Computer Plotting of Country Dance Figures

by

Richard Nightingale Goss, M.A.

advised by

Professor A. J. Cole, Chairman

Department of Computational Science

St Andrews University

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Abstract

In this thesis, the author has attempted to create a combination of programs using S-algol and Fortran which will translate choreographic instructions into a plotted output which will describe a country dance in a series of frames corresponding to the figures of the dance.

Country dancing as a form of figure dancing common to Western Culture is described along with a statement of the problems of doing research in an area of non-verbal communication, such as dance, as a justification of the need to have a systematic process of creating a comparison capable data base which can be communicated both in linguistically consistent words and relatively culture free graphical output.

A short history of dance notation dating from Feuillet (c1706) to the present use of Labanotation is included to give the background of the problem and the need for a system designed for depicting the dance movements of individuals in relationship to each other, as an added dimension to the existing systems which deal mainly with the body in relationship to itself and time.

In addition, there is an analysis of the state of the art in this area of dance research as already carried on by English Folk Song and Dance Society (EFDSS) and the Royal Scottish Country Dance Society (RSCDS).

The creation of a data base of over 4000 country dances (out of a potential 10,000 to c15,000 in print) is described including the relevant fields for recording such items as: date, source, form, progression, tempo, title, figure, with optional fields for secondary sources and other cross references.

The author has devised a meta-language of just over 100 words which can describe the data base to humans in a teaching situation, and to the machine in its use, within the programs for the manipulation and analysis of the data base. The meta-language is tied to an English "vocabulary" which both defines the figures in human readable language on the CRT and at the same time produces those Fortran calls necessary to produce graphical support to the verbal description.

Other supportive files are also described to indicate the interaction between a bibliographic source, a library of set formations and musical tempos, various combinations of persons dancing, possible combinations of dance progressions within the individual figures, and a figure library of c2000 recorded dance figures (of which the average dance uses four).

As an indication of future work, a revised list of a projected expansion of the code is provided beyond the scope of this thesis (although at present all codes and the data base have been translated into this new system).

In addition to appendices illustrating the various files (one page samples are given for those files otherwise too large for inclusion. The action of the basic program "dance.s" is described with examples from the various data bases.

There is an illustration of the graphics output of of five dances with a short classified bibliography and a 190 word glossary.

CONTENTS

Author's Statement

I, Richard Nightingale Goss, here state that all of the work included in this work is original to myself, except where otherwise noted, and is not work which has been or will be applied to any other degree or qualification.

Advisor's Statement

This is to certify that Richard Nightingale Goss has completed those requirements which make him eligible to attain the degree of master of science at the University of St Andrews.

Professor A. J. Cole, Supervisor of Studies

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Preface

The purpose of this thesis is to report on my progress in writing programs which can handle the texts of country dances, in linguistic and graphic modes. In studying this one aspect of a choreographic event, my aim is to obtain a better understanding of the much larger and fascinating problem of accurately documenting non-verbal forms of human communication.

As an historian, I have been fascinated for some years by the ease at which computers have been able to handle non-numerical data. When given the opportunity to take a sabbatical and later a leave of absence to study, I took the time to combine three of my interests. In history, I have always been frustrated in the amount of time consumed in manipulating vast amounts of source data. In the area of country dance, such is the problem both as to numbers of references to dances and the interpretation of these dances.

Prior to my access to computers I had directed my dance research towards a systematic study of Seventeenth through Nineteenth Century dance notation. In the middle 1960s, I began to compile, commercially available dance notes and a bibliography of potential sources. At the end of that decade, I began to haunt various libraries in Scotland and collected data on three-by-five cards which were then sorted into a metre square cabinet. In 1978, I was accepted as a postgraduate in the Department of Computational Science at St Andrews University whose

project was to design programs, primarily graphic, which could handle this large mass of data. This thesis is the computer science aspect of the result. Throughout this thesis I have used standard Scottish country dance terms whenever possible to avoid confusion as to the identity of modern usage. Where the dance term conflicts with that of computer science I have indicated this in inverted commas. I hope that this thesis will provide new angles of study in the area of dance interpretation and the use of computers for linguistic analysis of terms.

1 Introduction

In this chapter, the author outlines the nature of this project along with some necessary background information necessary to give an overall understanding of the terms and criteria used.

1.1 Outline of the Problem

It is the intent of the author to design a program which will ultimately produce a graphic output of the figures of a country dance when the input is a record of a dance from a known data base.

1.2 Area of interest

Since the potential readers of this thesis come from two distinct disciplines, computer science and traditional dance, it would seem best to define the terms used in the title, and elsewhere in the text. This is also appropriate as those especially interested in dance may not agree on common definitions of terms used by this author. The reader's attention is called to the glossary found at the end of this thesis which contains a more complete vocabulary.

1.2.1 Definition of Terms

A common definition of dance would indicate a rhythmical movement of a body through space and time. Within the context of this thesis, elements of music and an interaction between individuals is also hinted at.

Although many dance elements used in this thesis date from a time prior to the Sixteenth century, the dance referred to here is of a class called figure as opposed to solo or couple dancing. In figure dances, although there are elements of a duo or a solo form, the primary activity is within a group of persons, known as a 'set'. In figure or 'set' dancing, one's activities are primarily for the benefit and general enjoyment of the members of the 'set', although there has always been an element of communication involving the spectator. Although there is a sense of directionality in the orientation of the 'set' the individual performers face each other and not an audience.

Country dancing is a specific form of figure dancing where the set consists of opposing (contra) lines. In the 'pure' form of set used in this thesis the lines of segregated men facing women are as long as the population or the dancing area may permit.

In country dancing today, a common element is known as 'progression'. In a progressive dance the 'top' couple is usually featured in performing a series of 'figures' which produce movement 'down' the room to the bottom. The 'top' couple is supported in these

activities by less active couples who move ´up´ the room, to become ´top´ when their turn arrives. A dance is usually complete when each couple has returned to its starting place.

There are some other terms which are better defined at the outset. The dancing area of a set is referred to as the ´floor´ or the ´room´. Although the musicians have assumed various locations in relation to the set, in the past, today it is common to have the ´top´ of the room as that end which contains the source of the music. This is reversed when there is a ´presence´ to be danced to, such as an honoured spectator, as in a hall with a musician´s gallery, or an audience when the set is on a stage and the top is towards the bottom of the room. From this outline, the arrangement is usually as follows. One enters the room at the bottom with the man´s side to one´s left and the woman´s to one´s right. Activities are designated ´in´ when they are directed towards the x and or y axis dividing the set in half, as opposed to those activities designated as ´out´. These terms may be combined into such clauses as, ´in right´, ´out left´, ´up left´, ´out apart´, etc.

Although most would agree with the use of the term dance in this thesis, the words ´reel´, ´jig´, ´strathspey´, ´hornpipe´, have problems when definitions are strictly applied. For this project, all country dances are in duple or triple time and fast (8x32 bars = c4´30") or slow (8x32 bars = c8´00") tempo. In fast time the common duple terms are reel (2/4), jig (6/8) and ´Scottish´ hornpipe (2/4) and the triple slip jig (9/8). In slow time there is the duple strathspey (4/4) and the triple (3/4) waltz and minuet. While the use

of the term 'strathspey' is fairly consistent, the words 'reel' and 'jig' which can mean just 'dance' are often ambiguous. In England and Ireland, the style of the hornpipe is more accented and the tempo approaches that of a fast strathspey with resultant stylistic changes in dance performance. Other terms, such as 'rant', 'lilt', 'measure', or 'air' have been translated into the nearest 2/4, 3/4, 4/4, 6/8, or 9/8 term as used above.

Any dance activity which takes an eight bar phrase or fraction thereof to complete is termed a figure. Examples of these figures are reels (heys), chains, figures of eight, wheels (hands across), circles (hands round) or progressions (allemande, pousette, etc.).

Terms usually refer to that vocabulary of activities which occupy less than an eight bar phrase. To set (or foot it) refers to an activity primarily on a spot, though there are some setting figures, and some setting figures take an entire eight bar phrase. Other terms include: turn, cross, cast, lead, dance, step, bow, honour, clap, balance, etc. each of which have specific default values in country dancing.

The performers of a country dance are numbered from the top of the set to the bottom, with ones being the 'active' couple moving down the room, and the others moving 'up'. The active couple reaching the bottom becomes a supporting couple working back towards the top. A supporting couple upon reaching the top becomes active and works back towards the bottom. Within the set of those performing, some dances require only a fraction. This fraction of the 'major set' which is

dancing is referred to as the 'minor set'. In a two couple dance, the couples are ultimately numbered one, two, one, two as this is a duple minor formation and the most common major set is composed of four couples. For a triple minor dance, the numbering for the first repetition is one, two, three, zero, and for the second repetition the numbering is zero, one, two, three. Unless a major and minor set are the same (as in a four couple dance) a couple waits one repetition of the music upon reaching the top or bottom of the major set before beginning to dance again.

There are other forms of figure dancing which share figures with the country dance. The Quadrille (a square), Swedish Circle (three facing three), Circassian Circle (two facing two), Ecossaise (contra with first couple on opposite sides as others), Mescolanzes (two or more couples facing two or more), and various Reels (line or formation of lines), are examples of these.

Those definitions, which have older historic usages are controversial and not generally accepted within or outwith the dancing field. To many, country dancing is synonymous with British folk dancing and may include other figure formations and even traditional or 'Olde Tyme' couple dances. So care should be exercised when these terms are used. For further reference, there is a more complete glossary appended to this thesis.

1.2.2 Statement of the Problem

As has been noted above each editor of a dance form adds to its definition. When dealing with country dancing, there are many potential sources as to the accuracy of a performance. These fall primarily into three categories: observation of a live or recorded performance, participation in an interactive teaching of a dance, and the use of texts and graphic illustrations as dance description.

As each dance 'dies' with the end of its performance, those attempting to perpetuate a dance tradition must come to terms with the fact of constant evolution. Those attempting to preserve a 'pure' tradition are doomed to ultimate failure.

In an observation of a live or filmed performance, one is only hindered by the prejudice of one's own eyes. At least there is the opportunity of a second observer who, if a film is used, can make suggestions and refer back to the source. Live performers can add depth to an interpretation. If a dance is taught using a verbal description, the teacher can add a demonstration as a support for linguistic deficiencies.

The most serious problem relates to the fact that most dance descriptions are in words which have no unambiguous reference to a particular dance movement. Assuming that the instructions and the learner share a common language and culture, one would still have to cope with their changes in semantics of the definition of words through time. If the cultures differed, there would be the

impossibility of translations matching in a consistent and coherent manner.

As much of the communication in dance assumes sex based roles, there is the danger of a gender bias in interpretation of a source. Most dance illustrations are organized as if the observer is standing behind the man's line in a country dance. A woman must look at the picture upside down. Most publishers or authors were men, who when mentioning style refer to the woman's part as the same only more 'ladylike'.

If a dance form, such as the country dance, covers a large geographical area at a time of relatively inefficient communications there is the problem of a shift in dance style and interpretation, similar to that of accents or ideolects in language, between dancers.

The approximate size of the published repertoire of country dances, according to Joan Flett, is about 10,000 dances. This thesis uses a data base of about 4,000 dances, dating from 1740 to the present. There is no way that a consistent translation of these dances could be achieved throughout the period of this study, much less during the sixty years since the founding of such preservation organizations as the Royal Scottish Country Dance Society, some of whose changes in definitions are caused by their increased knowledge of historical dance and others by forgetting past decisions.

To achieve a consistent method of translation, one must be able to look at all relevant data in a matter of minutes and have the flexibility to alter and experiment with it in the same amount of time. In this way a data base can be consistent with itself at least as of the time of the last update. Successive updates provide a history of the interpretation of the data base since its establishment. As of the date of this thesis, the entire figure code has been revised and changed for the dances three times, in addition to minor corrections of redundancies and errors of interpretation and transcription.

1.2.3 Theory Considered

Using a code based on the most significant places of the Library of Congress classification system, computer effectiveness in handling bibliography and visual input all references to the subject can be readily organized with possible outputs being subject or author ordered bibliographies, and selected lists of items based on any combination of use, location, subject, or author. Using a meta-language of common definitions, any and all dance descriptions can be reduced to a common vocabulary for translation back into standard English or into a consistent vocabulary for sorting, matching, comparing, or other analysis.

Using encoded dance records as a data base, one could produce a standard English version of a dance, along with an appropriate description and graphics illustration of the movements within that dance.

In creating the graphics output, a synthesis of movements can be fed back to produce choreographic 'rules' to give greater depth of understanding of the dance art form.

1.2.4 Use of this Project for Arts Subjects

When a computer is programmed to handle non-scientific material using common language as accepted for human use in arts subjects, then the field of computational science is expanded to include a larger population of users. When this can be done with a minimum of stress caused by the user operating in an alien environment, so much the better.

In much arts based research, an excessive amount of time is spent in the clerical manipulation of data, when compared to the actual effort spent on creative interpretation. When a machine can be programmed to minimize this repetitive clerical effort, then the creative and productive elements of the operation benefit.

A second benefit on the clerical side of an operation is that repetitive operations performed by humans cause errors, if only by boredom. Here the computer is able to make consistently accurate encoding operations easily and, when in error, local or global amendment. For tentative adjustments, a file can be duplicated with corrections in seconds for analysis and evaluation of simulated interpretations.

When a format for an artistic output has been devised, it can be repetitively reproduced for easy comparison and study, or updated to meet altered needs of the interpreted data.

Through use of a single data base, all cross references, amendment and source information follows each piece of output automatically.

1.2.5 Use of this Project for Dance Research

A dance dies with each performance or at least the dancer or teacher. In the field of dance the usefulness of this project is even more important. Here words are often a source of linguistic confusion rather than a help. Words are inadequate and inefficient compared to pictures. In a code based on the nature of the choreographic movements, two dimensional geometry in the case of figures, the alpha-numerical sorts of the original description or its meta-language

are reduced to a code based on the relationship between the figures and their function within a dance as a whole. The code related meta-language can be re-translated into any standardized dance language, while it can also be used to produce symbolic graphic representations of the movements for greater unambiguous clarity.

Given a code which is or can be translated into a more accepted description, entire dances can be easily transported as binary bits between machines or in inexpensive coded handbooks. A projected data base of all country dances with a coding dictionary could be contained in a 300 page paperback.

1.2.6 Use of this Project for Human Interface with Computers

A successful interaction between human and computer in the area of country dance could easily lead to similar interactions in other forms of dance, movement, or the arts in general. This very rigidity of the response from a computer, forces the user to deduce more precise modes of expression in his own language. This would, in turn, improve his communication with others, as his thoughts become more systematic and logical. At the same time, this communication would be more productive as less time need be spent on clarifying interpretations and instructions.

1.2.7 A Successful Solution

To paraphrase Wirth's criteria of a successful computer solution to a human problem, this solution should be, easy to learn, use, and explain, be transportable and adaptable to related problems, fast and effective. In the solution to the problem outlined in this thesis these criteria will be met.

To operate the program the commands will be few, obvious, and the data files will allow for modification and correction, and be language adaptable to translation to home language or if necessary, the program will be documented so that conditions which come to exist outwith the original project will not be difficult to handle. Interpretation will be by logical English on the initial output, and the same with the addition of the graphics in the final. Using S-Algol, the obvious programming techniques are readily adaptable to other 'algo' based languages, and the Fortran commands for the plotting instructions are easily compatible for translation for most graphics terminals.

