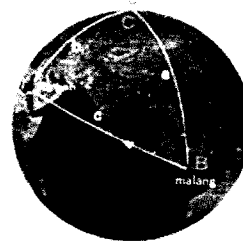
Spherical triangle geometry or also called spherical trigonometry (Spherical trigonometry) is geometry flat field is applied to the spherical surface of the earth that we live (Eng Nugraha Rinto 2012: 34). Triangle ball into the mainstay of science not only to calculate the direction of Qibla even including the straight distance of two places on the Earth's surface. As is generally agreed that the so-called direction is the "shortest distance" a straight line somewhere so mecca also shows the shortest way to the Kaaba. Due to the spherical shape of the earth, these lines form a large arc along the surface of the earth. Location Kaaba based measurements using the Global Positioning System (GPS) and using the Google Earth software astronomically was in  $21^{\circ} 25' 21.04''$  North latitude and  $39^{\circ} 49' 34.04''$  East Longitude. This figure is made with high enough accuracy. But for practical purposes does not need much detailed calculation of these figures. Typically used are:  $\phi = 21^{\circ} 25' N$  and  $\lambda = 39^{\circ} 50'$  east longitude.



Spherical triangle illustration on the earth surface



Spherical triangle on the google earth application



Spherical triangle on the Rukyatul Hilal Indonesia 2013

Figure 1 Spherical triangle illustration on the earth surface.

Direction of the Kaaba in the city of Mecca that can be used Qiblah known from every point on the surface of the earth, then to determine the Qiblah direction can be performed using Measure Science Triangle Ball (Spherical Trigonometry). Calculations and measurements were performed with a degree angle from the point of the North Pole, by using calculating machine or calculators.

For the calculation of the direction of Qibla, there are three pieces of the point to be made, namely: (1) Point A, placed in the Kaaba (Mecca); (2) Point B, placed in a location to be determined the direction of qibla; (3) Point C, placed at the north pole points.

Point A and point C are two fixed point, because right at the Kaaba point A and point C right in the Arctic, while point B is always changing depending on which location will be counted towards qibla. If the three points are connected by curved lines of the earth's surface, then there was a spherical triangle ABC, as shown. Making images spherical triangle as above is very useful to help determine the value of the angle Qibla direction for a place on the surface of the earth is calculated / measured from a point in the direction of the wind to other wind directions, for example, measured from points north to the West (N-W), or measured clockwise from the North point (UESW). For the calculation of the direction of Qibla, only some data: (1) The coordinates of the Kaaba  $\phi = 21^{\circ} 25' 21.17'' N$  and  $\lambda = 39^{\circ} 50' 34.56''$  East. (Ahmad Izzuddin, 2010: 7); (2) Location coordinates will be counted towards qibla. Data latitude and longitude

location of the town which will count towards qibla can be taken from the GPS. Data and formulas Qiblah direction as follows:

Specification:

- K = angle direction of the True North West to True
- $\phi K$  = Latitude Kaaba (21 ° 25 '21.17 "N)
- $\lambda K$  = Longitude Kaaba (39 ° 50 '34.56 "E)
- $\phi t$  = Latitude Mosque / town to be determined the direction of qibla
- $\lambda t$  = Longitude Mosque / City which will be determined the direction of qibla

After the counting is completed, it will be found K. K is the angle Qibla direction from true west to true. How to determine the true North practically is to look at the city proper declination qibla direction. For Malang city has declination 1 ° 19' to the east with a positive value.

### Compass

Compass also called directions. This tool can help determine the direction and the direction of Qibla in other place. This tool has a relatively low prices making it easy to reach the public, either in the form of ordinary compass, a watch-shaped or affixed on the mat. Only compass meant to have a weakness. But even so, if you had just used for first aid in order to pray for the traveler or traveling, it can be said that is sufficient, but for the sake of setting the direction Qibla of a mosque, the tool can not be accounted for needed help way or another tool more convincing results of its work.

According to the research of Prof. Sa'adoeddin Djambek, Qibla compass tool circulating in the community was not careful, because the designated Qiblah direction deviates from the actual direction. (Ismail, Syuhudi 2010: 114)

### Shadow Stick (istiwa')

With the help of the shadow stick, Qibla direction can be known. This way, even if the traditional but it is the most thorough manner, when compared with other methods, provided that the location of the wand and floor (base sticks) are eligible. (Alimuddin, 2009: 230). Looking for a practical application of the Qibla direction by using the shadow of the stick is: 1) On a level, which is exposed to direct of sunlight, in the middle of the day, made circles around three, four or five with the same center point or another. 2) the sticks are straight and not too big, with diameter of 1.5 cm. The upper of that stick is not too sharp but not too blunt. and plugged into midpoint of the circle in the upright position. 3) Then consider starting around 10:00 or 11:00 am until around o'clock. 14.00. At the time 10:00 or 11:00 am, when shadow stick joined together with a circle west, and not too big. Then at about 14.00 shadow will touch the tip of the stick position east circle, each end of the stick shadow, exactly touch the circle, mark with clear point, precise and not too large parallel lines. Parallel lines indicate the direction of the point of eastern and western points precise and meticulous. 4) Second point, the former shadow touches the tip of the stick in the same circle connected by a straight line. Because each circle has two points former shadow touches the tip of the stick. So if each point is connected with a straight line, then it will pass parallel lines. Parallel lines, shows the eastward and westward precise and meticulous. 5) In a straight line showing the east and west, made straight line 90 ° line that indicates the southern point in the right direction. In this way, In this way, one things to consider is the attitude of caution when giving points and draw a line, pads and sticks at all should not move or shake

There is uniqueness in the measurement of the Qibla direction by using this method. There are 2 days in a year in which the direction of the shadow of the stick is certainly going to be the Qibla direction. ie on May 28 (16:18 pm GMT 9:18 pm or equivalent) and July 16 (16:27 pm GMT 9:27 pm or equivalent). On the right is the position of the sun above the Ka'bah, so for the area around the Ka'bah can easily determine the direction of Qibla. On that date also known as *Qiblah Day* (day of mecca straighten). (Nugraha E. Rinto, 2012: 46).

