Rochester Institute of Technology
A Thesis submitted to the Faculty of the College of Imaging Arts and Sciences in candidacy for the degree of Master of Fine Arts.
The Value of Time: A Comparative Visual Analysis
by Dyanne M. Kim
May 18, 1998

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THESIS PROJECT DEFINITION

There are many profound mysteries in this world. Time is one of them. What is time? Strangely enough, this question cannot be answered. Over the centuries, the only source for time keeping was through nature. Eventually, the first humans began to realize and understand the regular sequences of celestial objects, such as the earth, sun and moon. Time is a factor when people record an event and when that event takes place in relation to other events. People cannot carry out this act if a common approach for time measurement did not exist within their society.

One way of making life possible for all people was through communication. Human interaction may involve two people communicating with each other or larger groups of people involved in numerous activities. Through these human interactions, a number of events occur on a daily basis. One way for people to communicate is through the use of a common language. Units of time measurement can be expressed in words or numbers. Without the use of any numbers, the three periods of tense in time measurement are the past, present and future. The past refers to anything that happened **before**. The present refers to something that is happening **now**. And the future is anything that will happen **later**. The period between **before** and **now** indicates that time must have passed, no matter how brief or long the length of time is.

In the real world, change is constantly occurring. Time and change are related for an important reason. The passing of time includes changes that take place. Such changes led to new discoveries, like units of time measurement. Some changes can happen only once, whereas other changes occur repeatedly. These changes that repeat stand out from other changes. For example, the most obvious and natural change that occurs on a daily basis is the rising and setting of the sun. Such naturally repeating events were probably counted by the ancients to keep track of time. As years passed by, people began to make time measuring devices, like sundials and clocks, to imitate the regularity of natural events. As people began to count the repeating events, they began to measure time.

THESIS PROJECT DEFINITION continued

Throughout history, the visual expression of time has been an integral aspect of art, business and technology across many levels of society. Functional time devices, such as calendars, have evolved into an important communication tool which keep people of different professional backgrounds informed of the units in time measurement, such as the year, month, week, day and hour.

This thesis, (The Value of Time: A Comparative Visual Analysis), will address four different professional users. These four professionals, a tax accountant, apple farmer, college professor and Catholic priest, were chosen because of the wide range of differences among them. The four professionals mentioned above not only perceive time differently from one another, but also live by different and specific schedules in their daily lives. For example, a certain month, week, day or even hour may hold more significance for one professional compared to others. The main objective for this thesis study is to visually communicate and emphasize the value of time for each of the four professions.

RESEARCH AND ANALYSIS

One of the earliest devices for time measurement was the Saxon sundial, developed around 1064 A.D.³ Although they were the only reliable source for telling time, sundials were not easily accessible. The construction of an accurate sundial required knowledge of astronomy, geography, mathematics and mechanics, not known in early days.⁴ One of the biggest disadvantages of using a sundial was that it relied on sunlight and therefore could only measure time on sunny days. Also, the slow movement of the shadow cast on the sundial made it difficult to measure the smaller units of time, such as minutes.⁵ By the 1700's, clocks and watches were developed. Their accuracy told time to the minute.

Accuracy in time keeping has grown in demand through the years as human lifestyles have become more complex. Demand has increased for a more accurate device that tells time for the people of present day compared to cave-dwelling hunters of prehistoric eras. The rising and setting of the sun, the phases of the moon and the cycles of other heavenly bodies have always provided man with periodic references for measuring time. When people began to move from the unvarying climate of areas near the equator and became farmers, they needed to measure time on a seasonal basis. Therefore, the "calendar" was born.

The exact origin of the calendar is unknown. During the Holy Roman Empire, the word "calendar" originated from Latin "calendarium", which means an account book literally intended for entering interest rates on loans and investments. The earliest calendars were strictly utilitarian, serving only religious and agricultural purposes. Priests created and maintained calendar systems to record the stars, seasons, times of religious festivals and times for planting and harvesting.

Not until the Middle Ages were calendars used as decoration. The first printed calendar was made around 1438 A.D. by an astronomy professor, Johannes Nider, at the University of Vienna. 12 The process required intensive work. Before the printed image was produced, it had to be carved into wooden blocks, then inked and pressed onto paper. Distinctive symbols for each month were developed for these calendars. 13

During the mid-fifteenth century, different kinds of calendars were produced. In 1448, calendars were made into hanging posters that could be tacked or pasted onto walls. Then more detailed, information-filled calendars were created. As a result, several calendars appeared in the form of bound, illustrated almanacs.

After the industrial revolution, calendars became a commercial vehicle for promotional purposes. ¹⁵ At the turn of the twentieth century, a businessman in America observed that almost everyone needed a calendar for personal and professional use. There was a mass, captive audience in calendar users and therefore, a perfect opportunity to produce a variety of calendars in mass quantity. ¹⁶ This was when the modern calendar was finally created.

A calendar is a system for measuring long units of time, usually in terms of days, weeks, months and years.¹⁷ The units of time measurement in calendars have a direct relationship to astronomy. First, the length of time in which the earth makes one rotation around its axis is called a *day*. Second, the length of time it takes for the moon to revolve around the earth is called a *month*. Finally, the length of time needed for the earth to make one rotation around the sun is called a *year*. The only unit of time measurement that does not have a direct link to astronomy is the week. No one knows exactly why there are seven days in a week. They were probably named for the seven objects, the sun, moon and the five planets able to be seen by the naked eye, moving on the zodiac (an imaginary belt in the heavens divided into twelve equal signs, each named for different constellation) that were seen by the ancients.¹⁸

There are three kinds of calendars. The first type is the Lunar Calendar, which is based on the month. This calendar consists of twelve synodic months. Each synodic month averages about 29.53 days, the period of time in which the phases of the moon, from one full moon to the next, repeats. 19 Therefore, a lunar calendar averages 354.37 days in length. 20 This is less than the usual 365 days it takes for the earth to revolve completely around the sun. As a result, lunar calendars get out of phase with the seasons.

The second type is the Luni-Solar Calendar. This type of calendar also has the twelve synodic months, but with a thirteenth month inserted every few years to keep the calendar in phase with the seasons.²¹ Two of the important surviving luni-solar calendars are the Hebrew (Jewish) and Chinese Calendars. The Hebrew Calendar is used by the Jewish religion, whereas the Chinese Calendar is used in eastern Asia.

Finally, the third type of calendar is the Solar Calendar, which is based on the length of one year. This is the present type of calendar, consisting of either three hundred sixty-five or three hundred sixty-six days. Solar calendars evolved from the ancient Roman calendar and passed through the stage of being a luni-solar calendar with extensive history.

Around the time Rome was founded in the first centuries (753 B.C.), there were only ten synodic months in the Roman calendar. ²² The year started near the beginning of spring in March and ended with December, the tenth month. The remaining seventy winter days were not counted in the calendar. Centuries later, two more months, January and February, were added between December and March. January was named for Janus, the two-faced Roman god of gates and doorways. ²³ February was named for the Roman festival of purification. ²⁴ Julius Caesar commissioned the Greek astronomer Socigenes from Alexandria to plan a sweeping reform of the Roman calendar during 45 B.C. ²⁵ This type of calendar includes the main features which Socigenes devised and Caesar implemented for the Roman Empire. On occasion, a thirteenth month was later inserted into the calendar. At this stage, the Roman calendar was the luni-solar calendar.

Although a month consists of thirty days in average, the following months have thirty-one days: January, March, May, July, August, October and December. The months with thirty days are April, June, September and November. In ordinary years, the remaining month of February has twenty-eight days. In total, all these months add up to three hundred and sixty-five days for one ordinary year.

The only exception to an ordinary year is a leap year, which occurs every four years. There are a total of three hundred and sixty-six days in a leap year. This day in the calendar appears as February twenty-ninth.

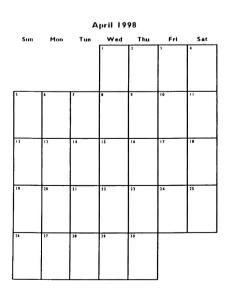
Today, the calendar year begins on the first of January and ends on the thirty-first of December. The first of January was established by the time of year when the sun seems to fade about half an hour later than its earliest setting seen in Rome, which occurs in early December. Basically, a calendar consists a total of three hundred and sixty-five days in one year. The year is divided into twelve months or fifty-two weeks (See Appendix A).

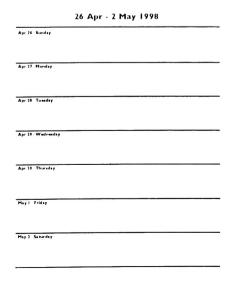
The initial steps for the thesis study were to carefully analyze the existing calendar formats. These formats range in their approach to specific units. They include the monthly, weekly and daily formats. In addition to the existing calendars sold in stores, computer programs also provide structured formats. The following thumbnail images of different calendar formats were obtained from a computer program, Calendar Creator:

Monthly formatted calendar

Weekly formatted calendar

Daily formatted calendar





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Calendar formats vary based on the units of time measurement. In most cases, all the units of time measurement add up to one full year. In addition, they are broken down into months, weeks, days and hours. If the calendar format is weekly, then there will be a total of fifty-two weeks for that one year. Monthly calendars will include twelve months to represent one complete year.

Units of time measurement are based on numbers. One year consists of twelve months. Each month averages about thirty days. Each month is divided into about four weeks. Since a week consists of seven days, a total of twenty-eight days would make up one full month. For example, there are twenty-eight days (exactly four weeks) in February. Months that have thirty-one days (January, March, May, July, August, October and December) are 4 ³/7 weeks long. Months with only thirty days (April, June, September and November) are 4 ²/7 weeks long.