This thesis involving country dancing is already able to plot many of the figures in other forms of set dancing. Once other rules, initial starting positions and rules of progression are analysed, the data base and files would easily handle this repertoire. The principles used can be expanded to handle other movement of items in a fixed space, or any other form of symbolic manipulation.

Simple sorting and matching of the data base can give rapid and facile answers to questions of a general nature, including quick and easy answers without having to deal with the original source material. The data in a single file of individual dance records, cross indexed allows for simple and efficient storage and reproduction, while searches of significant fields or strings can produce a multiplicity of related files, which, when sorted, can indicate relationships not easily recognizable when viewing the entire body of source material in its un-coded or un-digested state. The only serious limitation is in the ability to formulate significant search questions.

1.2.8 Work Methods

Given a record of a country dance as input, the computer will be able to produce a consistent verbal and graphic output, which would translate that dance into a linguistically appropriate dance description along with a symbolic display of the floor plan of the choreography. The initial effort being the production of linguistically consistent input.

The project solving this problem will be handled in three phases. 1) production of a data base of dances with supportive files for translations, 2) the writing of programs for ordering, matching, pairing, and translating the data base, 3) designing graphical output

appropriate to those cognisant with country dancing, which is at the same time neutral enough in its symbolic representation as to be useful to someone outwith the field of dance.

When such a project has been successfully completed, it could easily be extended to other forms of figure or set dancing as a horizontal expansion, or vertically, by the addition of the musical score, programs for which are already written, to which the element of the country dance can be appended. Similarly, by the addition of pre-existing programs which are based on Laban, the individual three dimensional movements of a dancer can be plotted in a position relative to the output of this thesis.

1.3 Summary

This chapter has outlined the nature of the problem and some of the relevant criteria for understanding the nature of this project.

2 History of the Problem

Here some of the various aspects of the problem are explored from an historical position.

2.1 Choreographics

The historic trend of dance notation, of which this project is a logical extension dates back to the early Eighteenth Century. At this time (1706) Fuillet, a French court dancing master, published a notation system which was quickly adapted and translated by others (Weaver, 1712). Under the Fuillet system, the musical score for a figure was printed at the top of each page and the balance of the space was used as a floor plan representing the dancing area. The dancing 'track' was represented by a line which was decorated with symbols indicating the movements of the different parts of the body. Fuillet's dancing, as a refined art of the court, was much more complicated than the required movements of the next century and of today, and thus required more symbols. At the same time, much was still left to the imagination as everyone knew the default values of the various figures and movements.

Meanwhile, John Playford, a music publisher, had started printing a series, called collectively The Dancing Master, from c1651 to c1728. As all of Playford's patrons already knew the elaborate system of defaults for country dances, the dance descriptions in his books were

quite brief and to some extent as yet un-translated.

Nicholas Dukes (1752) provides one of the first real clues as to what was meant by a given figure. His system was to display a plan of the 'set' with a marked track for each person. Each page was captioned and dedicated to an explanation of a single figure.

William Campbell, whose books range from c1784 to c1802, continued in the tradition of Playford. Being of a later period, his terminology is more easily understood and has obvious remains on into the early part of this century.

Wilson (1812 to c1825) brings into his books both the dances and description of the figures. His dances also bridge the gap between the country dance and other formations, including the quadrilles and early couple dances.

Chivers (1822) indicated the formation of his 'sets' with a picture but described the figures in words, giving both French and Spanish terms along with the English.

Smith (c1830) gives a rather detailed description of his dances, some of which have survived into the revival of country dancing in this century. Where he differs from the present forms is more a matter of evolution than error in reconstruction as these dances were still alive at the time of their annotation.

With the Brothers Lowe (c1840 to c1865) the country dance revival is brought into the period of living memory. Most of their dances can be traced back to Chivers and Smith, and the lack of detail is sufficient to allow for transitional forms between the late Eighteenth and early twentieth Centuries.

2.2 State of the Art

There are three distinct forms of dance notation today which deal with country dances. The Laban and Benesh systems used for ballet notation are directly related to Fuillet. The publications of the Scottish (RSCDS) and English (EFDSS) dancing societies are only expansions of the textual systems which date back to Playford. The Pillings system is a combination of shorthand glyphics, abbreviations, and diagrams which can be traced back to several manuscripts (Blantyre, 1802), Dukes (1752) and Wilson (c1822).

Through the work of Cecil Sharp, there was a revival of interest in many traditional examples of song and dance. As a reporter, Cecil Sharp was able to record many survivals in his day. Through the EFDSS and others much of his work has been published in narrative form. With the invention of various mechanical recorders for sight and sound, later survivals and reconstructions were saved. At the same time, most of the EFDSS teaching is passed by text supported by word of mouth (traditional) teaching methods.

In Scotland, Mrs Stewart of Fasnacloich, inspired by Cecil Sharp, founded the (R)SCDS. This organization, later led by one of its early leaders Miss (Dr) Jean Milligan followed the same style as the EFDSS in its publications. To preserve and (or) create the distinctive Scottish national style, the (R)SCDS created a system of teachers examinations supported by an annual summer school, where a large amount of folklore was still passed by the traditional (word of mouth) teaching methods, to some extent supported by the publications of Dr Milligan and the (R)SCDS.

2.3 Computers with Music and Dance

2.3.1 Laban

The Knust-Laban notation system (Kinetography-Laban) is excellent in describing the individual movements of a single dancer but a bit obtuse and cumbersome when plotting the movements of individuals in relation to each other. Laban's system as amended by Knust is probably the best mode of recording individual movement short of a collection of films taken from different angles. Whereas previous systems recorded the placement of the feet with comments referring to hands, Laban not only allows for an accurate placement of the feet in relation to time, but also indicates movement between 'steps' and

attitudes of parts of the body not usually noticed by the untrained observer. Attitudes which may be very important to the culture of the performer and often overlooked by the spectator. Unfortunately, Laban entered this field through ballet where there is more stress on the solo performer in relation to his own body rather than others. As a result, the method of indicating the relative positions and movements of the members of a country dance set is a bit cumbersome.

Each dance activity within a culture is an expression of communication within that culture. What is important in figure dancing is the relative position of each dancer to each other and the set as a whole. Many who country dance, while allowing for the communication of the facial expression and bodily movement, are not very cognisant of how they communicate. At the same time, they are very aware of 'good' footwork and the successful realization of a figure movement. Because of this, the mass of choreographic detail in Laban tends to confuse the issue in a country dance. In country dancing, the dancer is really interested in where he is and where he is going.

2.3.2 Pillings

Pillings, while meeting the objections for Laban, is too closely tied to the interpretation of the RSCDS, and in particular its language. Here, if two dances are the same and the language slightly different, it is quite possible for Pillings to produce different codes (Wedderburn's Reel and Fife Hunt). Pillings, based on Scottish country dancing, uses some alpha-numeric symbols which are too

culturally biased to be applied outside Scotland ("S" for set, "D" for back to back [dos a dos]).

When an eight bar figure requires more than four symbols or symbols which do not fit the rhythm of the music, it is easy to misunderstand the timing. For example, if the symbols for "lead down" and "cross" are used (as fits the language of the RSCDS) when the action down and crossing is performed at the same time, the performer often leads down then crosses, where if a symbol for "cross down" existed the problem would be solved.

When the RSCDS does not recognize a figure (as in "lead out sides") there is no Pillings symbol for it. This results in a variety of interpretations of the figure used by the Society and the figure becomes lost in a variety of code symbols.

Any alpha-numerical system is an abstraction far removed from the floor patterns which they are meant to indicate in dance. The Pillings system only works where it can be read back into English and then the words translated into movement through recognized patterns. Pillings by alternating between a graphics to a meta-language does not make the most effective use of either.

A final problem in the use of Pillings is that there is no way of testing for proper progression. The occasional exception is the use of the word "to" and a picture of the set in its final alignment.

2.3.3 RSCDS and EFDSS

The Royal Scottish Country Dance Society (RSCDS) and the English Folk Dance and Song Society (EFDSS) were both founded as organizations of preservation. In their initial philosophy, they were more interested in collecting and recording than analysis of dances. This has resulted in several problems in the interpretation of their notes. Both use the English language but are culturally biased towards their own national form of dance. To master both systems of words, one must learn two vocabularies for essentially the same movements. At the same time, many dance descriptions carry with them ambiguous phrases which only become logical to the experienced dancer, while remaining quite confusing to the neophyte. Figure names with overlapping definitions include: hey, chain, reel, figure of eight, and rights and lefts.

As the collection process was un-systematic, the collector achieved his preciseness and accuracy by becoming more verbose. This increased verbage leads to greater misunderstanding and interpretation. The style of a dancer, region, or art form is often confused with the description of the figure. Whether one uses one or two hands does not affect the outcome of the figure or the dance, while it may well be a valid description of a personal, regional or national style.

Both systems of dance notes would be improved by an explanation of a system of defaults, so that excessive words could be left out. This would shorten definitions, make teaching easier and learning faster. Thus, a statement such as "cross, cast, cross, cast left" would indicate that the first couple would cross with the right hand, cast down one place, cross with the left hand and the woman cast up one place while the man casts down one place.

Related to the default solution is a form of verbal inflation where two clauses, one for each of two persons or parties, is used instead of one. An example of is this is where the man dances with the third couple while the woman does the same with the second. Here, the listener will shut his mind when not included in one statement and often not tune back in in time to hear instructions in the next statement which does apply to him.

2.4 Summary

In this chapter, the author has indicated some of the historic problems related to the annotation of dances and dancers.

3 Problem

This chapter contains the specific statement of the problem with which this project deals.

3.1 Access

Between them, the RSCDS and the EFDSS are responsible for about 1000 individual dances currently in print. As primary sources, these organizations are only reliable as to how they feel a dance ought to be danced since the date of their publications. This presents several problems when these notes are used and one should ask two basic questions when dealing with them as sources. Are their notes indicative of the way the dances are performed today in any given locality? Are their notes indicative of the way in which the dances were performed at the time given in their source in any given locality? Unfortunately most dance notes are prescriptive and not really descriptive of the dance as performed. As a result, these notes should be treated only as a hint that there is a relationship between the published dance of today and the actual dance past or present.

In the case of the RSCDS, which indicates a 'source' on many descriptions, the statement of origin is only the oldest known form of the dance or tune and should not be treated as an accurate reconstruction of the dance at the time of the date indicated. The 'archives' of the RSCDS are still in an embryonic stage of development and it would be difficult to receive from the RSCDS a copy of the source of one of their published dances. At best, a RSCDS published dance is a committee's interpretation of a given dance whose source may be available. At worst, a RSCDS published dance is one person's creation based on a source not currently available.

The situation is better for the EFDSS, as it is not only possible to access all of their printed sources, but there is also existent, the field notes of most of those who observed the dances as performed.

For the researcher, those sources which are available are often in restricted collections, scattered, poorly indexed, and inaccessible.

If available, they are difficult to read or translate, and not always able to be copied. The Fletts indicate a repertoire of approximately 10,000 dances would appropriately define the size of this field. This number would not include duplicate descriptions of the same dance from their sources but would account for the same choreography used for dances of different names or tunes. As of this date, the data base for this thesis is about 4,000 dances, although

duplications and un-coded dances will soon bring the total up to nearer 5,000. Flett, indicates approximately 10,000 discrete dances.

3.2 Mass of Data

In most cases, the source copy of a single dance will occupy an entire page (including the score). The early RSCDS publications use two pages, and many Sixteenth Century dances are printed two to the page. With a potential data base of 10,000, human comprehension of the collection would be difficult at best, if only for access or analysis. If many were cooperating on any study, the costs of sharing information on xerox copies would be prohibitive. The reduction of a dance down to a single record would allow a printed copy of this data to occupy a pocketbook sized publication for reference and study.

3.3 Interpreting Data

With the 400 year spread of linguistic change and the geographical variations in English usage, not to mention the notes in French, German, Italian, Spanish and the minority languages of Britain and Europe, there is an immediate problem of translation of words into some consistent sort of choreographic interpretation.

Without a data base, usable translations are impossible. A meta-language which is able to be translated by computer would also be adequate for discussion, teaching, and computer description. The grammar and consistent meanings of such a base would allow for multi-lingual translations, while the vocabulary could be given in a glossary appropriate to the native language of the reader.

A graphic description which is as culturally neutral as possible, would be less ambiguous, if the symbols could relate to what one can see from a fixed vantage point as one might read international road signs.

3.4 Summary

There are three problem areas when dealing with this form of dance research: access to data, mass of data, and interpretation of data.

4 Solution

In this chapter, the various methods of solution for this problem are presented.

4.1 Dance Communication

An initial step in the evolution of this thesis is to analyse the communication necessary to solve the problem in the language of those most likely to find the thesis of use. To do this, the author has taught various computer generated dance descriptions to dancers of levels ranging from beginner to advanced. To prove compatibility with other teachers, these dances have been read to the teachers, without amplification, and the teachers have been able to perform the dances.

From this analysis of language used for teaching, a meta-language will be produced for 'shorthand' descriptions and later program simplification. The meta-language will be tested alongside existing systems to see if it can produce the same choreographic results and eliminate some of the 'mistakes'. The meta-language will then be amended to allow for errors discovered in practice. Here, the primary corrections will be in the area of matching word rhythm with movement rhythm. Clauses of the "this < conjunction > that" type will be re-worded into a simple imperative clause. Finally errors, based on poor language logic or errors of interpretation of original sources will be notated and the statements changed where possible. To re-check the appropriateness of the resultant language the above

process will be repeated.

Using the above information along with a superficial analysis of the data base, a meta-language will be created. The language and grammar will be revised and updated as in-depth understanding of the art form is achieved and the potential codes updated at the same time. Using the meta-language, choreographic sentences, each describing a phrase of a dance, will be created as the primary unit of the choreographic code for the dance record.

First one must develop parts of speech for the meta-language where nouns are those who are acting, verbs are imperatives for choreographic actions, and modifiers are used where needed to clarify and expand the simple sentences. A simple noun is an indication of those actors who are performing a given figure (as all, first couple, first and second couples, etc.). A compound noun is used where the actors change during the figure (as first man with second woman and then first woman with second man). The same pattern would follow with the imperative verbs: simple of a single act (such as reel, chain, etc.) and compound if multiple (such as cross & cast). Modifiers will be attached to the verbs to allow for variants (such as reel of three, and ladies chain). Nouns will be built up of nouns and compound noun units to accomplish the same results. The entire meta-language will be prepared in such a way as to be handled as strings in S-Algol.

4.2 Design a Data Base

The data base records should contain three basic areas of information: 1) the name, source, and form of the dance for cross referencing, 2) the choreographic figures of the dance for comparison and plotting, 3) some control data, which will identify choreographic errors.

The name of the dance should be in upper case letters with all "Mc" and deviant spelling reduced to a standard. Initial articles in the names of dances will be deleted. The source will be shown in two sub-fields, the date and the author. The form of the dance will be indicated in two sub-fields, the type of set with size of minor set if a country dance, and the tempo. Additional information, such as secondary sources, and alternate versions or titles will be stored at the end of the record if appropriate.