Not all regions can utilize the fonemena of Istiwa'ul A'dhom happened in this Makkah. Determination qibla when *Qibla Day* can only be used by the Muslims of the three continents, Asia, Africa and Europe, while the US and Australia could not take advantage of this moment because at that time the sun had not risen in the United States and in Australia the sun was sinking in the west. Indonesian region can also take advantage of this fonemena except eastern Indonesia.

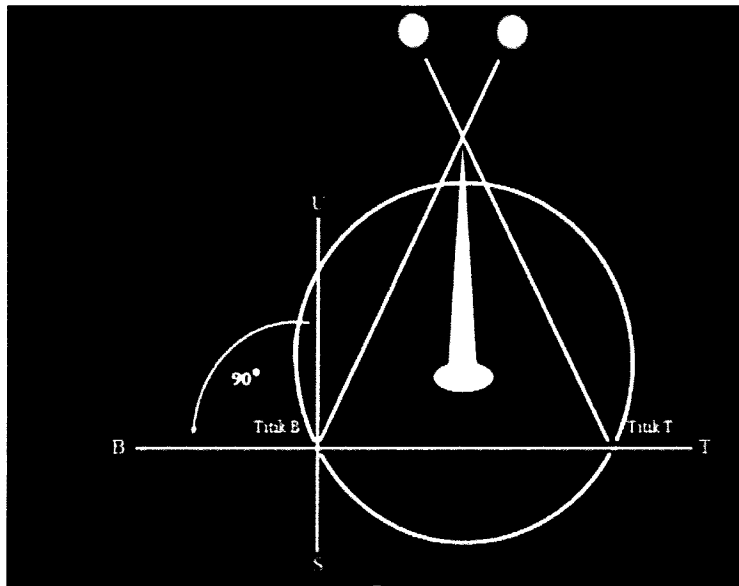


Figure 2. Shadow Stick (istiwa ') Source: Ahmad Izzudin, 2010

### Qibla 1.0 as Qibla Direction Measurement Applications

Qibla 1.0 is a Windows program that calculates the direction of the Qibla (direction Kabbah) from any location on Earth. Originator of this program is Dr. Monzur Ahmed researchers from the UK. This program was first released on May 7, 1998. Unlike other programs that only provide direction relative to true north, Qibla 1.0 also gives directions relative to magnetic north like a magnetic compass. This application has advantages with other mecca gauge applications. Strength and direction of the Earth's magnetic field can be calculated at each location. The program also displays *the Magnetic Declination* (Magnetic Declination) which is the difference in degrees between magnetic north and true north. This application has several menus like, *Map*, *Qibla*, and *General*. *Qibla* menu serves to measure the Qibla direction by entering the coordinates of the mosque which we will examine. Similarly, the menu folder, when the coordinates of the mosque is entered automatically count results of Qibla will appear.

### THE DIRECTION MOSQUE IN THE VILLAGE BANDULAN AND SUKUN

Application *Qibla 1.0* calculation results show all the mosques have the direction of Qibla 294.2°. The distance between the mosques in the village Bandulan with Masjidil Haram (Kaaba) about 8574.14 km. There is only one takmir who can provide information Qiblah direction mosque is a mosque takmir of Roudlotul Jannah, while others are not able to provide information in a clear direction of the Qibla of the mosque. They assume that the direction of the Qibla of the mosque are accurate. They assume that the direction of the Qibla of the mosque is quite facing west and oblique slightly to the north, but the calculation Qiblah direction that they understand not quite clear.

Every mosque located in the Bandulan and Sukun Village has diverse deviation Qiblah direction. Based on the calculation of *the Qibla 1.0* Application in the Bandulan village there is one mosque accurate namely Roudlotul Jannah mosque, while others are one mosque in the category quite accurate, 7 mosques in the category of slightly inaccurate, 5 mosques included in the category of less accurate deviation, and 3 mosques entry in the category of very inaccurate irregularities. The data obtained show that the direction of Qibla is still a lot that has not been accurately.

In the Sukun village there is one mosque accurate namely Al Islah, while others are 2 mosques included in the category of fairly accurate aberration, 5 mosques included in the category of slight deviation accurate, 3 mosques included in the category of less accurate deviation, and 3 mosques included in the deviation category is very inaccurate.

All takmir Bandulan village mosque using method of measuring azimuth direction of Qibla. its different from the Sukun village. Qibla compass measurement method with as many as 13 mosques or 86%, the shadow of stick as much as one mosque or 7%, and theodolite as much as 1 mosque or 7%. In the Sukun Village and Bandulan Village none takmir that uses spherical triangle method and computer appli-

cations. The application of the compass method most popular among takmir Bandulan village mosque in Sukun village because it is considered a practical, easy, and cheap, but this method also has disadvantages in terms of the accuracy of the angle.

The use of methods Triangle Ball and Computer Applications considered too difficult for the takmir. Yet in an age of technology as now all work has helped and can be done easily via the electronic media just as GPS, computer applications (Qibla 1.0, Qibla Locator, Locator Meccah, etc.). Need additional insight to takmir on Qibla measurement methods.

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