There are twenty-four hours in one day. Two systems of numbering the hours of the day are most commonly used. First, the twelve-hour time scale divides the day at noon. The hours before noon are labeled A.M. (ante meridiem).²⁷ Those after noon are labeled P.M. (post meridiem).²⁸ Second, the twenty-four hour time scale is used in many parts of the world for civil, governmental, military and scientific usage in time keeping.²⁹ This is a more concise and less ambiguous system. Below is a comparison of both systems for numbering the hours of the day:

	24-hour scale	12-hour scale	
Midnight	00:00	12:00 A.M.	
	01:25	1:25 A.M.	
	11:59	11:59 A.M.	
Noon	12:00	12:00 P.M.	
	13:25	1:25 P.M.	
	23:59	11:59 P.M.	

People from all over the world use calendars in their daily lives. Whether it is for personal or professional use, people need some form of an organizational tool to keep track of their daily schedule. People of all ages, ethnic backgrounds, religious and professional careers use such tools, like calendars, to measure time.

Calendars are used by many different working professionals. Understanding and researching the professionals and their titles are an important aspect for this thesis study. It is the first step to discover the differences in time value for the working professionals. In order to start this research the *Dictionary of Occupational Titles*, a resource published by the United States Department of Labor was consulted. Instead of listing each title printed in this book, only the most common and general categories of occupations were selected. Here is the following list of the main categories:

Agriculture

Art and Design

Beauty

Business

Child Care

Construction

Dentistry

Economy

Education

Engineering

Entertainment

Fashion

Finance

Food/Drink

Government/Politics

Health

Home Care

Journalism

Law

Literature

Medicine

Music

Religion

Safety

Sanitation

Science and Nature

Sports

Technology

Transportation

From the list of the general categories of occupations, four main professional categories were chosen, along with more specific occupational titles:

Agriculture

Dairy Industry Worker

Farmer

Education

Librarian

Student

Professor

Finance

Accountant

Banker

Bank Teller

Bookkeeper

Cashier

Investment Banker

Retailer

Religion

Minister

Nun

Pastor

Pope

Priest

Rabbi

The four professionals were carefully selected, confirming that there was a wide range of differences among them. As a result, the four chosen professionals were the farmer, professor, accountant and priest. The four professionals were then specified to the following degrees:

Apple Farmer
College Professor
Tax Accountant
Catholic Priest

These four professionals were chosen because of the wide range of differences among them. They not only perceive time differently from one another, but also live by different and specific schedules in their daily lives. Discovering new facts about each of the four professionals' usage of time was a main goal for the thesis project.

Interviewing Professionals

In order to gather research for the four specific professions, interviews were conducted, either in person or by phone, from a questionnaire developed by the designer. Based on the questionnaire, the following questions were asked (See Appendix B):

- 1) Description of job
- 2) Use of calendar:
 - a) Is it necessary to use a calendar?
 - b) How important is it to use a calendar?
 - c) What are the main reasons for using calendars?
- 3) Important dates/events relating to profession
- 4) Description of typical year, month, week and/or day
- 5) Important considerations:
 - a) Particular colors involved in profession?
 - b) Specific images/icons/symbols considered?

The following professional users interviewed were:

Tax accountant Joon Won Choi, CPA, Timonium, Maryland

Apple farmer Jennifer Hanaman, Fowler Farms, Wolcott, New York

College professor David Dickinson, Illustration Program,

Rochester Institute of Technology, Rochester, New York

Catholic priest Father Chang Ho Kim, Lutherville, Maryland

SYNTHESIS

Tax Accountants

After researching and interviewing the professional users, all the information was gathered and summarized. Joon Won Choi, CPA, is a tax accountant for people who run their own businesses. Most of her clients include Korean families who operate their own stores. During the interview, she mentioned that keeping track of time for all her client appointments was a very important part of her job. Clients call in everyday to either schedule or cancel a meeting. After explaining the thesis project and its goals, Mrs. Choi listed all the important dates and events for tax accountants. For example, she immediately mentioned the quarterly due dates for both corporations and individuals:

Corporate Due Dates	Dec 15	Mar 15	Jun 15	Sep 15
Individual Due Dates	Jan 15	Apr 15	Jun 15	Sep 15

She also mentioned the peak periods, which refer to the busiest time periods for accountants before the big tax deadline of April 15. The peak periods include the last week of January, first week of February and the two weeks preceding April 15.

Mrs. Choi has a typical workday from 8:00 am to 6:00 pm. She works in her office five days a week, Monday through Friday. After viewing her appointment book, there were lists of client appointments that lasted from half an hour to an hour. On some slow days, there were a few spaces of free time. When asked, the first color that came to her mind was green, for money. As the interview ended, Mrs. Choi offered the main part of her job was to help all her clients save money as much as possible.

Apple Farmer

Jennifer Hanaman, an apple farmer at Fowler Farm in Wolcott, New York, was given a telephone interview. She grows, picks and processes apples throughout the year. She mentioned that apple farmers go by a seasonal calendar when harvesting apples. Since apple orchards operate in cooperation with the laws of nature, apple farmers take important steps and have specific preparation during each season. Here are main highlights of what goes on in an apple orchard during each season of the year:

Winter

pruning, equipment repairs

Spring

grafting, budding, planting, spraying insecticides

Summer

fertilizing, pollination, irrigation

Fall

picking, marketing, processing (pies, sauce, juice, cider, jelly)

An apple orchard can be a busy place in a typical year. Each month of each season involves careful step-by-step planning and teamwork. Although winters may be slow, there is always indoor work that needs to be done. The beginning of spring keeps apple farmers busy with the planting until the end of fall, when the picking ends. During the interview, Jennifer listed vibrant nature colors like greens, reds, oranges and browns, as representative of her profession. Trees are important for apple farmers. Trees symbolize nature, growth and structure. It is what apple growers rely on for the success of their apple harvest.

College Professor

David Dickinson is a full-time illustration professor at RIT at the undergraduate and graduate levels. Professor Dickinson teaches three classes a week. His duties include serving on thesis committee meetings and participating in other special projects for the Democrat & Chronicle Newspaper. Professor Dickinson only uses his calendar for the following reasons: student appointments, due dates of all the class assignments, thesis committee meeting schedules and for personal reasons. For Professor Dickinson, other important dates and events included the three RIT thesis exhibitions, deadlines for the Democrat & Chronicle projects and exam weeks for each quarter. He also found it helpful to record the due dates for final grades at the end of each quarter.

A typical day for Professor Dickinson consists of using one half of the day for either lecture, demonstration or critique. The other half of the day is used as studio time. During this time, he is available in the computer lab for any student who needs extra help with their work. In addition, he also holds office hours where any student can come to his office with questions or problems.

Catholic Priest

The last person to be interviewed was Father Chang Ho Kim, a Catholic priest for St. Mary's Church of Baltimore. Every Sunday for the last twenty years, Father Kim has given a sermon during mass to his church members. Father Kim uses calendars for either personal or professional reasons. There are special sacred events that the Catholic church celebrates every year to honor Jesus, Mary (Blessed Virgin Mother of Jesus) and Joseph (Husband of Mary). In addition to his Sunday responsibilities, Father Kim also performs special mass celebrations for these sacred events on other days of the week. He listed all the important holidays and events the Catholic Church honors every year:

January 1 February 25 March 19 March 26 April 5 April 10 April 11 April12 May 24 May 28 May 31 June 4	New Year's Day Ash Wednesday Celebration of Joseph Holy Thursday Palm Sunday Good Friday Passover Easter Sunday Holy Trinity Corpus Christi Visitation of the Blessed Virgin Mary Sacred Heart of Jesus
•	
November 22 November 26 November 30 December 8 December 20 December 25	Feast of Christ the King Thanksgiving Feast Day of St. Andrew the Apostle Immaculate Conception of the Blessed Virgin Mary Fourth Sunday of Advent Christmas

These events were listed in Father Kim's calendar. He described his church members as dedicated and loyal. All these events are celebrated during mass every year. He honors every special day to celebrate Jesus, Mary and Joseph with all his church members. One important color was mentioned by Father Kim. Purple has always been a sacred color for Jesus, symbolizing royalty. Besides the color, other symbols have also been important to the Catholic religion: Holy Cross, Mary and Jesus and the Holy Eucharist. The main purpose for the masses is to share the Holy Eucharist (body and blood of Christ) with all his church members.

In contrast to the special events, listed above, that may be celebrated on any day of the week, mass still takes place every Sunday. Sunday is the busiest day for Father Kim. He gives his sermon on both Sunday mornings and afternoons. On Saturdays, Father Kim prepares his sermon lectures. Throughout the weekdays, Father Kim and his wife are involved in many volunteer jobs in Baltimore.

CREATING ORGANIZATIONAL MATRICES

After all the information was obtained from the interviews, organizational matrices (outline of descriptive information grouped in a form of a graph) were created. These matrices were created so they can be carefully analyzed and compared throughout the thesis study.

YEAR

A yearly was broken down into twelve months, from January to December. Important events that occur in those twelve months for the four professional users (tax accountant, apple farmer, college professor and Catholic priest) were listed in the appropriate places. For the tax accountant, the following information was included: due dates for the corporations and individuals, peak periods and the courses offered for accounting. There are important steps for apple farmers to take during the year as they work toward the harvest. The matrix documents the month by month process of growing apples. In the section designated for the college professor, the year was divided into four academic quarters: winter, spring, summer and fall. The matrix contains the beginning and end of each quarter. Other information, like the dates of three thesis exhibitions, is also included. In the section related to the Catholic priest section, all the sacred events and holidays were listed in the yearly matrix.