The choreography of the dance will be noted in a field composed of one string field for each phrase, usually of eight bars. Within the phrase field of five characters will be three sub-fields for progression, verb(s), and noun(s). The progression sub-field will indicate the choreographic result of the figure and account for the terminal positions of each dancer in the set. The verb(s) sub-field is composed of an alpha-numeric code indicating the imperative command of the move(s) in the figure. This code, when sorted with or without the progression, will associate figures which are related both in language of description and in movement. The final sub-field, if of one non-blank character indicates the dancers performing the entire

figure. If of two characters, this sub-field will indicate an initial performing person or group followed by a combination or combinations of performers.

As a check on inappropriate or 'illegal' progression an integer field of one digit will be used to match against the actual count of the moves as indicated by the progression sub-field of the phrase field and assure that all have ended the repetition of the dance in their 'proper' place.

As the name and choreography fields are variable in length, their relative positions in a simple position sort can become important. This necessitates a program to reorder the records in the file so that it either follows the source, control, and form fields to produce a consistent sort for combinations of fields followed by appropriate choreographies or dance names which ever is needed. This same program can be used to identify all of the fields and indicate if one contains an error in the data format.

Additional data files need be created to translate the various codes used in the main data base. A progression file will contain the code followed by the allowed moves made by parties involved in the figure. A figure file will contain the progression, verb, and noun sub-fields of the code followed by a meta-language translation of the verbs. A source file will contain the date and author code followed by a bibliographic statement of the source. A person file will contain the person code followed by a translation of the person(s) involved in the figure. A form field will contain codes followed by

translations of the progression, set form, minor set, and tempo used in the dance. A vocabulary file will contain the verbs of the meta-language followed by both their translation into English and the Fortran commands necessary for them to be realized with the graphics program.

4.3 Program

Next phase will be to write programs to meaningfully manipulate the data. Using the various orderings (name or figure) the data base can be searched using match and pair programs. A matching program will indicate if there are two dance names in the data base which are the same but are attached to different choreographies. This will produce cross references for alternate versions of the same dance. When applied to a figure sorted data base the result will indicate alternate names for the same choreography. A pair program will identify all cases where the same name and choreography already exist in the data base. In this case errors can be located in form coding or the dance record can be appended to the older source and the new source indicated as secondary.

4.4 Translate

A program is produced to read a file of dance records and translate the code into human readable information. Such a program should give all name, source, and general information about the dance, and then translate the choreography into 'sentences' appropriate to one attempting the dance for the first time. The terminal or file output of this program will give all necessary information concerning the dance for initial scanning. At the same time, the program will produce a Fortran program which, when compiled and linked, will produce graphics output with the above information in addition to symbolic representation of the figures of the dance. At this point of the dance analysis, any significant error messages are produced which may necessitate editing the data base or dance form before time is wasted on a graphics plot containing an error or which may abort, while at the same time may be overridden to produce a flawed dance if desired.

4.5 Graphics

The final program will result in a non-gender biased picture of the figures of the dance designed in as culturally free format as can be arranged, while not so abstract that the normal practitioners of country dancing are unable to relate to it.

4.6 Summary

To solve the problems as indicated in chapter three one must design a relevant data base and write programs to manipulate, translate, and display the information contained in that data base.

5 Data Files

This chapter contains a description of the various files used for this project. These files are conceived at three levels of abstraction ranging from the most concrete: vocab.dat which translates the figures into English commands and provides the Fortran graphics statements, source.bib which handles the basic bibliography, form.dat which accounts for the formation type, minor set, and tempo; person.dat which accounts for the individual dancers involved; progress.dat which acts as a check on the possibility of illegal moves. On an intermediate level of abstraction is the file figure.dat which accounts for the almost 2000 individual combinations of facts which make up the figures or phrases, usually of eight bars. At the highest level of abstraction is the file dance.dat, which is the data base into which all of the dances are entered.

5.1 The Meta-language

This file is simply a vocabulary which defines each of the elements in the meta-language fields, date, source, form, minor set, progress, tempo, name secondary sources, notes, cross references, and comments, which is made up of three types of words: nouns, verbs, and modifiers. For further definitions of this vocabulary one is referred to the glossary at the end of this thesis.

The nouns are words which stand by themselves or in combination with other nouns or modifiers to indicate the person(s) or combinations of persons who are the actors in the individual dance figure. The most common are indicated by the numerals "1, 2, 3, 4," standing for the first, second, third and fourth couples respectively. If a noun has a numeral and a "w" or "m" adjacent to it, the numerals is to be read as one of a couple of that number. "1m" is first man, "2w" is second woman, "1m3w" is first man with his first corner, etc. Where two nouns are separated by a space it is understood that the first action of the figure is carried out by the first noun and later actions by the later. "1m2w 1w2m" indicates that the first action is performed by the first man with the second woman and the last action by the first woman with the second man. Other common nouns are: "all" (all dancers), "cnr" (corner), and "cnrcpl" (one's first corner and that person's partner).

The verbs are all imperative in form and should be read as if the "noun" is to "verb". "12: REL" should be read, "First and Second couples are to reel." Other common imperative verbs are: "ST" (set), "TRN" (turn), "CST" (cast), "LD" (lead), "CHN" (chain), "ALMAN" (allemande), etc.

To differentiate between types of verbs, modifiers are attached. In "REL3" the three indicates a reel of three (as opposed to four). In "CHN4", "CHN6", and "CHNL", a chain of four (RSCDS rights and lefts), chain of six, and a ladies chain are indicated.

For a complete listing of the meta-language see Appendix B. Although the complete meta-language has a vocabulary of over one hundred words, many of these words, such as "PUSET" (pousette), and "ALMAN" (allemande) stand for figures made up of lesser movements already listed in the vocabulary. As these figures are so common and specialized in nature, it is more efficient to use a definitive name.

5.2 Vocab.dat

The purposes of the file vocabulary data are twofold: 1) to translate the meta-language into standard English and 2) to provide truncated strings to complete the various Fortran statements which make up the commands for the plotting program in Ghost. This file is made up of records, one for each discrete figure movement. In each record are three types of field. The first is based on the meta-language verbs with modifiers (see above). The second is an English translation of the meta-language to be used as a glossary and a character string to produce the figure statements for the program dance.s and the captions for the graphic program output.for. The third type, can be one or many partial Fortran statements appropriate for Ghost when preceded with the strong, " call ". A sample of this file can be found in Appendix C.

5.3 Source.bib

The purpose of the file, source.bib, is to provide a listing of the basic bibliographical sources of the dances. A more comprehensive bibliography can be found in the files cattab.dat and echapb.dat (the author's personal and working bibliographies).

The source.bib file contains three fields: code, author, and other information. The code field (a string of five alpha-numeric characters) is composed of two sub-fields: a date code (three numerals) and an author code (two alpha-numeric characters). The date code is simply the last three digits of the assumed year of publication, with question marks in place of the numerals of which the author is unsure. The author sub-field will always begin with the initial letter of the author's surname but may be followed by either a letter (in the case of a limited source) or a numeral in the case of a major source. The source code "983R1" would indicate any publication of the Royal Scottish Country Dance Society in 1983. The sub-field "other" contains the title of the work and any personal notes which may be relevant.

When the source.bib file is called from the program, dance.s, it is only used to translate the last two characters of the code into the name of the source, as the first three numerals can generate the date on their own. For a sample of the file source.bib see Appendix D.

5.4 Form.dat

The file "form.dat" is used to translate the code found in two of three fields, each of one character (21S). The first field indicates the shape of the set or formation, if not a longways (contra) set. If a longways set, the code is a numeral corresponding with the size of the minor set needed to perform the dance within the major set. The "2" would indicate a duple minor set (a minor set containing two couples).

The second field (1), taken as an integer, indicates the progression and thus does not need translation.

The third field (S) contains the various codes necessary to indicate the various tempos used for country dancing. While the fourth contains the English translations necessary to provide the character strings for the outputs of the programs "dance.s" and "output.for". A copy of this file is found in Appendix E.

5.5 Person.dat

The file "person.dat" is used to determine the nouns which indicate the persons who perform a given figure. Its translation becomes the noun or noun clause for the output of both "dance.s" and "output.for."

The file contains two fields, the code and the translation. The code contains one or two alpha-numeric characters. If one character is followed by a blank, this character designates the person (or persons) who are dancing continuously throughout the entire figure or phrase. If this field contains two characters, the first indicates those who start the figure the second indicates the combination(s) of persons following the initial movement.

In form, the translation field is a series of sub-strings separated by blanks. Each sub-field is a word made up of noun(s) or noun(s) and modifier(s). For example: "12" indicates first and second couple while "1CNR 1CNR2" indicates first couple with woman three and man two followed by first couple with woman two and man three.

A sample of the file "person.dat" can be found in Appendix F.

5.6 Progress.dat

The file "progress.dat" is used to calculate the relative movement within the set during each figure or phrase. The file consists of records containing two fields: the code and the progression.

The code field consists of one alpha-numeric character for each regular form of progression. An "0" indicates no progression, "1" indicates plus one. Alpha characters indicate the less used combinations of moves.

The second field contains six positions: one and four for positive and negative signs (up or down the set), two and five for distance up or down the set, three and six for moves across the set. Positions one to three are for the man and four to six for the woman.

In this way a code of "1" would be translated as " 1_ 1_" and indicate that the first man and woman move down one place each. Moves up the set are indicated as minus integers while moves across are indicated by an x, with the succeeding x indicating a cross back.

For a progression to be "legal" each "X" must be cancelled by another "X" and the sum of all progressions must be equal to the progression stated in the dance record in the file "dance.dat" (see below).

A copy of the file progression.dat will be found in Appendix G.

5.7 Figure.dat

"Figure.dat" is an intermediate level file which is used by the program dance.s to translate the figures in conjunction with the files "vocab.dat", "person.dat", and "progress.dat" to further define its figures. This file is made up of records of two fields, the code and its translation into the meta-language of verb(s) or verb(s) and modifier(s).

The code field consists of a string of five alpha-numeric characters corresponding to a specific phrase or figure usually of eight bars of music. The first sub-field of one character indicates the progression (as in progress.dat). The second sub-field of two characters indicates the actual figure as translated by the second field. The third sub-field of two characters indicates the nouns or persons dancing (as in persons.dat).

The second field contains the string(s) containing the verb(s) with modifiers needed to translate the code into both an English description and graphics routine as found in the file "vocab.dat".

A sample of the file "figure.dat" will be found in Appendix H.

5.8 Dance.dat

At the highest level of abstraction is the file dance.dat which contains one record for each individual example of a name with a specific combination of figures. These records each contain six to eight fields. Fields seven and eight exist only if there are secondary sources for the dance (seven) or if there are alternate versions, alternate names, or miscellaneous information which needs be stored with the dance record. The common fields are: 1) the source (a string of five), 2) the type and or size of the set and minor set (a string of one), 3) the progression (a single integer), 4) the tempo (a string of one), 5) the name (a string of variable length), and 6) the figures (a string of variable length in one multiple of six characters for each figure).

The arrangement of the dance record is fixed for ease of sorting. Without any reordering and using a simple position sort, the file can be sorted by date (1), author (4), form (7), progression (8), tempo (9), name (11) and figure. If reordered the same information is available except that the figures can be sorted before the names. A sample of the file "dance.dat" can be found in Appendix I.

5.9 Summary

This chapter contains information relating to the file structure used for this project.

6 Programs

This chapter contains information relating to the various programs used for this project.

6.1 Input and Output

6.1.1 String Manipulation

When designing the first edition of the input files, the author was put under several constraints. At the beginning of this study, the Hollerith card of eighty columns was very much in evidence. While this was not too much of a problem for the typical dance of thirty-two bars and a reasonable name, some dances exceed 128 bars and have titles such as "Sir Archibald Grant of Monymusk's Strathspey". With the source and form code taking a fixed eight columns, and the usual four figures taking twenty columns, this left fifty-two columns for spaces, field divisions and the title. In addition, some dances must be described as two different dances, depending upon the complications of simultaneous dancers.

A second dichotomy of decision rests between the balance between efficient computer storage in bit mode and a human readable statement of all necessary information.

Initially, the typical dance was contained on one punched Hollerith card. If a dance description took more than eighty characters, the information was duplicated on a second card with the figure field altered (the name field became "< name >1, < name >2, etc."). If a dance required parallel descriptions the information was duplicated with alpha characters appended to the name (< name >A). With the evolution of the computer laboratory to individual on-line terminals as data entry points a part of this problem was solved, and no continuation entries were needed for lengthy records. N.B. In the case of medley dances and quadrilles which have figures which might become dances in their own right, there is still a double entry as these divisions do appear under other names and can thus be matched by a sort.

As the numeral "1" is redundant, the last three digits of the year is an adequate code for the "year" field. With the "year" field as a qualifier, only two positions are necessary to define the "source" field. The first position is an alpha character and mnemonic to the source, while the second is alpha-numeric (numeric for common, alpha for special).

As all of the known variables can be accounted for in a single facit alpha-numeric code, a single column in a fixed location is sufficient for the set form, progression, and tempo fields. For specification in sources and ease of identification these three fields are surrounded by curved brackets. For example: "(31J)" indicates a triple minor longways set, with a progression of 1 in jig time.

As the "name" field varies greatly in length and it would be wasteful of space to allow for the supposed maximum, this field will be a literal variable string and terminated by a "/". The "figure" field will also be variable in length for the same reason and terminated by a ":". As each figure of a dance will be identified by a five digit alpha-numeric code which for sorting purposes will be abstract as opposed to mnemonic, The length of this field will be in multiples of six with a space between figures. In this way errors in transcription will be easily identified both visually and by calculation.

Two optional fields complete the dance record. If a dance reference has any secondary sources they are placed in a variable length string in multiples of six for each source code (five characters and a space), terminated by a "." Further comments such as alternate titles and versions constitute the last field as a string literal.

6.1.2 Code Generations For Graphic Output

The in-house graphics program is Ghost which uses Fortran as its programming language. Fortran presents several problems when used for efficient program writing. It does not easily account for nor manipulate character strings (especially of variable length). The potential of errors in mis-positioning of fields and accounting for maximum number of spaces is quite great. An obvious solution would be to write a program in another language which will output a Fortran program with a minimum of errors.

6.1.3 Algol Based Languages (S-algol)

The Algol Based languages have the increased flexibility and power to solve the problem of rigidity found in Fortran. At the outset of this project the St Andrews computing laboratory was already using Algol-W, soon to be replaced by Pascal. At the same time the academic staff was creating and implementing St Andrews Algol (S-algol) as a teaching and production language. S-algol is a high level programming language which has been designed according to the principles of correspondance, abstraction and data type completeness. We found it to be very satisfactory to be used as the programming language for this project. At the same time, the programming techniques used with S-algol can be translated into the more widely used languages such as PL/1 and Pascal.

6.2 In-house Programs

The St Andrews computer laboratory has several in-house programs which have simplified this project.