After all the important information, events and holidays were listed in the yearly matrix for the four professional users, a series of hierarchy exercises were conducted. Through the hierarchy exercise, the designer will be able to not only identify specific typographic variables, but also clarify their function as visual cues to signal the hierarchical levels of information in a text. The designer will then discover the power of subtle typographic messages. There were three steps involved in these hierarchy exercises. The first step involved using typographic scale differences to emphasize certain elements for each user. The second step was to experiment with typographic weight differences to emphasize some important words or phrases for each user. The last step involved the use of other graphic elements, along with a combination of the two previous variables in scale and weight. In the end, a total of three yearly matrices finalized.

MONTH

A similar procedure was followed to create the monthly matrices. This time, the month of April was broken down into thirty days across the matrix. Based on data gathered and used in the yearly matrix, the month of April seemed to have significance for all four professionals. Therefore, April was chosen to be highlighted in the monthly matrices. The information contained in the monthly matrix has more specific facts about each user. The tax accountant section contains such details as client appointments, each peak day and the April 15 deadline. In the apple farmer section, spring planting begins in April. Throughout the month, details, like the process of transplanting apple trees, are included. The college professor section contains information such as the week by week process of class critiques and assignment deadlines. The monthly matrix for the Catholic priest shows the week by week preparation for mass, along with other sacred events that occur in April.

Again, a series of four hierarchy exercises were conducted. First, the typographic scale changes were used to emphasize key elements for each user. For example, larger type was used for the peak period days in the tax accountant section. Larger type was used for the beginning of the spring planting preparation for the apple farmer section. For the college professor section, larger type was used for the three thesis exhibition shows and the class critiques. These two important events emphasize deadlines for both the students and professor. Mass was the only word highlighted for the priest through the use of larger type.

Typographical weight differences were used next. The same words or phrases that were emphasized above were also highlighted through the use of different type weights. The last hierarchy exercise was through the use of other graphic elements with a combination of typographical scale and weight variables. As a result, a total of three different monthly matrices were created which each included the four professional users.

WEEK

A similar procedure was conducted for the weekly matrices as was done in the yearly and monthly matrices. This time, a week was broken down into seven days, starting with Sunday and ending with Saturday. The information contained in the weekly matrix has even more specific facts about each professional. The tax accountant section contains such details as nine to five workdays and their client appointments. The apple farmer section shows the day by day process of apple farmers selling their fruit to the public. The college professor section contains a weekly schedule of all classes that are taught, along with department meetings and other off-campus project schedules. In the Catholic priest section, only one day is emphasized during the week. Sunday is broken down into morning, afternoon and evening masses.

A series of three hierarchy exercises was created for the weekly matrices. Only one section did not contain the typographical differences in scale and weight. It was not necessary to emphasize any information for the tax accountant. This matrix shows a typical week of client appointments. No deadlines were included, therefore, nothing was highlighted. The first hierarchy exercise used typographical scale differences. In the apple farmer section, larger type was used for the apple farmers beginning to market their fruit. In the college professor section, larger type was used for class and department meetings. Larger type was also used for the morning, afternoon and evening masses in the Catholic priest section.

Typographical weight differences were used next in the second hierarchy exercise. The same words or phrases that were emphasized previously were also highlighted through the use of different type weights. The last hierarchy exercise was done using imagery with a combination of typographical scale and weight variables. As a result, a total of three different weekly matrices were created which each included the four professional users.

DAY

Finally, the same procedure was followed for the daily matrices as was done in the yearly, monthly and weekly matrices. The day was broken down into twenty-four hours, starting from 12:00 am and ending at 12:00 pm. The information contained in the daily matrix has even more detailed facts about each user. The tax accountant section contains a typical workday starting at 8:00 am and finishing at 6:00 pm. It shows a typical daily schedule including client appointments. In the apple farmer section, the daily process of apple farmers beginning to pick their fruit is shown. Apple farmers start their day at 7:00 am, earlier than many other professionals who may start around 9:00 am. The college professor section shows a a typical day of classtime which is taught by the college professor. It starts with a critique in the morning, followed by a lunch break and ending with studio work time in the afternoon. The Catholic priest section shows the mass ritual of one day. As the mass begins, it is followed by prayers and hymns.

Finally, a series of three hierarchy exercises was created for the daily matrices. As in the weekly exercises, it was again not necessary to emphasize any information for the tax accountant. This daily matrix shows a typical day of client appointments. No deadlines were included, therefore, nothing was highlighted. The first hierarchy exercise focused on the use of typographical scale differences. In the apple farmer section, larger type was used when the picking began. In the college professor section, larger type was used for the morning critique. Larger type was used to communicate in the Catholic priest section when the mass began and ended.

Typographical weight differences were used in the second hierarchy exercise. The same words or phrases that were emphasized before were also highlighted through the use of different type weights. The last hierarchy exercise was through the use of other graphic elements with a combination of typographical scale and weight variables. As a result, a total of three different daily matrices were created which each included the four professional users.

IDEATION

Before any preliminary sketches started, the main goals for the thesis study had to be clearly generated through conceptual solutions. What are the main intentions for creating the design applications? Through academic and professional experiences of the designer, it was important to create a visual, comparative study of how time is viewed through each professional. The design applications will be designed for educational purposes.

After creating the yearly, monthly, weekly and daily matrices through hierarchy exercises, preliminary sketches of the actual design application began. A total of four posters were created. A poster was designed for each professional user. For the first poster, representing Tax Accountants, variables related to typography, color and image were explored. Most of the information contained in the yearly, monthly, weekly and daily matrices was combined into one timeline for the tax accountant. The timeline was placed directly in the center of the poster. The title of the thesis and the professional user, tax accountant, were positioned at the top. Tax accountant was strongly emphasized through the use of larger letterforms. A range of green tones was used throughout the poster. Images that relate to money, such as a calculator and piggy bank, were used.

Since this was only a preliminary sketch, more changes needed to be done. The main considerations for further changes were the use of color, images and the typographic variables, such as size, weight and scale. Discoveries from the hierarchy exercises were taken into consideration when creating this preliminary poster.

For the layout relating to Apple Farmers, various type, color and images were used. Most of the information contained in the yearly, monthly, weekly and daily matrices was combined into one timeline for the apple farmer. The timeline was also placed directly in the center of the poster. The title of the thesis and the professional user, apple farmer, were positioned at the top. The user name, apple farmer, was strongly emphasized through the use of larger letterforms. A range of red tones was used throughout the poster. Images that relate to apple farming, such as apples and a mower tire track, were used.

IDEATION continued

Discoveries from the hierarchy exercises were taken into consideration when creating this preliminary poster. Since this was only a preliminary sketch, more changes needed to be done. The main considerations for further changes were the use of color, images and the typographic variables, such as size, weight and scale.

Most of the the information contained in the yearly, monthly, weekly and daily matrices were all combined into one timeline for the college professor. The timeline was also placed directly in the center of the poster. The title of the thesis and the professional user, college professor, were positioned at the top. The user name, college professor, was strongly emphasized through the use of larger letterforms. A range of yellow tones was used throughout the poster. Images that relate to teaching at the college level, such as a computer mouse, an aerial view of the RIT campus and a graduation cap, were used. The cap was specifically located near the month of May, during Commencement.

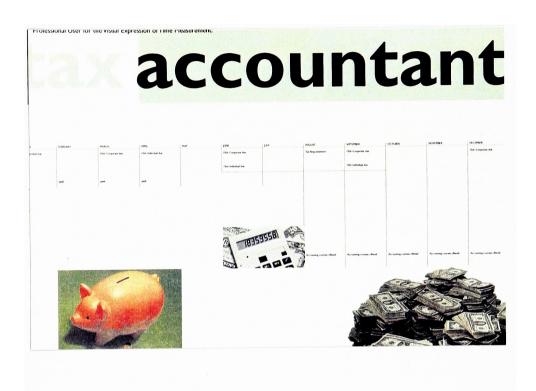
Discoveries from the hierarchy exercises were taken into consideration when creating this preliminary poster. Since this was only a preliminary sketch, more changes needed to be done. The main considerations for further changes were the use of color, images and the typographic variables, such as size, weight and scale.

In the layout representing Catholic Priests, various type, color and images were explored. Most of the information contained in the yearly, monthly, weekly and daily charts were all combined into one timeline for the Catholic priest. Along the top included the title of the thesis and the professional user, Catholic priest. Catholic priest was strongly emphasized through the use of larger letterforms. A range of soft blue-violet tones was used throughout the poster. Images that related to Catholicism were used. For example, this poster shows two different images of Jesus and the Blessed Virgin Mary.

Discoveries from the hierarchy exercises were taken into consideration when creating this preliminary poster. Since this was only a preliminary sketch, more changes needed to be done. The main considerations for further changes were the use of color, images and the typographic variables, such as size, weight and scale.

IDEATION continued

Preliminary layout of the design application for the Tax Accountant:

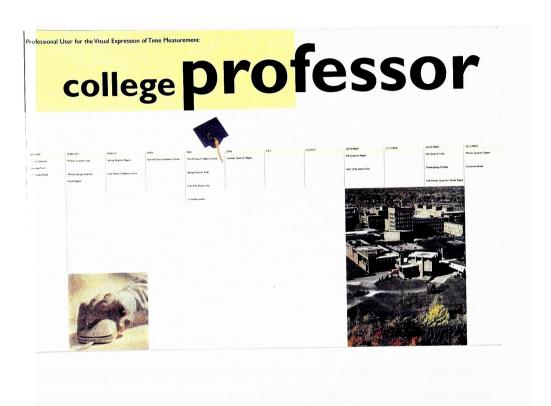


Preliminary layout of the design application for the Apple Farmer:

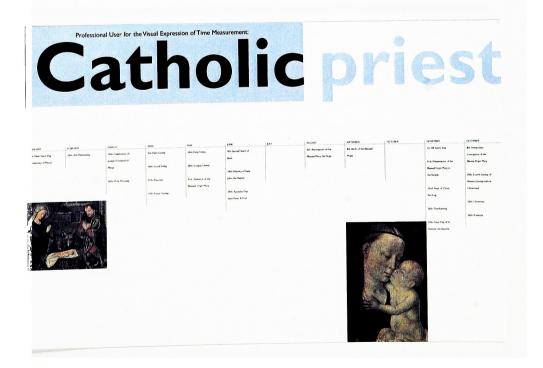


IDEATION continued

Preliminary layout of the design application for the College Professor:



Preliminary layout of the design application for the Catholic Priest:



EVALUATION

Over the weeks when refinements were being made to the design applications, a change occurred in the thesis title. The old name, *Visual Expression of Time Measurement*, was changed to *The Value of Time: A Comparative Visual Analysis*. Originally, this thesis project focused on goals that related to calendar design. But as agreed by the designer and the thesis committee members, a stronger thesis study was emerging which focused on the visual analysis of the time that was valued differently by each of the four professional users.

After four preliminary layouts were created, feedback was received from the thesis committee members. Overall, the four compositions needed much more consistency along the top portion of the layout where the thesis title and user names were located. The type of each user name was too large. The title of the thesis, "The Value of Time: A Comparative Visual Analysis", needed to be in the same position for each of the four layouts. The color vignettes also needed a consistent look throughout each of the four layouts.

Most of the feedback was focused on the timeline section of each layout. Originally, all twelve months, starting from January and ending in December, were equally spaced throughout the timeline. The thesis committee suggested that certain months with more important dates or events should have greater emphasis. This could be shown through extended column widths or the use of larger typography.

The thesis committee members advised that images should be used carefully. In other words, no images should be arbitrarily used in the layouts. The placement of the images should also be carefully considered. If an image was placed under a certain month, that image would have some special relation to that month. Besides images of photography or illustration, the thesis committee members also suggested the use of texture that may also describe each professional.

IMPLEMENTATION

Based on the suggestions and feedback from committee members, the following changes were made. First, the colors for all four layouts were revised. A darker and duller green was used in the tax accountant layout, to represent the actual color of money. A brighter peach was used for the apple farmer layout. The yellow in the college professor layout was brightened to represent writing pads that are often used in academia. The color was changed to a brighter purple in the Catholic priest layout. Throughout each layout, more than one shade of the chosen color was used. Darker shades were used in certain areas that needed to be highlighted or emphasized.

The main focus of each of the four layouts was the information contained in the timeline. Certain months had more focus through use of bigger column widths and larger type. For example, the tax accountant layout shows strong emphasis during the month of April. Throughout this timeline, there are three different column widths. The widest column is shown in April. For the months of December, January, March, June and September, the column widths measured about a third in size compared to the column width of April. These months all contain the tax due dates for both corporations and individuals. Other months (February, May, July, August, October and November) contain no information and, therefore, had the smallest column widths (See Appendix D).

Each layout included the name of a certain type of calendar. For example, *fiscal calendar* was added to the tax accountant layout to define a tax year of twelve months which ends with a month other than December. *Harvest calendar* was added to the apple farmer layout. The college professor layout included the phrase *academic calendar*. The Catholic priest layout was labeled the *sacred calendar*.

The tax accountant layout was designed through the use of a grid system, based on the column widths from the timeline. The space directly above the month of April, is used to describe what tax accountants go through in a typical year. An image of a piggy bank is placed to the right of this section. To the left of this section is a cropped, close-up image of a dollar bill. These images were used to symbolize tax accountants. Their main job is to help their clients save and budget their money. The title of the thesis in each of the four layouts, the name of the professional user and other subtitles were placed in the

same location to carry out a consistent look. The subtitle, "A year in the life of a ..." was placed in a black vignette with white type. Fiscal calendar was placed at the bottom left side of the first image, directly below the thesis title.

A similar procedure was done with the apple farmer layout. Certain months had more focus through the use of bigger column widths and larger type. For example, the apple farmer layout shows strong emphasis during the months of August, October and December. Throughout the timeline, there are two different column widths. The widest columns are shown in August, October and December. These months show the most important processes of apple harvesting. Apple picking begins in August. October is an important month, since the largest quantity of apples are picked at this time. After all the apples are picked and processed, it is time for the apple farmers to begin marketing their fruit in December. Smaller column widths for the other months of January, February, March, April, May, June, July, September and November were used. Other process work occurs during these months for the apple farmers, but are not considered the busiest times.

Just like the tax accountant layout, the apple farmer layout was also designed through the use of a grid system, based on the column widths of the timeline. The space directly above the months of August and September is used to describe what apple farmers go through in a typical year. An image of an apple tree in bloom is placed on the right side of this section. On the left of this section is a cropped, close-up image of a green apple. These images were used to symbolize apple farmers. The title of the thesis, the name of the professional user and other subtitles were placed in the same location in each of the four layouts to carry out a consistent look. The subtitle, "A year in the life of a ..." was placed in a black vignette with white type. Harvest calendar was placed at the bottom left side of the first image, directly below the thesis title (See Appendix D).

Suggestions were given by the committee members for the college professor layout.

Certain months had more focus through the use of broader column widths and larger type. For example, strong emphasis is shown during the months of May and September. Three different column widths were used. The widest columns are shown in

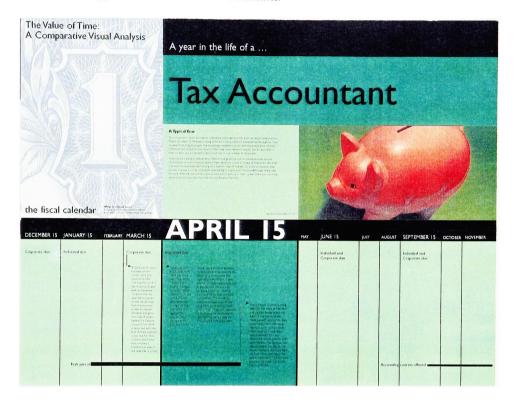
May and September. These months show the beginning and ending of the academic year. For the other months of January, February, March, April, October, November and December narrower column widths were used to contain information like the beginning and ending of each quarter, holiday breaks and the thesis exhibitions. The narrowest columns are used during the summer months of June, July and August. Many professors do not teach during the summer quarter, but still remain very busy with related professional activities.

The college professor layout was designed through the use of a grid system, based on the column widths from the timeline. The space directly above the months of May, June, July and August, is used to describe what college professors go through in a typical year. An image of the George Eastman building at RIT, is placed to the right of this section. To the left of this section is a cropped, close-up image of a brick wall of a RIT building. These images were used to symbolize the college environment. The title of the thesis, the name of the professional user and other subtitles were placed in the same location in each of the four layouts. The subtitle, "A year in the life of a ..." was placed in a black vignette with white type. *Academic calendar* was placed at the bottom left side of the first image, directly below the thesis title (See Appendix D).

More suggestions from the committee members were given for the Catholic priest layout. Certain months had more focus through the use of bigger column widths and larger type. For example, strong emphasis is shown during the months of March, April and December. Three different sizes of column widths were used throughout the timeline. The widest columns are shown in March, April and December. These months show the important sacred holidays Catholics celebrate every year. In March, Holy Thursday is celebrated. Four special events occur in the Catholic religion during April: Palm Sunday, Good Friday, Passover and Easter Sunday. In December, there is a big celebration of Christmas, the birth of Christ. The other months of January, February, May, June, August, September and November are shown with narrower column widths and include other sacred events honoring Mary and Jesus. The smallest column widths are used for the months of July and October, when no sacred events occur.

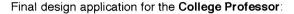
The Catholic priest layout was designed through the use of a grid system, based on the column widths from the timeline. The space directly above the month of April is used to describe what Catholic priests go through in a typical year. Images of Mary with Jesus and the Holy Eucharist held by the priest, are placed to the right of this section. To the left of this section is a cropped, close-up image of a Catholic priest's robe. These images were used to symbolize Catholic priests. The title of the thesis, the name of the professional user and other subtitles were placed in the same location in each of the four layouts. The subtitle, "A year in the life of a ..." was placed in a black vignette with white type. Sacred calendar was placed at the bottom left side of the first image, directly below the thesis title (See Appendix D).

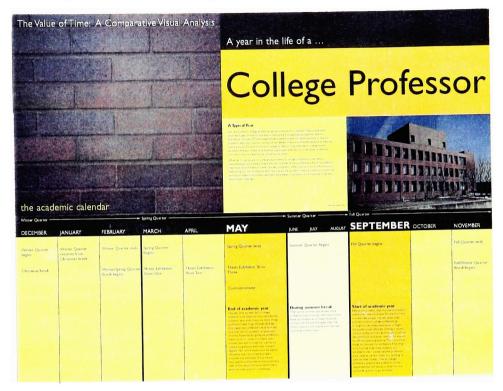
Final design application for the Tax Accountant:



Final design application for the Apple Farmer:







Final design application for the Catholic Priest:



DISSEMINATION

The four layouts were displayed in the RIT Bevier Gallery during the second of the three thesis exhibitions. Each final layout measured twenty-four inches wide by eighteen inches.