6.2.1 Editing

Although there have been several improved editors since the beginning of this project, the author has remained with SOS as his default editor, not so much for its quality but because it was the primary editor with which he was acquainted when introduced to the VAX system and it was decided not to switch to save time over problems of negative transfer and wasted time taken in becoming thoroughly familiar with the newer editors. There is the additional assistance of a function which ends and saves editing operations at fixed (20 input) intervals (ed*it : == ed sos save : 20 isave : 20). This being a crucial factor under the older RAX system and the irregularity of the power supply around St Andrews.

6.2.2 Login.com File

To save time commonly wasted typing common commands with standard variables, a Login.com file was expanded to handle some of these items.

6.2.2.1 Search

There are six search commands commonly used: 1) Se < string > searches all files, in the directory, for a given string and prints the results on the terminal (se* : == search *), 2) Dn < string > searches the file of dances (dn* : == search match = and dance.dat), 3) Seek < string > searches the file of dances and produces a temporary working file (Seek* : == search match = and output = dance.fil dance.dat), 4) Fg < string > searches the file of dance figures (fg* : == search match = and fig.dat), 5) Per < string > searches the file of persons (per* : == search match = and person.dat), 6) prog < string > searches the file of progressions (prog* : == search match = and progress.dat).

6.2.2.2 Link

A link command (le* : == link output, ghost lib, t4662 lib) prepares the output of the dance program for plotting.

6.2.2.3 Sort

The command sort < number > < old.file > < new.file > sorts the file with a default position of one, and other positions as indicated (so* : == sort k[ey] = (po[sition] = < integer >, si[ze] = 100)).

6.3 Reordering (Order.s)

Order.s shifts the order of the name and figure files for sorting by either as above. The reordering program (Order.S) identifies the 'name' and the 'figure' fields in the dance record and transposes them. In this way the significant order of the various sorts will produce an order by 'name' or 'figure' after the initial fields, or as an initial sort.

In addition this program will cease to operate when it attempts to reorder a record with a format error within any of the fields. Using the program in this way eliminates any obviously flawed data before it is appended to the data base.

6.4 Matching (Match.s)

6.4.1 One Name For Different Figures

If, in the data base, there are two records containing the same dance name but with different figures, the program 'Match.S' pairs them in the printed output. By sorting this list by data source one is able to re-check the choreographic translations for mis-interpretations. If upon the re-check an error is found it is corrected. However, if the dance in question does in fact have different variations which can not be reconciled, a cross referenced

source and note are added to the two dance records.

6.4.2 One Figure for Different Names

Where a given set of choreographic instructions constituting a single dance have more than one given name the program 'Match.s' again pairs them in the printed output. If the differences in the 'name' field are based on variations of translation, orthography, or accepted alternates for the same tune or dance, all references using these names are duplicated to allow creation of further matches using a sort by name to find alternate figures. A further entry of the source, alternate spelling, and note are added to the record.

6.4.3 One Name, One Figure, Different Records

Where a given 'name' field and 'figure' field are the same as the corresponding fields in two records, the program 'Pair.s' pairs them in the printed output. The two 'source' and 'form' fields are compared and, with references to the original sources, corrected. Where it is found that the two records are alternate sources for the same dance, the record of the oldest is appended with the 'secondary' source along with any additional notations, and the record of the newest source is deleted.

6.5 Dance Translation

The primary program used to translate the data base into something useful serves two functions. The initial call of the program (dance.s) provides a screen display or printout of all relevant information concerning the dance(s) in question. At the same time this program writes into a new file a Ghost (Fortran) graphics program which will plot the movements of the dance.

When "test.tem" is a temporary file containing one dance record, "786CB (31S) MISS GRANT OF MONYMUSK A6M1 CG61 AYY1 AVV3 :." The command "sr find < test.tem" gives the following output: "MISS GRANT OF MONYMUSK is a 32 bar (triple minor) contra in 4(Strathspey) time.

Campbell (1786): progression = 1.

1: cast; cast up;

1: down & back; cast;

1: turn & back;

123: circle round & back;"

If this file contained more than one dance, the above entry would be followed by a blank line then each succeeding dance in the file.

If there are format errors in the data base there are signification error messages indicating this. If the dance violates some rule(s) of progression or a partner goes missing the situation is also indicated with an appropriate error message. If the terminal responses to a dance question are appropriate and a plot is required the command "li" (link) is given to prepare the file for plotting.

The command "li* : == link output, ghost lib(rary) , t(ektronix) 4662 lib(rary) " is predefined.

6.6 Bibliography (cattab.dat, echapb.dat, source.bib)

There are three files containing the bibliographic data necessary to locate a given item of reference: 1) a file of those sources providing dances for the data base and for translating the source code of the dance record onto the output (source.bib), 2) a file of those sources in the author's personal library and available at the computing laboratory (cattab.dat), 3) a file of those sources not immediately accessible (echapb.dat). The command "bib" < character string(s) > will produce items from any of the above bibilographies and is predefined as "bib* : == search match = and CATTAB.DAT, ECHAPB.DAT, Source.bib." Each of these files contain, in positions for significant sorting, the necessary simtex commands to produce formated bibliographies, with appropriate titles and division headings.

As each of these three files serves a separate function, the ultimate use of which is not, as yet fully defined, any item may be found in only one file or a combination of files. As a sample, only one source has been selected as presented in all files. It is assumed that these files will be combined at some later date in a larger bibliographic data base, though this is not a direct part of this project.

File "source.bib" serves as an immediate vehicle for translating the source field of the dance record into words for output. A typical record would be "977R1:RSCDS, MISS MILLIGAN MISC 1&2." There are three fields: 1) the "source" code consisting of the last three digits of the year and two appropriate mnemonic characters for the author, 2) The "author" as a person if known or organization if not is a variable field of variable length bounded by a comma, 3) the title of the work is also a variable length field ending with a period.

The file "cattab.dat" is a combination shelf list (inventory) and catalogue of the author's own holdings. In addition, it is edited in such a way that catalogued book plates and class marks can be produced using a resident "labels" program. A typical record would be "B793.33M@GV 1763.C7M*Milligan, Jean C.*Miss Milligan's Miscellany of SCTSH CNTRY DANs, v.1*EDIN: RSCDS, c1977**."

A "cattab.dat" record will contain at least four fields, three of fixed length and one variable.

1) For purposes of storage, it may be necessary for the different types of media to be kept apart. This has resulted in a one digit code to indicate whether the item is a book (B), record, tape, microfilm, or video, etc.

As there are two primary library cataloguing systems in the English speaking world, sole reliance on one would hinder one in working with the other. At the same time, a rapid search of a library might be more quickly completed outwith the standard catalogue by using the shelf slips of a given collection. To accommodate this the records in this file contain the first significant digits of both the Dewey Decimal System and the Library of Congress so that a book may be located in both, or depending upon the philosophy of sorting preferred, one can group the items in two possible arrangements by sorting.

2) The second field is based upon six digits of the Dewey Decimal system. Dewey is simpler than the Library of congress in that it contains only ten facits (as opposed to 26), is mnemonic and recursive, and the number of positions used in sorting can determine the depth of sub-headings in a classified bibliography even if the system is not known. In the example above, the Dewey number is "793.33M." A breakdown of the code, by digits would provide the subjects: art - recreation - indoor - dance - ethnic - Milligan. As the system is infinitely divisible, numbers after the "M" for Milligan will accommodate other authors with names starting with "M". Using the recursions from the history division of the Dewey Decimal one will find that "941.33" gives: history - Europe - Scotland - region - Fife. Therefore the expansion "793.334133M" gives: ... ethnic dance - Fife - Milligan.

3) The third field is based upon ten digits of the Library of Congress System. The Library of Congress system is not decimal in structure and is based upon an actual library rather than a philosophical concept of knowledge. This system denies a hierarchy of knowledge based on ten classes and replaces it with twenty-six (alpha) divisions based on the actual books in print. The "alpha" part of the code may be up to three digits followed by four numeric, a decimal point, and then any combination of decimal or alpha digits as needed.

The Library of Congress code for this book, "GV1763.C7M" breaks down as: Recreation (GV), dance - social - ballroom (1763), country dancing (C7), Milligan (M). If a collection such as is used for this thesis were properly catalogued in a library, it would need expansion to more adequately differentiate between items. Though the fact that the Library of Congress field is followed by the bibliographic entry (author, title, etc.) is adequate for the author's purposes. The more appropriate number, ,"GV1763.C7S3M5M5," would indicate this specific bibliographic item within the code. This expansion would be decoded as: recreation (GV), dance - social - ballroom, country dancing (1763), Scotland (S3), Milligan (M5), Miscellany (M5).

4) The fourth field is of variable length and contains the information usually found in standard bibliographies: Author, title, city, publisher, and date. In addition, the records in this file contain stars to separate the fourth or bibliographic field into sub-fields. In this way if the record were used for input into a labels program, the output format would appear as:

GV 1763.C7M

Milligan, Jean C.

Miss Milligan's Miscellany of Scottish Country Dances, v.1

Edin: RSCDS, c1977.

The file "echapb.dat" is the author's working bibliography for this project, with each record containing a possible five fields. A typical record would be "6GR-GV1763.C7 Roy. Sctsh. Cntry. Dance Soc. Miss Milligan's Misc., I & II (Edin.: RSCDS, 1977)[977R1]." Within the file, depending upon the sorting are simtex commands to provide title headings, and cross referencing as to codes used. Using creative searching routines, with a combination of significant fields, one can produce specific bibliographies. For example: the command "bib 0dw,63.c7" will produce a list of books as yet un-evaluated (0) from the Dundee Public Library Wighton Collection (DW), which are about country dancing (63.C7).

1) The first field of one digit contains a code indicating the use or probable value of the item to the study. Under this alpha-numeric mnemonic code "0" indicates that the item might be of value but is as yet unfound or unseen, and "z" indicates that it might have been found useful but has no value to the author. In between "0" and "z" are such items as "b" for bibliograpny, "r" for cross reference, "1" for primary source, "2" for secondary, etc.

2) The second field of two mnemonic characters indicates the location of the item. While "GR" indicates the author's own holdings, other libraries are indicated by city and library such as "PS" for Perth-Sandeman, "GM" for Glasgow-Mitchell, "ER" for Edinburgh-Reed, etc.

3) The third field indicates the subject, using eight digits of the Library of Congress classification system (see above).

4) The fourth field indicates the normal bibliographic information marked for printed output using the "simtex" text editor.

5) The last field is variable and optional and contains several classes of information. If an item in its resident library is not classed in the Library of Congress system an entry is made as to its actual "shelf mark", such as "[977R1]" for the computer code of the dances in the data base of this project. If an item initially found in one location (indicated in field two) is known to also be in another library this would be indicated as [PS-Af6] meaning that the book also resides in the Perth-Sandeman Library (not catalogued in L.C.) in stack "A", shelf (6) "f", in the "6[th]" position (Perth's system). If the book is possibly redundant or incorporated in another work this is indicated in curly brackets as "{see also < reference > }."

6.7 Summary

This chapter contains information relating to the programs used for this project.

7 Graphics

This chapter explains the use of the graphics program for this project.

7.1 Why Graphics?

Words alone, as used to describe anything but other words, are inadequate to describe events separated through space and time. Although historical dictionaries exist, any interpretations are coloured by the symbolic translation provided by those who have written definitions. Most valid interpretations of verbal texts are achieved either through multiple examples of other independent verbal transcriptions, or some visual evidence supporting those transcriptions.

Taking the currently used Scottish country dance term "allemande" one would find almost as many definitions as there are interpreters. Outwith the field of dance, "allemande" is a French word, taken from the German, meaning German. An analysis of the German word gives two lexical units common in every day English, "all" and "man". To anyone hearing this word for the first time without any context this word might appear to mean either all men or something German. What is meant by the French users of the word when referring to dance is something danced in the German way. In a musical suite, the allemande is a German style dance. Meanwhile, sometime before 1772 and possibly

through the influence of French dancing masters the term "allemande" enters the vocabulary of country dancing. The word is used today, with the same spelling in Scottish country dancing, and in corrupted form in American square dancing.

Today in Scottish country dancing the term refers to a specific series of movements lasting for eight bars of music, which, by default, result in two couples changing places with each other. The Scottish Country Dance Society was founded in 1923 to preserve and perpetuate traditional country dances (and dancing) in Scotland. In 1927 they published a book of dances containing a figure which they termed an allemande. To date, the author has been unable to locate any reference to a dance allemande in a country dance context within fifty years prior to 1927. In the case of dance allemandes found in the late late eighteenth and early nineteenth centuries, the word is either referring to an obviously non-progressive figure or to a figure which could progress at some other point of the dance.

There are German dances of this period which were popular throughout Europe and Britain which have within them figures where one's partner is turned under the arm, and there are in existence pictures demonstrating the various ways of turning ones partner in this context. The American square dance term "alman left" refers to turning your "corner" with the left hand. The Scottish country dance allemande has such a turning motion at the beginning of bar one and in bar six of of its figure. Therefore it would be reasonable to assume that the common denominator for this "German" activity would be a turn and not a progression, as presently interpreted. In 1840, the word is

treated as synonymous with the non-progressive figure the "promenade" and about 1930 there is a film of a dance using an allemande, where the action is progressive but the track of the dancers is that of a promenade and a half. Since, to date, there is no picture of a pre-revival allemande or unambiguous description, the evidence indicates that the current use of the term "allemande" is a modern use of an old term in a new but related way. As a historical reconstruction, this use is a failure as it ignores the evidence. If one had found a non-verbal description prior to 1927, the problem of this misinterpretation would have been solved instead of being perpetuated in the sixty-eight R.S.C.D.S. dances published since that time.

Since any symbolic representation is liable to subjective interpretation, an independent secondary reference, whether in verbal symbols or preferably in another mode, is almost necessary to convey meaning through time or space. If a picture composed of symbolic characters representing something outside of the language, or "real" in relation to time and space can meet this criteria. Since dance is a form of communication through an abstract series of symbolic movements in time and space, a graphic representation or mapping of these movements is an appropriate reinforcement of or substitute for verbal descriptions of dance, especially country dancing, where the constants are the tracks of two dimensional figures.

7.2 Ghost

The St Andrews Computer Laboratory provides the Culham Ghost-80 graphical output system (version 3). Although other graphics systems have been implemented, the author started with earlier versions of Ghost and has prepared his programs to be compatible with it.

As Ghost uses Fortran, a language which is not very efficient when handling strings. It has been decided to perform the work in S-Algol. S-Algol prepares, as its output, a Fortran file which can be linked and plotted without further editing.

7.3 Output Format

The usual format for country dance notation is simply words possibly including a musical score coded to indicate the phrasing. When some visual information is included it is presented in the form of the floor plan of the set in one of two ways. Commonly the set is oriented so that the top of the set is to the left of the viewer, in other words as one were standing behind the "man's line". Occasionally the set is so arranged that the top of the set is to the top of the page, in other words with a line of men to the left, women to the right.

The former display, while more traditional and easier to place on a page has several problems. The languages used to describe a dance refer to top, bottom, up, and down. Where these words can correspond to the location on the page as normally presented to the viewer, interpretation is easier. While an orientation rotated ninety degrees to the left, is quite clear to a male dancer (left is left, etc.), a female must rotate her view 180 degrees to determine her direction and moving left on the page becomes moving right on the floor.