The four layouts were designed mainly for educational purposes. The goals for the thesis study related to the analysis of the value of time for each of four professional users. These final layouts could be distributed and used in the following ways:

Since the layouts are intended for educational purposes, they could be used in both public and school libraries. One way to display these layouts would be to put the tax accountant layout, for example, near the section on finance. The Catholic priest poster could be displayed in the section on religion. The apple farmer layout could be shown in the agriculture section of the library. Finally, the college professor layout could be used near the reference section. These layouts could inform students and other library patrons of the ways time is valued within each profession.

A second way of distributing the layouts would be to place them directly in the working environments of each of the four professionals. These four users most likely have either their own office or a working room they use every day. The layouts could be used as a reminder to clients and visitors of all the important events that occur each year in their professional careers.

Finally, the posters could be used in design schools. The best places for the four layouts would be in locations where many art students work and learn. For example, a design studio or a computer lab might be a good location to display these layouts. Students and professors can visually admire, and gain awareness of, the ways time is valued within each profession.

RETROSPECTIVE EVALUATION

Only minor feedback was given from the thesis committee members for the design compositions shown in the exhibition. When comparing all four layouts, the thesis title, "The Value of Time: A Comparative Visual Analysis," was either on one line or two separate lines and, therefore, did not appear consistent. The following is an overview summarization of all feedback received from the thesis committee for each layout:

THESIS COMMITTEE EVALUATION

Tax Accountant layout:

April 15 appeared too large with very tight spacing and not as consistent in size compared to the other highlighted months in the other posters

Apple Farmer layout:

Differences in type size for the months showed a clear hierarchy and legibility

College Professor layout:

Descriptive text in the section of A Typical Year was not legible due to its lengthy width The colors seemed too bright when compared to the other posters

Catholic Priest layout:

A Typical Year section was much easier to read due to its narrow width Image of the priest's robe appeared too dark

RETROSPECTIVE EVALUATION continued

Once the final changes were made, color prints, reduced by sixty percent, were generated to fit on an eleven by seventeen size paper. These reduced color prints were copied to be sent to the professional users who were originally interviewed for this project. Evaluation forms were also sent with the color copies. On the evaluation form, four questions were asked that related to the goals of the study (See Appendix E). The following is an overview summarization of all the feedback received from the four professional users:

OUTSIDE EVALUATION

Tax Accountant Layout (Evaluated by Joon Won Choi, CPA)

According to Joon Won Choi's evaluation, the information about time in the visual composition was well described for the profession of a tax accountant. April 15 is emphasized more than the other due dates. Since not many people are familiar with the term, fiscal calendar, it was important to show the definition by ending the year with a month other than December.

The chosen color, green, communicated the profession in an appropriate manner.

The explanatory paragraph contained most of the necessary and basic information to describe the profession of a tax accountant. Although it included the corporate and individual due dates and the peak periods, small details like the tax laws and client interaction were not included.

As a tax accountant, Mrs. Choi felt that the design composition achieved its main goal by visually communicating and emphasizing the value of time for this profession. All the important due dates were included. Appropriate images and colors were used in the layout. Overall, the design composition clearly emphasized the importance of April 15.

RETROSPECTIVE EVALUATION continued

OUTSIDE EVALUATION continued

Apple Farmer Layout (Evaluated by Jennifer Hanaman, Fowler Farm)

According to Jennifer's evaluation, the information about time in the visual composition was well described for the profession of an apple farmer. The description of the apple harvest process throughout the year was clearly shown across the timeline.

The chosen colors, red and peach, communicated the profession in an appropriate manner. These colors represent an apple harvest.

The explanatory paragraph contained most of the necessary information to describe the profession of an apple farmer. The only information that was not included in the paragraph was the technical and scientific knowledge farmers need to know about apple growing. However, Jennifer felt that this kind of information was not necessary to include since only the farmers need to know the scientific and technical aspects for growing apples.

As an apple farmer, Jennifer felt that the design composition achieved its main goal by visually communicating and emphasizing the value of time for this profession. Some months with greater emphasis were clearly shown in the composition. The months of August and October are the most important times for the apple harvest. Overall, Jennifer felt that the design composition was very well organized which made it visually appealing and informative.

College Professor Layout (Evaluated by David Dickinson, RIT)

According to Professor Dickinson's evaluation, the information about time in the visual composition was well described for the profession of a college professor. The composition was well organized and contained important information relating and describing the profession of a college professor.

The chosen colors, yellow and burgundy, communicated the profession in an appropriate manner. These colors relate to elements which represent the RIT campus.

RETROSPECTIVE EVALUATION continued

OUTSIDE EVALUATION continued

The explanatory paragraph contained most of the necessary information to describe the profession of a college professor. Professor Dickinson felt that it was not crucial to include the exact information contained in a RIT professor's contract by describing their lists of responsibilities and regulations as a professor.

As a college professor, Professor Dickinson felt that the design composition achieved most of its main goal by visually communicating and emphasizing the value of time for this profession. Spatial relationships worked well with all the text and graphics. The only area that caused uncertainty from Professor Dickinson was in the summer quarter. He noticed that these months had the least attention and focus. He felt that this may not be true for all college professors. The summer quarter may indeed be the busiest time for some professors.

Catholic Priest Layout (Evaluated by Father Chang Ho Kim)

According to Father Kim's evaluation, the information about time in the visual composition was well described for the profession of a Catholic priest. More emphasis was shown in the months of March, April and December. This was especially important for the role of Catholic priests who honor the sacred events in celebration of Mary.

The chosen color, purple, communicated the profession in an appropriate manner.

The explanatory paragraph contained most of the necessary information to describe the profession of a Catholic priest. The only information that was not included in the paragraph was the denominations for the hierarchy rank of the Catholic religion. Father Kim suggested that the background information describing the process of becoming a priest through seminary school was also important to include in the explanatory paragraph.

As a Catholic priest, Father Kim felt that the design composition achieved its main goal by visually communicating and emphasizing the value of time for this profession. However, Father Kim suggested that March should not have as much emphasis as April and December. Only April and December should be highly emphasized.

CONCLUSION

Upon the completion of the final thesis study, much knowledge was gained through each step of the process. Through the initial phases of research, new and unexpected information on the value of time was discovered. Besides the history of time, other findings relating to time, such as mathematics and science, were acquired through research. As the research gatherings progressed, more sub-related topics were discovered along the way. One of the more interesting aspects of the research process was uncovering the immense number of professionals. This list led to various comparisons for evaluating the value of time in each profession.

During the synthesis process, useful information about the working profession was obtained from the interviews of the four professionals. Personally, the designer did not know all four professionals before the interviews. Jennifer Hanaman was referred to from a friend of the designer. An interesting discovery was learned from this experience of interviewing both known and unknown professionals. The interviews with the three familiar professionals (Joon Won Choi, David Dickinson and Father Kim), were more comfortable than the interview with the fourth professional, Jennifer Hanaman, whom the designer never met. Despite these differences, all the interviews were conducted on a mature and professional level. Enough information was gathered from the four professionals to use in the thesis study.

After the interviews, information on the value of time for the four professionals was visually compared and analyzed into matrices. The matrices were organized into yearly, monthly, weekly and daily formats. Each of the four professionals viewed time differently from one another. Not every professional has a typical workday from 9:00 am to 5:00 pm during the week. Apple farmers mainly rely on natural sources, like the seasonal weather, to operate within their working environment. The busiest working days for the Catholic priest are during the weekends, when most people are not working. For either scientific or religious reasons, there are certain factors related to whether or not some professionals can control the use of time in their profession.

CONCLUSION continued

The ideation process enabled the designer to explore different design application layouts. Significant improvements, from the preliminary sketches to the final application layouts, were made through the simple use of colors, images, typographic variables and spatial relationships. Focusing on the main goal enabled the designer to succeed in comparing the value of time differences for the four professionals. Although it was important for the final layouts to be consistent, some variety was needed in the composition to differentiate between the four professionals. Not all the images were the same size in the four layouts. Some column widths of the months in one layout were either wider or narrower than the other layouts. Despite these variations, the type size and placement of the thesis title and other subtitles were consistent in all the four layouts.

Feedback was given by the thesis committee to the preliminary sketches during the evaluation process. In the implementation process, changes were made to the four layouts to produce final design applications. The four final applications were then displayed in the Bevier Gallery during the second thesis exhibition on April 10, 1998. One way to discover if the designer achieved her thesis goals in the design applications was through a retrospective evaluation. The four interviewed professionals responded with their suggestions through a questionnaire. The retrospective evaluations also enabled the designer to understand and respect the different perspectives of the four professionals' usage of their time.

Creating design compositions for a comparative visual study was only one part of the knowledge and experience gained by the designer. Throughout the thesis process, the designer gained a valuable lesson. Since the process steps (research, synthesis, ideation, evaluation, implementation and retrospective evaluation) were structurally organized, the designer was able to conduct her thesis study by focusing on the main goals and objectives. Overall, the designer was fortunate enough throughout the thesis process to have the support and guidance from the thesis committee and the graduate graphic design department.