While the initial plotting of a dance has followed the traditional "top to the left" orientation, for the final product (see Appendix A), it has been decided to eliminate any sex bias and align the set in an appropriate manner, with the top of the set at the top of the paper.

Some other arbitrary decisions were made in the basic format. As there are differences between the basic paper size in the United Kingdom and the United States, and the St Andrews University "Tektronix 4662" will only hold American size (8.5x11) paper without rotation, a compromise format was designed so that both paper sizes would present a reasonable projection without excessive distortion. Rotation and scale calls are produced by the program (dance.s) but are written as Fortran comments, unless edited otherwise.

The basic format consists of a rectangular field with a title box at the top. The remainder of the field is divided into four rectangular frames, one for each of the typical figures in a thirty-two bar dance. At the bottom are a plotted signature-logo and a "c" with the year for copyright purposes. If a dance contains more than four phrases or if more than one frame is needed to describe a figure, the plotter will send a request for a second page at the end of the fourth frame, at which time it will continue without repeating the heading.

The standard heading consists of three lines: 1) dance name, source and date, 2) the statement "a < number > bar (< size of > minor (set)) < set shape > in < tempo as fraction > (< tempo as name >) time. 3) progression (, and secondary references if any).

In each frame (usually corresponding to an eight bar phrase of music or figure of the dance) there is a translating statement at the top. In form the statement is noun(s) then verb(s) as "1: cast; cast up;" would be read "First couple cast, first couple cast back." or "123: circle round & back;" would read "Couples one, two, and three circle round and back." The frame itself represents the floor plan of the set as viewed from the "bottom" with the men represented traditionally as circles and the women as squares. To differentiate between the couples, the following code has been devised: couple one is marked with an "x" (saltire or St Andrew's Cross), two with a (St George's) cross, three with a dot. Couples numbered as four, five, six, etc. are unmarked as the use of "minor" sets usually would cause

couples beyond four to be renumbered one to three.

7.4 Movement Representation

Dance movement in country dancing occurs on two levels. A dancer is performing dance "steps" either in place or moving across the floor. As set dancing involves a fixed number of other dancers the country dance involves people moving in relation to each other through two dimensional space.

Labanotation (see Glossary) is already designed to provide a graphic display of a body's movement in relation to itself in three dimensional space. As a research technique for recording both descriptions of an individual's movements, the Laban system has already been programmed for computer output. Country dancing is primarily concerned with bodies movement in relation to each other. Since the significant recording of a country dance is the figure not the individual movements of a dancer, Labanotation provides too much detail and obscures the patterns which identify each dance at the most concrete level, while appearing redundant at higher abstractions.

If a researcher were analysing an individual dancer, Labanotation would be appropriate. If a researcher were analysing a dance step, again Laban's system would solve his problem, though a typical dance of thirty-two bars often has all the dancers performing the same step thirty-two times. Therefore, this study, which deals with figures, need simply refer to other sources when information on a step is

needed. When the steps needed for a dance are not to be assumed by default (progressive steps as Strathspey in slow time and skip change of step in fast), a symbol such as "S" (meaning to perform a setting step) is placed on the plot in the appropriate place.

When dealing with the figures of country dancing in this project, the author, using as his viewpoint the bottom of the set, uses a two dimensional drawing of the track followed by the individual dancer(s). To make the program and its interpretation simpler two levels of abstraction are used for the drawing of a figure.

A large percentage of all of the movements in country dance figures are known by names and, with few defaults, are performed often and in the same way. These figures (reels, circles, wheels, chains, turns, figures of eight) are best represented on a more abstract level, easily recognizable with some sacrifice of literal accuracy as to the exact track of the individual dancers. Therefore the figure "hands round" would be indicated by a circle and "hands across" by a wheel. Where the flow can not be assumed by default an arrow is used to indicate the direction or, in the case of wheels (hands across) the spokes are bent in the direction of the elbow to show the movement.

There are, however, a large number of figures which appear in few dances. In word symbols, these require statements composed of several dance movements, usually averaging four for each eight bar phrase. In this case, the flow of the movement is best described with a track indicating the movement of the dancer as accurately as possible. Therefore the "figure of eight" which is a standard, and therefore

abstract, figure would be described in words as, "lead down, cast down, lead up, cast up". Its graphic representation would in fact produce the appearance of a numeral "eight" on a plot.

7.5 Other Set Dances

As many country dance figures are used in other formations in the same way that they are used in a longways set. As other formations co-existed with the longways set, the language of dance instruction remained the same even though the figures changed. By taking the language used for a figure and calculating new rules and defaults for the new formation.

Set dance formations of the Seventeenth through the Nineteenth Centuries would include:

Longways (contra) - a line of men facing a line of women,

Ecossaise - a contra with the first couple crossed over,

Swedish - threesomes facing threesomes down the room,

Mescolanzes - foursomes facing foursomes down the room,

Circles - couples facing couples round the room,

Rounds - dancers in one circle,

Quadrilles - squares of four or more couples.

With each of these formations, one will find the same words used in dance descriptions, though the defaults will change depending upon the shape of the set.

7.6 Allowances For Expansion

As the data file for the Ghost program (plot.for) is external to the program as is the translation of the dance terms (vocab.dat) into Ghost subroutines, the output of this program can easily be improved without altering the basic program (dance.s). Examples of expansions might be the use of multiple coloured pens to indicate phrasing or the paths of different participants, or, later, for programs creating timed movement on the v.d.u. similar to the current video games.

7.7 Summary

This chapter describes the reasons for the use of graphics in connection with this project.

8 Conclusion

In this chapter, the problem and its solution are restated. The various processes are re-assessed and a general conclusion is reached.

8.1 The Problem

The general problem to be solved by this project is as follows. Can a computer program be designed which will adequately translate a data base of country dance records into a graphics program which will plot a symbolic picture of the dance indicated in those records.

8.2 The Solution

It is proposed that by designing a data base to meet the needs of the problem above, a program to manipulate this data base, and another to depict the results this project can be accomplished.

8.3 Evaluation of the Data Base

Although the data base, as conceived, meets the needs of this project, it is now felt that the narrowness of the project has omitted some useful facits from it. Additional variable and optional fields might be added to allow for further cross referencing especially in the areas of: alternate titles, alternate spellings, and related or inaccurate sources. It is also felt that the thirty-six places should be extended to sixty-two (by adding lower case letters), to allow for as yet undiscovered figures or figures found in the country dances of cultures other than Scottish.

8.4 Evaluation of the Programs

While the programs also meet the needs of the project as planned, it is felt that more sophisticated routines involving progression are needed to account for more complicated figures and activities typical of the more recently devised dances. Although the matching and comparing programs do require manual searches of primary source material before decisions are made, some extensions to programs could be implemented to shift the positions of sources within the data string and encode some general conclusions which are common to some matches (see Appendix J).

8.5 Evaluation of the Graphics

If the suggestions under the section for programs were implemented, additional graphic output would also be necessary to account for alternate sources, titles, and choreography.

8.6 Compare the Problem and Solution with the Results

Overall, it is felt that the results of this project meet the criteria of this project as conceived. In retrospect, the project grew faster than its solution to the extent that the result will probably serve as a base for a more extended program to be produced at some later date.

8.7 Was this Project Useful

As an exercise in creative uses of the computer in arts or non-numerical areas, it is felt that the project has been quite useful. In addition, the 'hands on' experience with the computer has opened to the author and to those to whom he has been 'preaching' additional possibilities in computer implementation as a research tool.

The practical outcome of this work has also caused a considerable amount of interest among various bodies interested in research in the areas of traditional (folk) arts, music, and dance, especially for analysis of descriptive rather than prescriptive studies.

8.8 Conclusion

It is felt that the overall results of this research project have justified it as a worthwhile effort. With the added sophistication gained herein, the author intends to expand on the original project to implement in some practical way the results produced.

8.9 Summary

This chapter is a summation of the project and its results, with an evaluation of both the task and its conclusion.

9 Implications for Further Research

Upon completion of this project, it is felt that the following areas would be worth further research both as an expansion of this project and, by implication other related fields wherein these programs might be applicable.

9.1 Expansion from Contras to Other Forms of Set Dances

As the longways contra set as used in country dancing shares many formations, movements, and a dance vocabulary with other set dances of the Sixteenth through the Twentieth Centuries. It would seem logical that the techniques used in this thesis be expanded to include all forms of set dances.

In keeping with this possibility, the data base (dance.dat) used for this project includes dances, not longways contras, which come from common sources. In translating their language into choreographic notation, the consistancy of language used by an individual source is kept and even expanded by the differences in interpretation needed for the various forms of sets in a given source. To keep these samples, approximately fifteen percent of the total data base, from disturbing the rules for country dance, the form code of the program calculates the shape of the set and if the result is not a longways contra, an error message indicating that "this program is not equipted to handle <type of set> dances". At the same time the individual figures and

their interpretations are available for comparison and analysis.

An obvious project would be the production of a data base containing all set dances followed by the productions of programs which deal with the various "rules" involved in each form of set.

9.2 Music and Figures

This project uses only the name of the dance and its figures as basic fields for recognition and comparison. The addition of music would be the next most valuable field for research.

Using a comparison of tunes, not a part of this project, the following match was found. There are several tunes and dances carrying the name "Seann Triubhas," Gaelic for "old trousers". (Triubhas is related both to the English word for trousers and truss.) When collectors, not speaking the local language or dialect, recorded tunes with their names, they often equated unfamiliar terms with words already familiar to their own vocabulary. Today "Seann Truibhas" would be pronounced < shawn-truze'> so it is not unreasonable to find that the tune for this dances matches with the French spelling of words meaning "Russian song" ("Chant Russe" pronounced < shan(t)-ruse' >). Especially when one considers that the Scots often have a liaison between a final "t" and the initial letter of the next word (attaching the final "t" of "chant" to the initial "r" of "Russe).

While it is well within the ability of the computer to match the sounds of the French for "Russian song" and the Gaelic for "old trousers" or to match the encoded symbols from the International Phonetic Alphabet for the same, both of these samples come from English (as opposed to Scottish sources) where additional spelling variations with resultant differences in pronounciation might have caused this match never to have resulted without the music.

In addition, significant relationships might well develop between segments of tunes. An example of cross cultural matching can be found in the the music for the dance "Minard Castle", "The Grinder's Hornpipe". Most dances are composed of thirty-two bars and most Scottish dance music consists of two phrases of eight bars. For a typical dance each phrase is repeated (AABB). The dance "Minard Castle" is an exception, being forty bars in length with the last figure not really necessary to the ultimate conclusion of the dance. Similarly, the last eight bars are also not needed for this tune, which sounds complete at bar thirty-two. A tune match for this last phrase (bars thirty-three to forty) if one looks at the first eight bars of the German folk song "Muss I den".

There are two common methods for encoding melodies, one by equating the tones of the scale with integers and the other by showing the direction of each tone from the previous one. Bars thirty-three to four of "The Grinder's Hornpipe", are "e egf fag e c g". Using a position code which ignores the key, one gets a melody of "3 354 465 3 1 5" or "3354465315" without the rhythm. Using a directional code

this becomes "dsudsududd", where "s" is no change, "u" is up and "d" is down.

To ensure the location of buried tunes as in the example above, a tune would have to be divided into its logical phrases, each named and then subtitled. In the dance transcription of "The Grinder's Hornpipe" the figure arrangement is "AABBC", Therefore, one's data base would need an entry for "Grinder's Hornpipe, 1" through "Grinder's Hornpipe, 3" to allow for most possible matches. Still this would not allow for some smaller motives of one, two, or four bars.

9.3 Addition of Labanotation

As the Laban system is already being used to notate the personal differences between one dancer's style and another's, it would seem reasonable to expand the music notation system to include plotted tracks for the movements of each dancer in a set as a means of identifying local styles and elements of body langauge.

9.4 Multi-lingual Dictionary

In the existing program there are a rather limited number of sentence statements. Given, a dictionary to translate the technical language of country dancing, it would be quite useful to create new sentence patterns in several languages so that the output would be translated into the language of the person accessing the data base.

9.5 Spoken Output

To carry the above suggestion one step further, it would not be at all difficult to synthesize a spoken message which could either explain the dance as a whole or in some way paced to a fixed tempo, so as to form a verbal cue while dancing.

9.6 Moving Graphics

While the output of this project is a static picture, existing routines which operate various video games could be applied to actually move the various persons around the dance area at a predetermined tempo, corresponding with that of the musical score.

9.7 Summary

This concluding chapter contains the suggestions for further research along the lines of the project just completed.

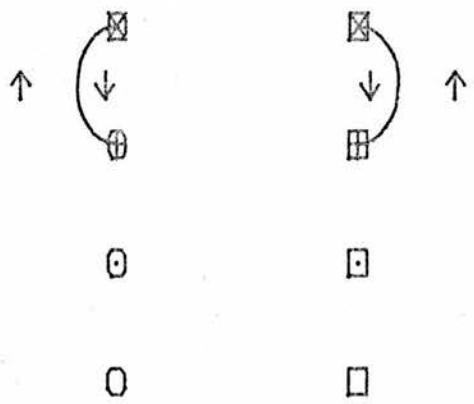
10 Appendices

10.1 Appendix A: Plots of Dances

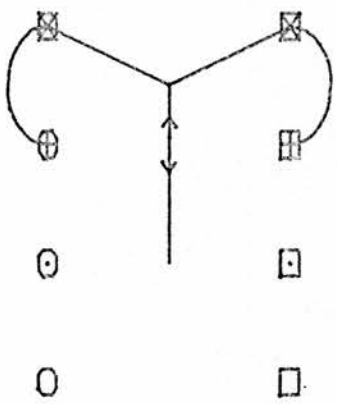
10.1.1 Miss Grant of Monymusk

MISS GRANT OF MONYMUSK, Campbell (1786):
a 32 bar (triple minor) Contra in 4/4 (Strathspey) time.
Progression = 1. Secondary source(s) 1.

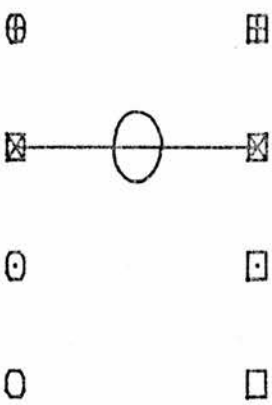
1: cast; cast up;



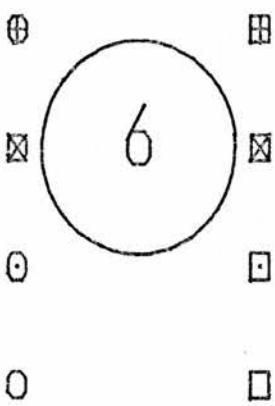
1: down & back; cast;



1: turn & back;



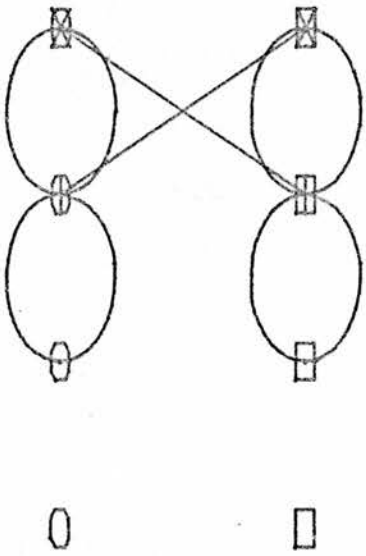
123: circle round & back;



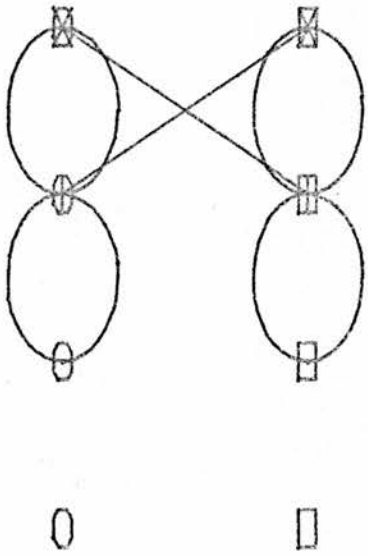
10.1.2 Last of the Lairds

LAST OF THE LAIRDS, RSCDS (1977).
a 32 bar (triple minor) Contra in 6/8 (Jig) time.
Progression = 1. Secondary source(s) 1969P1.

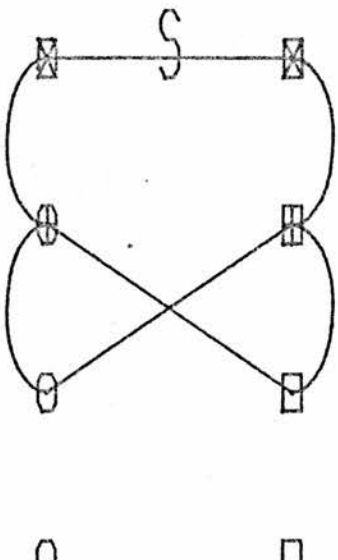
123. reel of 3 on sides;



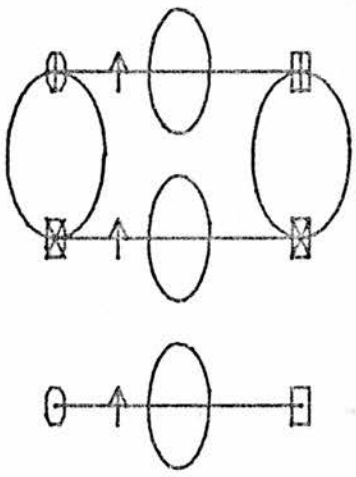
123. reel of 3 on sides;



1. set cross cast; cross down cast up;



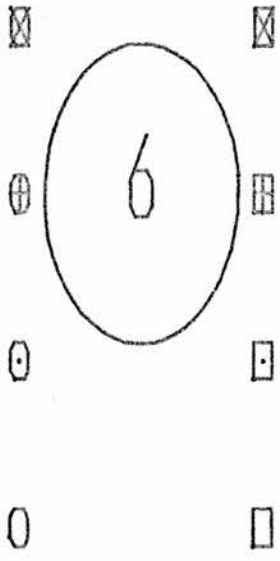
1 123. lead up cast; all turn;



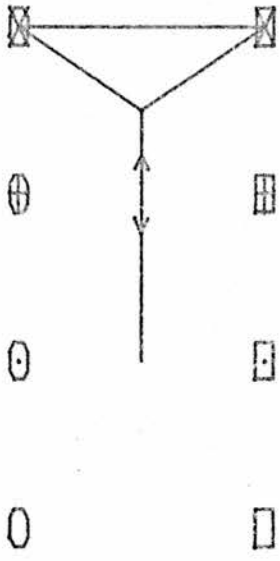
10.1.3 Largo Law

LARGO LAW, Pillings (1969).
a 32 bar (triple minor) Contra in 4/4 (Strathspey) time.
Progression = 1. Secondary source(s) 1977R1.

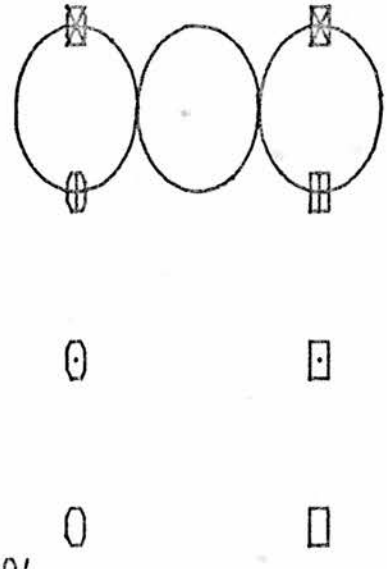
123: circle round & back;



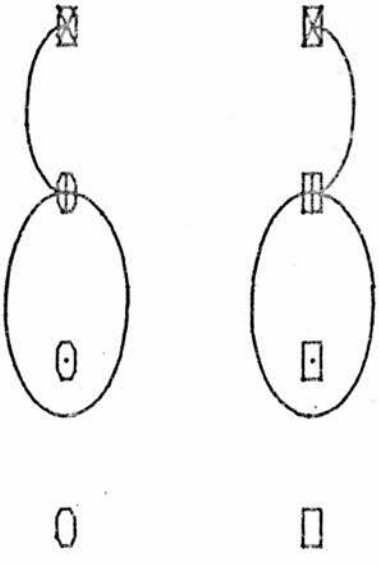
1: down & back; cross;



12: reel of 4 across;



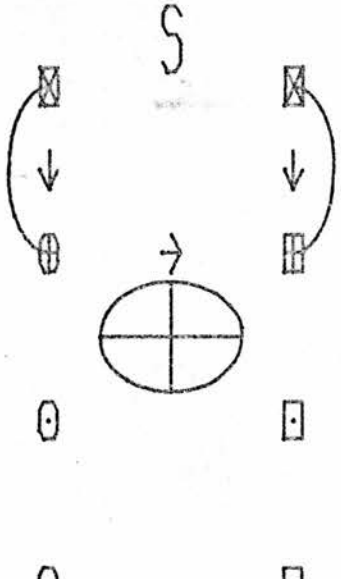
1: cast; lead down cast up;



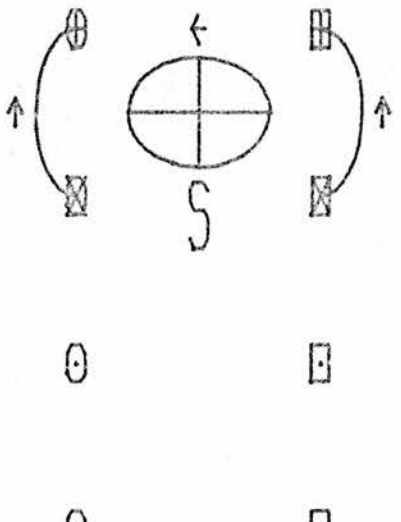
10.1.4 Machine Without Horses

MACHINE WITHOUT HORSES, RSCDS (1938):
a 32 bar (triple minor) Contra in 6/8 (Jig) time.
Progression = 1. Secondary source (s) 1969/1.

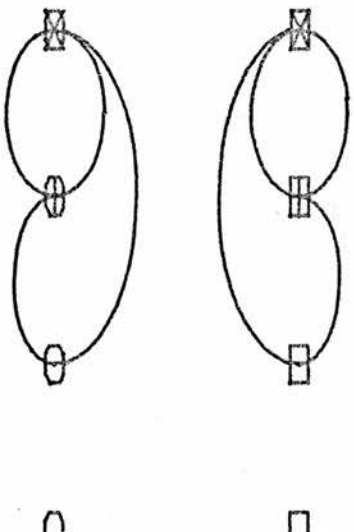
1 13: set cast; hands across;



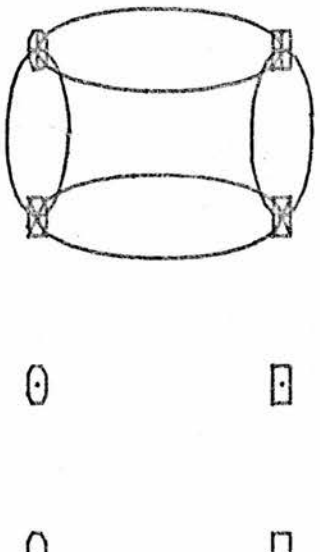
1 12: set cast up; hands back;



12: lead down 2 cast up; lead up cast;



12: chain of 4;



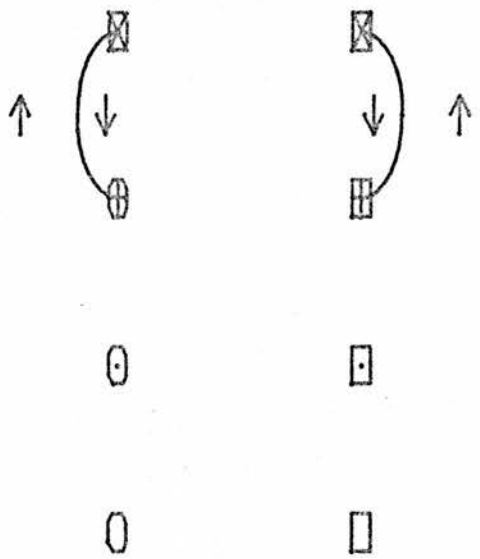
10.1.5 Corn Rigs

CORN RIGS, RSCDS (1927):

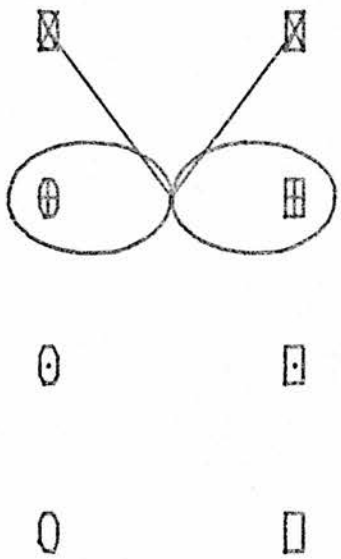
a 32 bar (duple minor) Contra in 2/4 (Reel or Hornpipe) time.

Progression = 1. Secondary source(s) 1969P1.

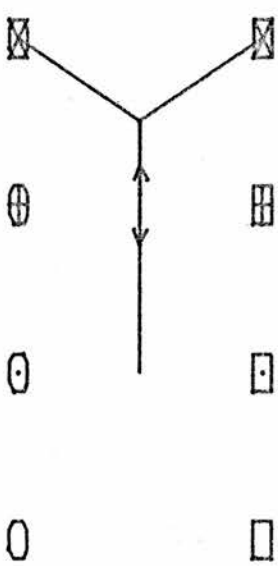
1: cast; cast up;



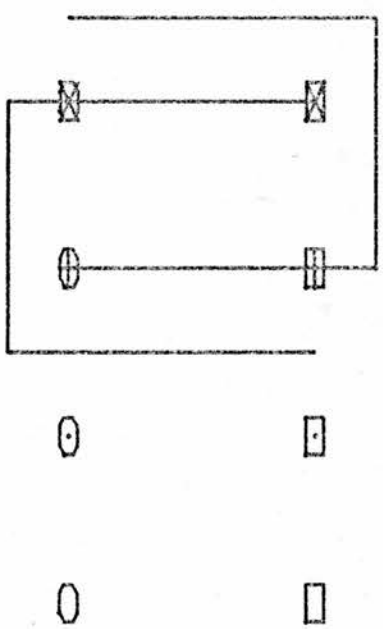
1: figure of 8 across; (in down);



1: down & back;



12: pousette;



10.2 Appendix B: Metalanguage

Noun

1	= first couple
2	= second couple
3	= third couple
4	= fourth couple
ALL	= all
CNR	= corner
CPL	= couple
HDS	= head couples
M	= man
PTNR	= partner
SDS	= side couples
W	= woman

Verb

ADV	= advance
ALMAN	= allemande
BKTOBK	= back to back
BOW	= bow
CHN	= chain
COUPE	= coupe
CRC	= circle
CRS	= cross
CRWNGL	= crown triangle
CST	= cast
DANCE	= dance
DBLTRGL	= double triangle
END	= end
FACE	= face
FG8	= figure of eight
FOLD	= fold
GLSGDRS	= Glasgow Highldrs
HST	= Highld Schottishce
JUMP	= jump
KNOT	= knot
LD	= lead
MINUET	= minuet
MOV	= move
PAS	= pass
PAUS	= pause
PDB	= pas de basque
PETNELA	= petronella
PL	= place
POINT	= point
PROM	= promenade
PUSET	= pousette
REL	= reel
RET	= retire
RONDEL	= rondelle
RPT	= repeat
SLIP	= slip
SPRTL	= spurtle
ST	= set
TAP	= tap
TRN	= turn
TURNY	= tourney
WHL	= wheel