FOOTNOTES

- 1. Leonard Doob, *Patterning of Time*. (New Haven: Yale University Press, 1971), 126.
 - 2. Doob, 127.
- 3. Harrison Cowan, *Time and its' Measurement*. (Cleveland: The World Publishing Company, 1958), 17.
 - 4. Anthony Aveni, Empires of Time. (New York: Basic Books, 1989), 86.
 - 5. Aveni, 86.
- 6. Mark Gabor, *Art of the Calendar.* (New York: Harmony Books-Crown Publishers Inc., 1976), 7.
 - 7. Cowan, 57.
 - 8. Cowan, 57.
 - 9. Gabor, 7.
 - 10. Gabor, 7.
 - 11. Gabor, 7.
 - 12. Gabor, 7.
 - 13. Gabor, 7.
 - 14. Gabor, 7.
- 15. M.N. Saha, *History of the Calendar*. (New Delhi: Council of Scientific & Industrial Research, 1992), 42.
 - 16. Gabor, 7.
 - 17. Saha, 45.
 - 18. Cowan, 51.
- 19. Michael Robbins, *Electronic Clocks and Watches*. (Indianapolis: Howard W. Sams & Co., 1975), 12.
 - 20. Robbins, 12.
 - 21. Saha, 44.
 - 22. Saha, 44.
 - 23. Robbins, 13.
 - 24. Robbins, 13.
 - 25. Saha, 45.
 - 26. Robbins, 13.
 - 27. Robbins, 14.
 - 28. Robbins, 14.
 - 29. Robbins, 14.

GLOSSARY OF TERMS

Academic Of colleges, universities; scholastic

Accountant A person whose work is to inspect, keep, or adjust accounts

Aesthetics A branch of philosophy dealing with beauty and the beautiful

Bible The sacred book of Christianity; Old Testament and New Testament

Calendar A system by which the beginning, length and divisions of the civil year are fixed and by

which days and longer divisions of time are arranged in a delineated order

Clock A device other than watch for indicating or measuring time

Conceptual An idea that includes all that is characteristically associated with or suggested by a team

Consideration Careful thought and attention

Culture Body of customary beliefs, social forms and material traits constituting a distinct complex

of tradition of a racial, religious or social groups

Day The time (24 hours) that it takes the earth to revolve once on its axis;

period of light between sunrise and sunset

Diagram A drawing or plan that outlines and explains the parts or operation

Evaluation To determine the significance or quality of

Expression To represent by a symbol, character, figure or formula

Farmer A person who earns their living by farming, especially one who manages

or operates a farm

Function Purpose for which something is designed or exists

Goal Result or achievement toward which effort is directed

History A branch of knowledge dealing with past events

Hour Division of time, one of the twenty-four parts of a day; sixty minutes

Incidence The act, fact or manner of falling upon or influencing

Integration Making whole or complete by adding or bringing together parts

GLOSSARY OF TERMS continued

Interrelationship Mutual or reciprocal relation

Measurement Process of ascertaining the extent, dimension or quality

Minute 1/60 of hour; 60 seconds

Month Period of four weeks or 30 days

Mystery Something unexplained, unknown, or kept secret

Nocturnal Of, done or happening in the night

Origin Something from which anything arises or is derived

Pattern Natural or chance marking, configuration or design

Phase Any of the stages or forms in any series or cycle of changes, as in

development

Plan Scheme or method of acting or proceeding developed in advance

Portable That can be carried or moved

Preliminary Preceding and leading up to the main part, matter or business

Priest Person whose function is to make sacrificial offerings and perform

other religious rites

Process Systematic series of actions directed to some end

Professor A teacher; specifically a college teacher of the highest rank, usually in a specific field

Relationship Connection, association or involvement

Root Source or origin of a thing

Schedule List of times of recurring events; timed plan for procedure or plan

Season Any of the four arbitrary divisions of the year, characterized chiefly by differences in

temperature, precipitation, amount of daylight and plant growth (spring, summer,

fall/autumn, winter)

Second 1/60 of a minute of time; very short period of time

Solution Act or process of solving a problem

Strategy Plan or method for achieving a specific goal

GLOSSARY OF TERMS continued

Student Person who is enrolled for study at a school, college, etc.

Symbolism Letter, figure or other conventional mark designating an objective, quantity,

operation or function

Thumbnail Brief or concise sketch

Week Period of seven days, especially one beginning with Sunday and ending with Saturday

Weekday Any day of the week except Saturday and Sunday

Weekend The period from Friday night or Saturday to Monday morning

BIBLIOGRAPHY

Books:

- Aveni, Anthony. Empires of Time, New York: Basic Books, 1989.
- Brearley, Harry. *Telling Time Through the Ages*, New York: Doubleday, Page & Company, 1919.
- Collins, Philip. Pastime: Telling Time From 1879 to 1969, San Francisco: Chronicle Books. 1993.
- Cowan, Harrison. *Time and Its' Measurement*, Cleveland: The World Publishing Company, 1958.
- Cowles, Gardner. *The Coming of Christ*, New York: Cowles Magazines and Broadcasting, Inc., 1963.
- Cribb, Joe. Money, New York: Alfred A. Knopf, 1990.
- Doob, Leonard. Patterning of Time, New Haven: Yale University Press, 1971.
- Drepperd, Carl. American Clocks & Clockmakers, Boston: Charles T. Branford Company, 1958.
- Dupuis, N.F. *The Measures and the Measurement of Time*, Kingston: The Jackson Press, 1944.
- Gabor, Mark. *Art of the Calendar*, New York: Harmony Books Crown Publishers inc., 1976.
- Gertrude, Sil. *A Handbook of Symbols in Christian Art*, New York: Macmillan Publishing Co, Inc., 1975.
- Gummer, John. The Christian Calendar, Springfield: G & C Merriam Company, 1974.
- Hiebert, Kenneth. *Graphic Design Processes: Universal to Unique*, New York: Van Nostrand Reinhold, 1992.
- Johnson, Hannah. From Apple Seed to Apple Sauce, New York: Lothrop, Lee & Sheppard Company, 1977.
- Johnson, Sylvia. Apple Trees, Minneapolis: Lerner Publications Company, 1983.
- Kittredge, George. *The Old Farmer and His Almanack*, Williamstown: Corner House Publishers, 1974.
- Landes, David. Revolution in Time, Cambridge: Harvard University Press, 1983.
- Lloyd, H. Alan. Some Outstanding Clocks over Seven Hundred Years 1250–1950, London: Leonard Hill Books Limited, 1958.

BIBLIOGRAPHY continued

- Macey, Samuel. *The Dynamics of Progress*, London: The University of Georgia Press, 1989.
- Micucci, Charles. The Life and Times of the Apple, New York: Orchard Books, 1992.
- Mintz, Lorelie. How to Grow Fruits and Berries, New york: Julian Messnor, 1980.
- Morris, Pamela. The Diary of a Country Priest, New York: Macmillan Co., 1954.
- Nottridge, Rhoda. Apples, Minneapolis: Carolrhoda Books, Inc., 1990.
- Peterson, Chris. Harvest Year, Honesdale: Boyds Mills Press, Inc., 1996.
- Reid, Lori. *The Complete Book of Chinese Horoscopes*, Rockport: Element Books, Ltd., 1997.
- Ribolini, Gabriele. Pocket Watches, San Francisco: Chronicle Books, 1988.
- Robbins, Michael. *Electronic Clocks and Watches*, Indianapolis: Howard W. Sams & Co., 1975.
- Robertson, Drummond. *The Evolution of Clockwork*, London: Cassell & Company, Ltd., 1931.
- Saha, M.N. *History of the Calendar*, New Delhi: Council of Scientific & Industrial Research, 1992.
- Spina, Suzanne. *In Celebration of Rochester*, Northridge: Windsor Publications, Inc., 1988
- Wright, Lawrence. Clockwork Man: The story of Time, Its Origins, Its Uses, Its Tyranny, New York: Horizon Press, 1969.
- Calendar Graphics: An International Collection of Great Calendar Designs, Tokyo: PIE Books, 1992.
- Calendar Graphics 2: The Best and the Brightest in Calendar Design, Tokyo: PIE Books, 1995.

BIBLIOGRAPHY continued

Magazines/Journals:

Financial World, January 21, 1997 Financial World, June 17, 1997 Money, January 1998

Other Sources:

Calendar Creator, PowerUp Software Corporation, Creator David Taylor

Kinko's-Custom Calendar Order Form

Day-Timer: How to Use Your Day-Timer Personal Organizer

The Filofax Calendar

Franklin Quest-1997 Annual Reference Catalog

OfficeMax

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APPENDICES

APPENDIX A

Units of Time Measurement

Calendar Formats:

Monthly

Weekly

Daily

1 Year

Units of Time Measurement

1 Month

April 1998

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			I	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

26 Apr - 2 May 1998

	20 Ap	r - Z Ma	y 1770		
Apr 26 - Sunday					
Apr 27 - Monday					
Apr 28 - Tuesday				.,	
Apr 29 - Wednesday					
Apr 30 - Thursday					
May I - Friday					
May 2 - Saturday					

Thursday, April 30, 1998

8 AM	3 PM	
9 AM	4 PM	
10 AM	5 PM	
II AM	6 PM	
12 PM	7 PM	
I PM	8 PM	
2 PM	9 PM	

APPENDIX B

Interview Forms from the Following Users:

Tax Accountants

Joon Won Choi, CPA

Apple Farmer

Jennifer Hanaman

College Professor

David Dickinson

Catholic Priest

Father Chang Ho Kim

Appendix B	
Questionnaire Interview with: Joon Won Choi, CPA	☐ Tax Accountant ☐ Apple Farmer ☐ College Professor ☐ Catholic Priest
1) Description of job	uners; wf their Hy Baltimore
2) Usage of calendar:	
a) Is it necessary to use a calendar? yes to keep track of class b) How important is it use a calendar? their whole business relies on it — Scheo	,
c) What are the main reasons for using calendars? Set up appointments for clients Schedule other personal agenda as	
3) Important dates/events relating to profession Quarter due dates for Corporate & Peak period - end of Jan beginning of Feb 2 weeks prior of Apr 15	Individual
4) Description of typical, year, month, week and/or day base new year on Apr 15! typical 8-6 Schedule everyday w cl that last about 1 hour each w few	Cient appoint s breats

5) Important considerations:

a) Particular colors involved in profession?