Modifier

1 - 9	= 1 - 9
ALRD	= allround
APT	= apart
ARCH	= arch
ARM	= arm
AWAY	= away
AXUM	= axum
BETW	= between
BK	= back
BOT	= bottom
C	= across
CCW	= counter clock wise
CNTR	= centre
CW	= clock wise
DBL	= double
DIG	= diagonal
DN	= down
FACING	= facing
H	= half
HRSHU	= horseshoe
IN	= in
INTO	= into
L	= ladies
LINE	= line
LT	= left
MID	= middle
MIR	= mirror
NO	= no (not)
NTRLKNG	= interlocking
OPP	= opposite
OUT	= out
OVER	= over
OWN	= own
PARAL	= parallel
PRG	= progress
RD	= round
REV	= reverse
RT	= right
S	= side or plural
SET	= (the) set
SID	= side
SNGL	= single
STING	= setting
TO	= to
TOP	= top
TRNING	= turning
UNDR	= under
UP	= up

```
ADV.Z^advance ',8)^PLOTNC(PX,PY,43)^%
ADVRET UPBK.Z^up & back ',10)^PLOTNC(PX,PY,43)^%
ALMAN.Z^allemande ',10)^PLOTNC(PX,PY,43)^%
ALMAN21SBOT.Z^allemande ',10)^PLOTNC(PX,PY,43)^%
ALMANH.Z^half allemande ',15)^PLOTNC(PX,PY,43)^%
ALMANL.Z^allemande left ',15)^PLOTNC(PX,PY,43)^%
ALMANQ.Z^quarter allemande ',18)^PLOTNC(PX,PY,43)^%
ALMANR.Z^allemande right ',16)^PLOTNC(PX,PY,43)^%
BAL.Z^ballence ',9)^PLOTNC(PX,PY,43)^%
BKTOBK.Z^back to back ',13)^PLOTNC(PX,PY,43)^%
BOW.Z^bow ',4)^PLOTNC(PX,PY,43)^%
CHN.Z^chain of n ',11)^PLOTNC(PX,PY,43)^%
CHNCNR.Z^corner chain ',13)^PLOTNC(PX,PY,43)^%
CHNH.Z^half chain ',11)^PLOTNC(PX,PY,43)^%
CHNHREV.Z^reverse chain ',14)^PLOTNC(PX,PY,43)^%
CHNL.Z^ladies chain ',13)^PLOTNC(PX,PY,43)^%
CHNLH.Z^half ladies chain ',18)^PLOTNC(PX,PY,43)^%
CHNMH.Z^men's chain ',12)^PLOTNC(PX,PY,43)^%
CHNPRG.Z^progressive chain ',18)^PLOTNC(PX,PY,43)^%
CLP.Z^clap ',5)^PLOTNC(PX,PY,43)^%
CLP3.Z^3 claps ',8)^PLOTNC(PX,PY,43)^%
CLP4.Z^4 claps ',8)^PLOTNC(PX,PY,43)^%
CLPING.Z^clapping ',9)^PLOTNC(PX,PY,43)^%
CRC&BK.Z^circle round & back ',21)^CTRMAG(50)^PLOTNC(PX,PY,54)^ELLPSE(.08,.09)^%
CRC.Z^circle n ',9)^PLOTNC(PX,PY,43)^%
CRCLH.Z^half circle left ',17)^PLOTNC(PX,PY,43)^%
CRCR.Z^circle right ',13)^PLOTNC(PX,PY,43)^%
CRCRH.Z^half circle right ',17)^PLOTNC(PX,PY,43)^%
CRS.Z^cross ',6)^PLOTNC(PX,PY,43)^%
CRSDN.Z^cross down ',11)^PLOTNC(PX,PY,43)^%
CRSDN2.Z^cross down 2 places ;,20)^PLOTNC(PX,PY,43)^%
CRSDN3.Z^cross down 3 places ;,20)^PLOTNC(PX,PY,43)^%
CRSIN.Z^cross in ',9)^PLOTNC(PX,PY,43)^%
CRSUP.Z^cross up ',9)^PLOTNC(PX,PY,43)^%
CRSUP2.Z^cross up 2 places ',18)^PLOTNC(PX,PY,43)^%
CRWNTRNGL.Z^crown triangle ',15)^PLOTNC(PX,PY,43)^%
CST.Z^cast ',5)^POSITN(M1X,PY+.05)^ARC(M1X,M1Y,180.0)^POSITN(W1X,PY+.05)^
     ARC(W2X,W2Y,180.0)^PLOTNC(PX-.11,PY+.05,187)PLOTNC(PX+.11,PY+.05,187)^%
CST3.Z^cast 3 ',7)^PLOTNC(PX,PY,43)^%
CST3BK.Z^cast up 3 ',10)^PLOTNC(PX,PY,43)^%
CST4.Z^cast 4 ',7)^PLOTNC(PX,PY,43)^%
CSTAPT.Z^cast apart ',11)^PLOTNC(PX,PY,43)^%
CSTIN.Z^cast in ',8)^PLOTNC(PX,PY,43)^%
CSTLT.Z^cast left ',10)^PLOTNC(PX,PY,43)^%
CSTOUT.Z^cast out ',9)^PLOTNC(PX,PY,43)^%
CSTRT.Z^cast right ',11)^PLOTNC(PX,PY,43)^%
CSTUP3.Z^CTRMAG(16)^POSITN(TX,TY)^TYPECS('cast up 3 places ',17)^PLOTNC(PX,PY,43)^%
CUPPDB.Z^coupe & pas de basque ',22)^PLOTNC(PX,PY,43)^%
DBLTRGL.Z^double triangle ',16)^PLOTNC(PX,PY,43)^%
DBLTRGLH.Z^half double triangle ',21)^PLOTNC(PX,PY,43)^%
FG8.Z^figure of 8 ',12)^PLOTNC(PX,PY,43)^%
FG8C CSTAPTWS.Z^lead out sides ',15)^PLOTNC(PX,PY,43)^%
```

10.4 Appendix D: Source.bib

750HA:Hare, 24 CD FOR 1750.
751HA:Hare, 24 CD FOR 1751.
785CB:Campbell, 1ST COLLECTION, 1785.
786CB:Campbell, 2ND COLLECTION, 1786.
787FO:Forster, 24 CD FOR 1787.
788CB:Campbell, 4TH COLLECTION, 1788.
789BJ:Bowie, COL OF S R CD, 1789.
789CB:Campbell, 5TH COLLECTION, 1789.
790CB:Campbell, 6TH COLLECTION, 1790.
792CB:Campbell, 8TH COLLECTION, 1792.
793CB:Campbell, 9TH COLLECTION, 1793.
794CB:Campbell, 10TH COLLECTION, 1794.
794DA:Dale, COLLECTION OF REELS AND DANCES, 1.
795CB:Campbell, 11TH COLLECTION, 1795.
796CB:Campbell, 13TH COLLECTION, 1796.
797BO:Boag, Col OF FAV RLS&SPS 1797.
797CB:Campbell, 14TH COLLECTION, 1797.
798CB:Campbell, 15TH COLLECTION, 1798.
799BW:Bland & Weller, Col V.5.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 10.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 11.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 12.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 13.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 14.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 15.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 17.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 18.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 19.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 2.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 3.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 4.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 5.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 6.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 7.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 8.
79?DA:Dale, COLLECTION OF REELS AND DANCES, 9.
79?HI:Hime, 10TH COL OF POP D.
79CBW:Bland & Weller, NEW COL B.3
800CA:Cahusac, An COL OF 12 FAV CD 1800.
800CB:Campbell, 16TH COLLECTION, 1800.
801CB:Campbell, 17TH COLLECTION, 1801.
802CB:Campbell, 18TH COLLECTION, 1802.
803CB:Campbell, 19TH COLLECTION, 1803.
804CB:Campbell, 20TH COLLECTION, 1804.
805CB:Campbell, 21ST COLLECTION, 1805.
806CB:Campbell, 22ND COLLECTION, 1806.
807CB:Campbell, 23RD COLLECTION, 1807.
807FI:Fitchat, 5TH BOOK OF C D, 1807.
809CB:Campbell, 25TH COLLECTION, 1809.
809FE:Fentum, Col OF D, 1809.
809FI:Fitchat, 7TH BOOK OF C D, 1809.
810CB:Campbell, 26TH COLLECTION, 1810.
811CB:Campbell, 27TH COLLECTION, 1811.
822GO:Gow, NATHANIEL, 5 FAV CD FOR 1822.
823GD:Goulding d'Almaine & Potter, 24 CD FOR 1823.

10.5 Appendix E: Form.dat

```
  J:6(Jig).
  M:Medley.
  N:9(Slip Jig).
  R:2( Reel or Hornpipe ).
  S:4( Strathspey ).
  W:3( Waltz or Minuet ).
1  :Twasome .
2  :( duple minor ) Contra.
3  :( triple minor ) Contra.
4  :( quadruple minor ) Contra.
B  :Bumpkin ( 3x3 formation ).
C  :Circassian ( 2 facing 2 ).
E  :Ecossaise ( longways, improper ).
G  :Glasgow Highlanders ( longways, one partner improper ).
H  :Axum Reel ( "H" formation ).
M  :Mescolanzes ( 4 facing 4 ).
O  :Swedish ( 3 facing 3 ).
P  :Grand March ( Polonaise ).
Q  :Quadrille ( square formation ).
R  :Foursome ( or Tulloch ).
U  :Union ( see Chivers ).
X  :Five(Six or Double Eight)some.
```

10.6 Appendix F: Person.dat

```
0 :(MISC ACTIVE 8 BARS).
00:ALL.
01:1 1W2M 1 1M2W.
02:1PTNRR PTNRL.
03:ALL 1.
04:1 4 2 3.
05:12M34M.
07:1W3M.
08:1 123 1CNR 1CNRCPL.
09:1M2M3M.
0F:1M2M1W2W 12.
0G:1 1M2W 1W2M.
0H:1CNRCPL2.
0N:1 1W3M.
00:13M.
0P:1W2M3W.
0Q:1W2M3W4M.
0R:1W2M4M.
0T:2M3W.
0U:2W3M.
0V:2W4W.
0W:34W.
0X:34M.
1 :1.
10:1 1W2M 1.
11:1 12 1.
12:1 12.
13:1 123.
14:1 1234.
15:1 1M2W.
16:1 12 123.
17:1 13.
18:1 CNRS1.
19:1 123 1.
1A:1 12 1 13.
1B:1 13 12.
1C:1 134.
1D:1 13 1.
1E:1 123 1CNRS.
1F:1 1CNRCPL 1 1CNRCPL2.
1G:1 1CNRCPL1.
1H:1 1CNRCPL2.
1I:1 1M2W 1 1W2M.
1J:1 1M2M.
1K:1 1M2 1 1W2.
1L:1 1M3W 1 1W3M.
1M:1 1M3W.
1N:1 1W 1W2M.
1O:1 13 123.
1P:1 12 13 123.
1Q:1 14.
1R:1 14 1.
1S:1 2.
1T:1 23.
1U:1 234.
```

10.7 Appendix G: Progress.dat

```
A: 0   0 .
B: 0X  0X.
C: 1   1 .
D:-1  -1 .
E: 1X  1X.
F:-1X -1X.
G: 2   2 .
H:-2  -2 .
I: 3   3 .
J:-3  -3 .
K: 2X  2X.
L:-2X -2X.
M: 3X  3X.
N:-3X -3X.
O: 0   2 .
P: 2   0 .
Q: 0   1 .
R: 1   0 .
S:-1   1 .
T: 1  -1 .
U:-1X  1X.
V: 1X -1X.
W:-2   2 .
X: 2  -2 .
Y: 0  -2 .
Z: ?   ? . (MISC UNASSIGNED FIGURES)
```

10.8 Appendix H: Figure.dat

```
AOC2 :ADV.Z RET.Z DNUP.Z OUTIN.Z /.
AON1 :PETNELAH.Z TRN.Z /.
AOP1 :PETNELA.Z CRC.Z /.
AOP4 :PETNELA.Z CRC.Z /.
AOP? :PETNELANOSTING.Z /.
AOS00:GRDSQ.Z /.
A1209:CRS.Z CST3.Z CRS.Z CST3BK.Z /.
A12P :CRS.Z CST3.Z CRS.Z CST3BK.Z /.
A131S:CRS.Z CST.Z CRSUP.Z CRS.Z CSTUP.Z CRSDN.Z /.
A151 :CRS.Z CSTUP.Z CRS.Z CST.Z /.
A161 :CRS.Z CST.Z CRSUP.Z /.
A1709:CRS.Z CST.Z CRS.Z CSTUP.Z /.
A171 :CRS.Z CST.Z CRS.Z CSTUP.Z /.
A179 :CRS.Z CST.Z CRS.Z CSTUP.Z /.
A17I :CRS.Z CST.Z CRS.Z CSTUP.Z /.
A17N :CRS.Z CST.Z CRS.Z CSTUP.Z /.
A17P :CRS.Z CST.Z CRS.Z CSTUP.Z /.
A19W :CRSDN.Z CSTUP.Z CRSUP.Z CST.Z /.
A1AN :CRSDN2.Z CSTUP.Z CRSUP.Z /.
A1B1 :CRSDN2.Z CSTUP2.Z CRS.Z /.
A1B9 :CRSDN2.Z CSTUP2.Z CRS.Z /.
A1C1 :CRS.Z CSTAPT.Z CRS.Z CSTAPT.Z /.
A1C2 :CRS.Z CSTAPT.Z CRS.Z CSTAPT.Z /.
A1CJO:CRS.Z CSTAPT.Z CRS.Z CSTAPT.Z /.
A1CN :CRS.Z CSTAPT.Z CRS.Z CSTAPT.Z /.
A1D9 :CRSDN.Z CSTUP.Z CRS.Z /.
A1F1 :CRS.Z CST.Z LDUP.Z CRS.Z /.
A1HI :CRS.Z CSTUP.Z CRSUP.Z CST.Z ST.Z /.
A1HP :CRS.Z CSTUP.Z CRSUP.Z CST.Z ST.Z /.
A201 :CRS.Z CSTBK.Z  /.
A221 :CRS.Z CST.Z CSTUP.Z CRS.Z /.
A225 :CRS.Z CST.Z CSTUP.Z CRS.Z /.
A229 :CRS.Z CST.Z CSTUP.Z CRS.Z /.
A22N :CRS.Z CST.Z CSTUP.Z CRS.Z /.
A291 :CRSDN.Z CSTUP.Z BKTOBK.Z /.
A2CJ1:CRS.Z CSTAPT.Z LDDN.Z CSTBK.Z /.
A2F1 :CRS.Z CST.Z LDUP.Z /.
A2H02:CRS.Z CSTAPT.Z ST.Z /.
A2J9 :CRS.Z CST.Z ST.Z CST.Z CRS.Z /.
A2KJO:CRS.Z CST.Z ST.Z TRN.Z /.
A2KOJ:CRS.Z CST.Z ST.Z TRN.Z /.
A2L09:CRS.Z CST.Z ST.Z CRS.Z CSTUP2.Z /.
A2L3 :CRS.Z CST.Z ST.Z CRS.Z CSTUP2.Z /.
A2LI :CRS.Z CST.Z ST.Z CRS.Z CSTUP2.Z /.
A2LO9:CRS.Z CST.Z ST.Z CRS.Z CSTUP2.Z /.
A2LOS:CRS.Z CST.Z ST.Z CRS.Z CSTUP2.Z /.
A2LP :CRS.Z CST.Z ST.Z CRS.Z CSTUP2.Z /.
A2M9 :CRS.Z CST.Z ST.Z CSTUP2.Z CRS.Z /.
A2N1 :CRS.Z CSTAPT.Z ST.Z TRN.Z /.
A2Q12:CRS.Z CST.Z WHLH.Z /.
A2R12:CRS.Z CST.Z CHNH.Z /.
A2S12:CRS.Z CST.Z CRCH.Z /.
A2U1 :CRS.Z CSTRT.Z TRN.Z CSTRT.Z /.
A2X1 :CRSDN.Z CSTUP.Z TRN.Z /.
```