Money - green

b) Specific images/icons/symbols must be considered?

Appendix B	
Questionnaire	Accountant ble Farmer
INTORVIONA MITH. 1800 Itali	lege Professor holic Priest
1) Description of job Apple grower, picker 9, processer	
2) Usage of calendar:	
a) Is it necessary to use a calendar? Not really depends but not for everyday uses a calendar? b) How important is it use a calendar?	ise!
b) How important is it use a calendar? Only for Seasonal purposes	
c) What are the main reasons for using calendars? to prepare for Narvest & apple picking Se	hedule
3) Important dates/events relating to profession	, 1
Winter - pruning, equipment repairs, horvest comple- Spring - grafting/budding, planting, spraying insecti Summer - fertilizing, pollination, irrigation	
Fall - picking begins, marketing, processing capple pies 4) Description of typical, year, month, week and/or day	Sauce, ci
- Careful planning through each season Slow in Winter	
Busy from Spring -> Fall Alot of Leanwork & dedication through ent	ire year
5) Important considerations:	
a) Particular colors involved in profession? vegetation/plant colors - givens, oranges	, brown
b) Specific images/icons/symbols must be considered? tree-Symbol of life & growth	

Questionnaire	☐ Tax Accountant☐ Apple Farmer☑ College Professor
Interview with: Dave Dickinson	College Professor Catholic Priest
1) Description of job professor (full-time) for Illust teach 3 classes a week Serve on thesis committee memb	
Special project - Democrat & C	
2) Usage of calendar:	
a) Is it necessary to use a calendar? Sometimes	
b) How important is it use a calendar? Let Students need to make appointments	dept nHgs
c) What are the main reasons for using calendars? tor personal reasons deadlines / due dates of assignm	ents of each class
3) Important dates/events relating to profession thesis committee mtgs -> thesis shows. Denio & Chronicle - deadlines for pro Finals week - final grades due	iects
4) Description of typical, year, month, week and/or day for all 3 classes, use 1/2 day for demo or critique; then other 1/2 of Studio time hold office hours 2× a week	lecture, lay is
5) Important considerations:	
a) Particular colors involved in profession?	
b) Specific images/icons/symbols must be considered?	

Questionnaire Interview with: Fother Class He V:	Tax AccountantApple FarmerCollege Professor
Interview with: Eather Chang Ho Kim	
I) Description of job	
Catholic priest - church in La	uther ville, MD
2) Usage of calendar:	
a) Is it necessary to use a calendar?	
b) How important is it use a calendar? depends	
c) What are the main reasons for using calendars? ———————————————————————————————————	
3) Important dates/events relating to profession Any religious date celebrating Many & Je 3/19,26 4/5,10,11,12 5/31 8/6,8 11/21 12/8 12/25 Most important Holy Thurs, Easter, Palm	
4) Description of typical, year, month, week and/or day Calue Sermons every Sunday in (Hold special masses during T	
5) Important considerations:	
a) Particular colors involved in profession? Purple-Sacred	
b) Specific images/icons/symbols must be considered? how cross, Eurcharist Mary 2 Jesus	

APPENDIX C

Synthesis Process - Hierarchy Exercises:

Yearly Matrix

Monthly Matrix

Weekly Matrix

Daily Matrix

s - Hierarchy Exercise

Appendix C		
Synthesis Pro Yearly Matrix	oce	SS
	December	
	November	
	October	
	September	
	August	
	April	
	ound	
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	1 eleman j	

Tax Accountants						h.i.	.	in a second seco	Ottober	November	December
	Corporated	Corporate dus on the 15th			Corporate due on the 15th			Corporate due on the 15th			Corporate due on the 15th
Individual due on the 15th			Individual due on the 15th		Individual due on the 15th			Indevidual due on the 15th			
Appe orchards are Pruning begins operated in cooperation (process which limbs with the laws of nature. It are sawed off & clipped	ss Equipment repairs and maintenance occupes the ch limbs days too cold or stormy to be outdoors.	pres the	Prepare for spring planting	Buds begin to swell Temperature, humidity	Pollination begins Fertilizing & tree	Irrigation Spraying mowing &	Last growing month before apples begin to ripen	Apples start to bruse Picking continues &	Last of the fruit comes off trees		Apples go through many different
to allow max sunlight into growing structure;	structure;			& rainfall are recorded	training begins	shaping practices continue	Picking begins	spu•	Farmers start to market their fruit	their fruit	made into sauce, pies and jelly or presses into
produce larger, better	er, better			Both harmful & beneficial insects are	Limbs are tied up or weighted down to	Some pruning is done			Apples are stored, packed and shipped fresh to	and shipped fresh to	fresh cider and processes apple juice
colored, higher quality & more valuable (ruit)	er quakty ible fruit)			counted to determine spray schedules	spread the young tree into perfect shape	to expose growing fruit to ripening sunlight			supermarkets, restaurants and schools nationwide	and schools nationwide	
				(spraying is only done when needed to		•			Some farmers invite the public to come for the	wblic to come for the	vilin narvest complete, it is time to prepare again for winter
				protect tree & Iruit)					fun of picking their own a	pples	
			٠								
•									•	•	•
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•		•	•	•	•			•	•	•	
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•	•	•	•	•	•			•	•		
•	•		•			•					
		The party and th						•	•	•	

Synthesis Process - Hierarchy Exercise Yearly Matrix

Start of Academic Year Chrustmas Break Fall Quarter Ends Thankspring Holiday Fall-Winter Quarters' Break Begins
Fall Quarter Ends Thankgring Holiday Fall Winter Quarteri Break Begin
Fall Quarter Ends Thankgring Holiday Fall-Winer Quarter' Beek Begins
Fall Quarter Ends Thanksgiving Holiday Fall-Winser Quarteni Break Begins
Thandgiving Holiday Fall-Wineer Quarteri Break Begins
Fall-Winser Quartens' Break Begins
Break Begins

Ę
(Solemnity of Mary) Joseph (Husband of
ary) IOth-Good Friday
26th-Holy Thursday 11th-Passover
12th-Euter Sunday

Synthesis Process - Hierarchy Exercise

Monthly	Matrix
MOUTHER	Malia

ces	s - Hierarchy Exercis
Pww S1	Individual Due
14 lun	Last Minute Preparation Peak
13 Мон	Last Munte Preparation Poak
12 Sun	Cleut Appointments Peak
<u> </u>	Cleast Appointments Paak
101	Clent Appointments Peak
• 1 Part	ž
Provide de la company de la co	Clant Apolitmenta Peak
• 1 -	Clent Appointments Peak
e 1 t-11	Client Appointments Peak
	Clent Appointment
•	
=	Client Appointments Posk
!	i hart (hent Appointments Appointments Peak Peak
Manual Annual 1 Ward	i heat Appointment
1	TirAtecument

Critque in Clus	
Project for Democrat & Chronicle	
Chas	
Preparation for Monday's Class	
Class 2nd Thess Eshibiton Show	
Preparation for Finday's Class Demonstration	
Chas	
Project for Democat & Chroncle	
Crtique in Class	
Chass	
Preparation for Friday's Class Derronstration	
Chus	

3		Esster	
3	į	Passover	Preparation for Easter Mass
	Good Friday		
	Preparation for Weekend Mass		
	Preparation for Mass	Mass Palm Sunday	

Synthesis Prod Monthly Matrix

oces X	s - H	iera	arch	ıy E	Exer	cise	9
30 Thur	Client Meetings & Appointments	:					
Paw 62	Clear Metury & Clear Metury & Clear Metury & Clear Petury A Appointment Appointment Appointment	•					
28 lun	Client Meetings & Client Meetings & Abbointments						
27 Mon	Client Meetings &						
26 Sum							
141:11	Client Meeting						
2) Thur	Client Meetings & Client Meetings &						
Page 77							
71 lus	C. Bent Mastings & Clent Mastings &	amaunuodet.					
70 i ban	Clent Meetings f	nueunwoddy					
14 'am							
11							
2 2	work Organiza	Clent Meetings					
	Sur k		Juji				

(attached by tissue splicing) on a root-stock selection
Study the trees frust variety that are grafted (attached by

Preparation for Froby's Class Demonstration	
Class Pr Pr Q	
Cneque in Class	
بو بو ع ک	
Project for Chronical & Chronical	
*	•
S C ha	£
Preparation for Mondays Class	Preparation for Mass Mass
Chas	
Preparation for Frday's Class Demonstration	
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ST C PRIS	
Project for Democrat & Gwoncle	
СР	
Preparation for Monday's Class	
ξ	Ē
	Preparation for Mass Mass
i Q	
tion for Class stration	

Synthesis Process - Hierarchy Exercise Weekly Matrix

Arpute	1 terminay	Yelvenil	Wordings day	Hunsday	Inday	Saturday
Chant Appointments 9 to am 5 to pm	C lieut Aspointments 9 00 am 9 900 pm	C.lient Appointments		Client Appointments 9 00 am P 00 pm	Chent Appointments 9:00 am 7:00 pm	Client Appointments 9 00 am S 00 pm
Apple farmen begin the process to market their fruit	Apples are first stored in refirgention		Apples are packed nto boxes		Apples are shipped to grocery stores. restaurants, and schools	Farmers allow the public to come for apple probing
	Chas. Digital Panting Homing Chas Demonstration Office Hour	Meeting for Democrat & Chankle Project Chass Illustration Forming Critique Office Hour	Chas: Illustration Morning Critique Office Hour	Preparation for findsy's Demonstration Office Hours	Class: Printmaking Morning Class Demonstration Office Hours	
			2000		Luch	

Afternoon Studio Work Luch Lunch Afternoon Studio Lab Department Meetings Lunch

Synthesis Process - Hierarchy Exercise Daily Matrix

Proce x	ss - Hierarchy Exercis	e		
wr 00 11	Clent Appoinment		Cruque ends Office bour begins	Responsive reading Project Screpture reading Seermon
10 00 4111				Mass begins Pretorie Call to worthly Hymns
wr 00 6	Clent Appointment		Morning Critique	
B 00 4111				
7 00 am		Check and dear stonge Picking Begins rooms and relifteration Laddens taken out		
1117 DO 4		Check and dear ston rooms and refrigerate Ladden taken out		
, 100 am				
4 000 acc			·	
J 190 am				
1 (M) ann		·		
Dally 1709	Tar Accountant	Apple Farmers	College Professors	Catholic Priest

Synthesis Process - Hierarchy Exercise

- ,	
Daily	Matrix

roces	ss - Hierarchy Exercise	Э		
11 00 pm				
10 00 hm				
9 00 pm				
m oo 8				
7 00 pm	Chent Appointment			
und 00 ♦	Client Appointment			
\$ 00 pm	Client Appointment	Apples are stored Ladders are put swory	Lave for the day	
4 tib pen		Picking ends for the day		
1 00 jm	Clent Apponument			
2 Ort pm	Clent Appoinment		Atembon Suado Lib Hep sludents	
1 00 pm	Lunch	Picking continues	Lunch	
17 titl pm	(.lent Apointment	Lunch break	Department Meeting	Eucharist

APPENDIX D

Final Thesis Design Applications:

Tax Accountant

Apple Farmer

College Professor

Catholic Priest

AUGUST SEPTEMBER 15 OCTOBER NOVEMBER Individual and Corporate due ax Accountant Individual and Corporate due JUNE 15 By accountants stiff butheries, individuals and organization with tax retem propurations. There are levels of different training skills each tax accountant experiences throughout their cavers: fifer, they mure tags in the brownglags needed to sairt with the propuration of both individuals and copporate tax enums. Then they must research profelt extinues, taken individuals and copporate tax enums. Then they must research profelt extinues taken in A year in the life of a ... A Typical Year FEBRUARY MARCH 15 What is a fiscal year? A tax year of twelve months which ends with a month other than Decemb The Value of Time: A Comparative Visual Analysis the fiscal calendar DECEMBER 15 JANUARY 15 Individual due Corporate due



College Professor Fall/Winter Quarter Break begins NOVEMBER AUGUST SEPTEMBER OCTOBER Summer Quarter begins A year in the life of a ... just the violents, college probesions po by an acidemic schedule. They intrinsicate commplet, probesions were lever as the fail and each of they regis for example, probesions there at Redestreat institute of Technology follows a system based on three quarters on most fill acidemy specified, proposing follows a system based on three quarters are offered supersology follows as practices consist of transients. They are are different specified for the proposition of the fail transients and the supersology for the transients and the supersology for the supersology ➤ Summer Quarter — JULY Whether it is pulsate to undergraduse level, it today proteins have ever repossiblents, according to the context, in order to be quilted in a fall man profession they must tend there that evels to equilied in with other life conds context, along must be profession and other life conds context, along must be profession and to be a fall or the context of the context of the context. The context of the context o estrict duties as a thesis commember in order for a graduate to graduate with their master's Spring Quarter ends MAY Thesis Exhibition Show Two Thesis Exhibition Show One Spring Quarter begins MARCH Winter/Spring Quarter Break begins A Comparative Visual Analysis Winter Quarter ends **FEBRUARY** the academic calendar The Value of Time: Winter Quarter resumes from Christmas break JANUARY Winter Quarter DECEMBER Christmas break



APPENDIX E

Thesis Design Project Evaluation Forms:

Tax Accountant, Joon Won Choi, CPA
Apple Farmer, Jennifer Hanaman
College Professor, David Dickinson
Catholic Priest, Father Chang Ho Kim

ppendix E	
Dyanne M. Kim Graduate Grap	n ohic Design–Thesis Design Project Evaluation
Please fill out	t the following information before answering the questions below:
Nan Professio Today's Da	ne: Joon Won Choi, CPA on: Tax accountant ate: 4/28/98 (Phone evaluation)
Questions (P	lease circle the appropriate answer):
I. After viewing t has been includ	the visual composition for the first time, do you feel that the information about time that ded is important and well described for that profession?
yes no Please explain ESP MO Peo 2. Do the chosen	Since Apr 15 is emphasized than other dates recially the fiscal calendar not starting in with If Jan! Very important since not many of the arc familiar w/ this term — fiscal colors communicate the profession in an appropriate manner?
yes)/ no If not, then wha	at color(s) do you feel would be more suitable?
	atory paragraphs in the tax accountant composition contain all the necessary information e your profession?
	Mainly the basics-like dates, peak period but not every detail (process of acct wy their clients not included—but not necessary to included
	f this thesis study was to visually communicate and emphasize the value of time for a sion. Do you feel, as a tax accountant, that this design composition achieves that main goal?
yes / no Please explain	Dates are there, so are added images, important dates are included— crucial due dates are highlighted, especially Apr 15!

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Α	n	n	0	n	a	IV	=
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Dyanne M. Kim Graduate Graphic Design-Thesis Design Project Evaluation

Please fill out the following	information	before answering	the auestions	below:
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Name: <u>Jennifer Hanaman</u> Fowler Farm fession: <u>Apple Farmer</u>
S Date: <u>4/30</u> (phone evaluation) Wolcott, NY

Questions (Please circle the appropriate answer):

1. After viewing the visual composition for the first time, do you feel that the information about time that has been included is important and well described for that profession?

yes / no Please explain 1+15 Nice to see all the months across I year w/ description showing all the process involved in apple harvest year - very clear!

2. Do the chosen colors communicate the profession in an appropriate manner?

my 1st choice! If not, then what color(s) do you feel would be more suitable?

3. Do the explanatory paragraphs in the apple farmer composition contain all the necessary information to fully describe your profession?

(yes) no Please explain this may not be necessary to include but
only the Scientific & technical aspects weren't
Included—like what farmers need to know to grow
apples (but do see that they learn thru classes)
4. The purpose of this thesis study was to visually communicate and emphasize the value of time for a

specific profession. Do you feel, as an apple farmer, that this design composition achieves that main goal?

yes ∤ no Please explain very clear since certain months are brought forth can relate to how some months are more important than other months, like Acq, Oct very well organized (visually) composition describing apple farmers

Dyanne M. Kim Graduate Graphic Design-Thesis Design Project Evaluation

Please fill out the following information before answering	the	questions	below:
--	-----	-----------	--------

Name: David Dickinson
Profession: Professor - Illustration Program
Today's Date: 5/4/98 (Sit-down evaluation)

Questions (Please circle the appropriate answer):

1. After viewing the visual composition for the first time, do you feel that the information about time that has been included is important and well described for that profession?

(yes) no
Please explain <u>Very well organized composition that contains</u>
important information related to college profession

2. Do the chosen colors communicate the profession in an appropriate manner?

(yes, 1 no besides the yellow (very grademic) also the bricks color If not, then what color(s) do you feel would be more suitable? — For RIT Campus

3. Do the explanatory paragraphs in the college professor composition contain all the necessary information to fully describe your profession?

yes) no
Please explain Although not necessary to include exactly
what's in a professor's (fail-time) contract
but to be general in terms of explaining-yes
it does describe my frofession

4. The purpose of this thesis study was to visually communicate and emphasize the value of time for a specific profession. Do you feel, as a college professor, that this design composition achieves that main goal?

Please explain yes all the text, apaphies is whole langer work well together to emphasize the fine value in my profession

(an relate to how certain months would be more important than others, but during the Summer quarter (where it's less emphasized) this man not relate to all professors—

for some it man be the suicest time for them

Dyanne M.	Kim				
Graduate (Graphic I	Design-Thesis	Design	Project	Evaluation

Please fill out the following information before answering the questions below	Please	fill out the	following	information	before	answering	the	questions	below
--	--------	--------------	-----------	-------------	--------	-----------	-----	-----------	-------

Name: Father Chang Ho Kim
Profession: Catholic Przest
Today's Date: 5/2/98 (phone evaluation)

Questions (Please circle the appropriate answer):

1. After viewing the visual composition for the first time, do you feel that the information about time that has been included is important and well described for that profession?

Please explain Especially for months of Apr & Dec - to show the importance of Easter & X-Mas celebrations of This Shows the role of the priest who honors those events — Also nice to see sacred holiday events also honoring Man.

2. Do the chosen colors communicate the profession in an appropriate manner?

yes/ no
If not, then what color(s) do you feel would be more suitable?

3. Do the explanatory paragraphs in the Catholic priest composition contain all the necessary information to fully describe your profession?

(yes) no
Please explain pretty much! Catholic religion?

(except for background info: process involved in seminary schooling—yrs it take to become priest?)

4. The purpose of this thesis study was to visually communicate and emphasize the value of time for a specific profession. Do you feel, as a Catholic priest, that this design composition achieves that main goal?

Please explain 1 feel the thesis shows a strong emphasis
on how certain months are more important
than others, like Apr & Dec, but
feel that Mar is not as equally important
as Apr