10.9 Appendix I: Dance.dat

```
786CB(31S)MISS GRANT OF MONYMUSK/A6M1  CG61  AYY1  AVV3 :.
969P1(31S)LARGO LAW/AVV3  BG41  BTL2  C6H1 :977R1.
977R1(31J)LAST OF THE LAIRDS/BQ43  BQ43  CJ61  AEE13:969P1.
927R1(21R)CORN RIGS/A6H1  ASI1  ACG1  C8P2 :969P1.
938R1(31J)MACHINE WITHOUT HORSES/CIW17 DIX12 CCF2  AUU2 :969P1.
742W1(21J)BARLEY SUGAR/SGB  ASHA  A9Z5  A9Z6  ASAB  ACZ1  ASBA  C5W1 :.
742W1(21R)BEAZLYS DELIGHT/CH1  C3V55:.
748W1(21R)BANTERING BILLY A AVV2  C5W1 :.
748W1(21R)BANTERING BILLY B/N  AVV2  C5W1 :.
748W1(21R)BARTONS MAGGOT/YY5A AXX2  C5W1 :.
749J1(21R)BANTERING BILLY A AVV2  CCQ1 :750J1.
749J1(21R)BANTERING BILLY B/N  AVV2  CCQ1 :750J1.
749RU(21J)AMBICHO/H1  C181  AXW2  AUU2 :.
749RU(21J)AMBIGUO/H1  C181  AXW2  AUU2 :.
749RU(21J)ASH WEDNESDAY/Z5  A5Z6  CG61  AUU2 :750J1.
749RU(21J)AURETTS DUTCH SKIPPER/CZ1  AEE1  AYY5A CH82 :.
749RU(21R)ALEWIFE AND HER BARREL AHR2  AKK5A C181  AUU2 :750J1.
750HA(21J)ANTE GALLICAN/KK12 C181  AUU2 :.
750HA(21J)BARR O/YY51 AYY61 AVV2  C2W1 :750J1.
750J1(21J)ALL IN A HURRY/Z81  C181  AD01 :.
750J1(21J)BARBARAS MAGGOT/KK2  C181  AUU2 :.
750J1(21R)BARTONS MAGGOT/YY5A AXX2  C6H1 :.
789CB(21J)ARCHERS DANCE/UR2  CGG1  AUU2 :.
792CB(21R)A MARSHALLS R/JJ2  CGG1  A8A2 :.
792CB(21S)ATHOLL BROSE/II1  CGG1  AUU2 :.
792CB(21S)BACK OF THE CHANGE HOUSE/GG1  CYY61 AUU2 :.
793CB(21R)ALLY CROAKER/JJ2  CGG1  A8A2 :.
793RI(21J)BANTRY BAY BOYS/CK51  ALY1  AG61  A8A2 :.
795CB(21R)?KS R/HR2  CGG1  A8P2 :.
798CB(21W)ADMIRAL MITCHELLS W/S C8U2 :.
799BW(21S)BACK OF THE CHANGE/CG1  EYY66 1 :.
79?DA(21J)BEGGAR GIRL/CC5A A6U12:.
79?DA(21R)ATHOLL HOUSE/HR2  CGG1  AUU2 :.
79?HI(21J)AP SHENKIN/KK66 CCG1  A8P2 :.
800CA(21J)ABRAHAM NEWLAND/JJ2  CGG1  A8P2 :.
800CA(21S)ARNOLDS BOTTLE OF PORT/H1  AXX2  CG81  AEG12:.
800CA(21S)ARNOLDS BOTTLE OF PORT/H1  AXX2  CGG1  A8A2  AE71  A8P2 :.
800CB(21S)AIRSHIRE LASSES/H1  CGG1  AVV2 :.
801CB(21S)ARABELLA/HH2  CGG1  A8A2 :.
802PR(21W)ARCHDUKE CHARLES'S W/E3466 B8P2  AUU2 :.
803CB(21S)ATHOLL --- HOUSE/HR2  CGG1  AUU2 :.
804CB(21W)BATH W/XX2  CGG1  A8A2  AVV2  AUU2 :.
806LH(21R)A LA DEL CARO/H1  CG61  A8A2 :.
807LH(21W)ADMIRAL DUNCANS NEW W/JJBA CGG1  A8A2 :.
822CH(21?)ANALENA/SI1  ABD1  C2W2  A8P2 :.
822CH(21J)ATTEMPT/BD1  AXW2  ASI1  C2W2 :.
822CH(21J)AUGUSTE/UW2  MDU2  LFU2  A8P2 :.
823GD(21R)AN THEYRE A NODDIN/XX2  CGG1  A8P2 :.
957R1(21R)ALEWIFE AND HER BARREL AHR2  CKJ55 A4U57:969P1.
961R1(21J)AN THOU WERT MY ONLY DEAR/SGB  ASHA  ACZ1  AEES  CK455 AUU2 :969P1.
964R1(21S)ALLTSHELLACH/CK82  DGG2  ATL2  C8T2 :969P1.
969P1(21R)ABERNETHY LASSIES/EYY1  FK42K ACG1  C8P2 :977R1.
```

10.10 Appendix J: New Tables

Since preparing this thesis, the author has revised his entire data base using improved codes. The primary reason for this change was brought about by the fact that further knowledge of the figures and their inter-relationship could be better reflected in an expanded and rearranged version. Thus the original thirty-six alpha-meric code was expanded by the addition of lower case letters as follows. Note: in the case of the figure and person codes, the full code is of two positions with the second being a subdivision of the first.

10.10.1 Progress

The first field is the new code, and the second and third stand for the man and woman respectively. The calculation for men and women is indicated by a minus (-) sign if the progression is negative and by the letters "x", "h", "q" if progress across (all the way, halfway, or quarter the way); or "y", "i", "r", if back.

0: 0 0
1: 1 1
2: 2 2
3: 3 3
4: 0x 0x
5: 0y 0y
6: 0h 0h
7: 0i 0i
8: 0q 0q
9: 0r 0r
A: 0q 0q -1 -1
B: 1r 1r 0 0
C:-1 -1
D:-2 -2
E:-3 -3
F: 1x 1x
G:-1y -1y
H: 1h 1h
I:-1i -1i
J: 1q 1q
K:-1r -1r
L: 2x 2x
M:-2y -2y
N: 2h 2h
O:-2i -2i
P: 2q 2q
Q:-2r -2r
R: 3x 3x
S:-3y -3y
T: 3h 3h
U:-3i -3i
V: 3q 3q
W:-3r -3r
X: 2h 0h
Y:-1i 1i
Z:-1q 1q
a: 0 1
b: 1 0
c: 0 2
d: 2 0
e: 0 3
f: 3 0
g: 0 -1
h:-1 0
i: 1 -1
j:-1 1
k: 0 -2
l -2 0
m: 2 -2
n:-2 2
o:-1h 1h
p: 0h 2h
q: 1x -1x
r:-1x 1x
s:-2x 2x
t:-2x 2x
u: 1y 1y
v: 1i 1i
w: 1r 1r
x:-1x -1x
y:-1i 1i
z: ? ?

10.10.2 Figures

The actual figure code has a two character 'key' field. The first character indicates the set of figure types, while a second indicates the subset. Where the subset is typical, the initial character is duplicated as "66" would indicate a standard "down and back." (In the following tables only the first characters are shown as the entire code would necessitate an array of sixty-two by sixty-two just for the character strings, without their interpretations.)

0_:ADVRET (DIR)
1_:ADVRET X
2_:ADV X
3_:RET X
4_:ST ADV DNBK BKTOBK
5_:BKTOBK
6_:DNBK
7_:LDDN CST
8_:LDDN X
9_:LDDN ST
A_:LDRT LT SIDING
B_:LDUP CST
C_:LDUP X
D_:ST LD
E_:CRS CST CRS CST
F_:CRS CST CST
G_:CRS CST X
H_:CRS CRS
I_:CRS X
J_:CRSDN
K_:CRSUP RT LT
L_:ST CRS
M_:CST TRN
N_:CST LD
O_:CST CRS BKTOBK CST
P_:CST X
Q_:CST2 X
R_:CSTRT LT
S_:CST ST
T_:ST CST
U_:REL3SMIR
V_:REL3S
W_:REL3CMIR
X_:REL3C
Y_:REL3DIG
Z_:REL4
a_:CHN
b_:CHN CHN
c_:CHN X
d_:CRC CRC
e_:CRC TRN WHL
f_:CRC X
g_:ST CRC
h_:WHL WHL
i_:WHL X
j_:TRN TRN
k_:TRN CRS CST LD
l_:TRN X
m_:TRN ST
n_:ST TRN ST
o_:ST TRN X
p_:PROM
q_:PROG
r_:ST X
s_:BAL
t_:ST2 CRC WHL
u_:ST2 X
v_:CLP PAUS TRNSGL
w_:ST3
x_:ST4(FIG)
y_:ST4(SPEC)
z_:MISC

10.10.3 Persons

The actual person code has a one or two character 'key' field. The first character indicates the set of persons active at the beginning, or throughout, the figure, while the second indicates that the figure is completed with a subsequent combination of persons. If the person code were "13" it would indicate that couple one began a figure which was completed by couples one, two, and three.

0_:ALL
1_:1
2_:12
3_:123
4_:1234
5_:13
6_:14
7_:1CNR
8_:1CNR2
9_:1CNR3 or 4
A_:1M
B_:1W
C_:1M2W
D_:1W2M
E_:1M2M
F_:1W2W
G_:1M3W
H_:1W3M
I_:1M3M
J_:1W3W
K_:12M
L_:12W
M_:1M2
N_:1W2
O_:1M3
P_:1W3
Q_:1M4W
R_:1W4M
S_:1M2M3M
T_:1W2W3W
U_:1CNRS
V_:1CNRCPL
W_:12M3W
X_:1CNRCPL2
Y_:1M23W
Z_:1M2M3M4M
a_:1W2W3W4W
b_:1432
c_:1M2W1W2M
d_:1W2M3W4M
e_:13W
f_:1M2W3M4W
g_:12M34M
h_:134
i_:2
j_:23 (cnrs)
k_:2M3W
l_:24
m_:1M2M1W2W
n_:2W4W
o_:234
p_:3
q_:34
r_:1W2W3W1M2M3M
s_:1M2W3W4M
t_:1M2W3W
u_:1W2M3M
v_:1M2M3W4W
w_:1W2W3M4M
x_:MISC-M
y_:MISC-W
z_:MISC-234

11 Program "dance.s"

The program "dance.s" translates a dance record into a c.r.t. screen output and produces a graphics program in Fortran (Ghost-80).

"dn($ dn*:==search/match=and *.dns)/output=ssample.tem" produces a file of one record:

786CB(31S)MISS GRANT OF MONYMUSK/A6M1 CG61 AYY1 AVV3 :.

It's fields are: source (786CB), form (31S), name, and figures.

The source field (786CB) which is referenced in the file "source.bib" is "786CB:Campbell, 2ND COLLECTION, 1786." The field consists of a five character string, the first three indicating the last three digits of the year (1786), and the last two, a mnemonic code for the author (Campbell).

The form field (31S) which is referenced in the file "form.dat" as "3 :(triple minor) Contra," and " S:4/4 (Strathspey)." The field consists of three, one character, subfields: the first (3) indicates the type (longways or contra) and the size (3 couple or triple minor) of the set, the second (1) is an integer indicating the progression if the figures are correctly performed, the third (S) indicates the tempo by name (Strathspey) and score designation (4/4).

The name field is a variable length character string giving the name of the dance in upper case letters (MISS GRANT OF MONYMUSK).

The figure field (A6M1 CG61 AYY1 AVV3) is composed of a variable length string of four or five letter codes, one for each figure of the dance. Each code consists of three subfields indicating the progression (one character), the figure (two characters), and the persons involved (one or two characters). While all are found in the file "figure.dat", two other files are needed to complete the translation.

The first subfield (position 1 "A or C") is searched in the file "progress.dat" to give:

```
A: 0   0 .
C: 1   1 .
```

which provides the integers necessary to determine if both the first man and the first woman progress one place. Since the first characters in each figure are "A,A,C,A" which equal 0 + 0 + 1 + 0 = 1, for both the man and the woman the dance progression is 'legal' and can be checked against the progression code (1) in the form field (31S).

The second subfield (positions 2 & 3) is searched in the file "figure.dat" to give:

```
A6M1 :CST.Z CSTUP.Z /.
```

```
AVV3 :CRC&BK.Z /.
AYY1 :TRN&BK.Z /.
CG61 :DNBK.Z CST.Z /.
```

The 'words' here which describe the dance are now searched in the file "vocab.dat" to produce the character strings:

```
CRC&BK.Z^circle round & back ',21)^CTRMAG(50)^PLOTNC(PX,PY,54)--
     ^ELLPSE(.08,.09)^%,
CST.Z^cast ',5)^POSITN(M1X,PY+.05)^ARC(M1X,M1Y,180.0)^POSITN(W--
     1X,PY+.05)^ARC(W2X,W2Y,180.0)^PLOTNC(PX-.11,PY+.05,187)^P--
     LOTNC(PX+.11.05,187)^%,
CSTUP.Z^cast up ',8)^POSITN(M1X,PY+.05)^ARC(M1X,M1Y,180.0)^POS--
     ITN(W1X,PY+.05)^ARC(W2X,W2Y,180.0)^PLOTNC(PX-.18,PY+.05,1--
     71)^PLOTNC(PX+.18,PY+.05,171)^%,
DNBK.Z^down & back ',12)^POSITN(M1X,PY+.05)^ARCELL(PX,PY+.05,9--
     0.0,2.)^POSITN(W1X,PY+.05)^ARCELL(W1X,W1Y,90.0,2.)^POSITN--
     (PX,PY+.05)^JOIN(PX,PY-.1)^CTRMAG(30)^PLOTNC(PX,PY-.015,1--
     87)^PLOTNC(PX,PY+.015,171)^%,
TRN&BK.Z^turn & back ',12)^POSITN((M1X+W1X)/2,(M1Y+W1Y)/2)^CIR--
     CLE(.02)^POSITN(M1X,M1Y)^JOIN(W1X,W1Y)^%,
```

necessary to create the actual Fortran (Ghost-80) commands to perform the plotted output.

The third subfield (positions 4 or 4 & 5) is searched in the file "persons.dat" to give:

```
1 :1.
3 :123.
```

which indicates that figures one to three are performed by couple one while figure four, by couples one, two, and three.

The program "dance.s" reads a record from the "dance.dat" data base, identifies the various fields and checks the choreography for internal consistancy. If no error messages appear at the terminal, it can be assumed that the graphics output file will plot a dance. The command "sr dance < sample.tem" will produce two outputs, a quick summary with error messages at the terminal, and a file "output.for" which, when compiled (for output.for) and linked (link output,ghost/lib,t4662/lib), will produce a dance plot (run output).

In the following case, an error has been inserted to demonstrate the result if an 'illegal' combination of figures was assembled into a dance.

```
MISS GRANT OF MONYMUSK is a 32 bar ( triple minor ) Contra in --
     4/4 ( Strathspey ) time.
  Campbell ( 1786 ): progression =   1.

1: cast; cast up;
```

1: turn; turn;

123: circle round & back;

Progression Error: the man has moved 2 instead of 1 place(s).

Progression Error: the woman has moved 2 instead of 1 place(s).

The following is a copy of an input file (test.tem) and the terminal output for the dances found in Appendix A.

File "test.tem"

```
786CB(31S)MISS GRANT OF MONYMUSK/A6M1  CG61  AYY1  AVV3 :.
969P1(31S)LARGO LAW/AVV3  BG41  BTL2  C6N1 :977R1.
977R1(31J)LAST OF THE LAIRDS/BQ43  BQ43  CJ61  AEE13:969P1.
927R1(21R)CORN RIGS/A6M1  ASI1  AGG1  C8P2 :969P1.
938R1(31J)MACHINE WITHOUT HORSES/CIW17 DIX12 CCF2  AUU2 :969P1.
```

Terminal Output

```
MISS GRANT OF MONYMUSK is a 32 bar ( triple minor ) Contra in --
     4/4 ( Strathspey ) time.
  Campbell ( 1786 ): progression =   1.

1: cast; cast up;
1: down & back; cast;
1: turn & back;
123: circle round & back;

LARGO LAW is a 32 bar ( triple minor ) Contra in 4/4 ( Straths--
     pey ) time.
  Pillings ( 1969 ): progression =   1. Secondary source(s) - --
     1977R1.

123: circle round & back;
1: down & back; cross;
12: reel of 4 across;
1: cast; lead down cast up;

LAST OF THE LAIRDS is a 32 bar ( triple minor ) Contra in 6/8 --
     ( Jig ) time.
  RSCDS ( 1977 ): progression =   1. Secondary source(s) - 1969P1.

123: reel of 3 on side;
123: reel of 3 on side;
1: set cross cast; cross down cast up;
1 123: lead up cast; all turn;

CORN RIGS is a 32 bar ( duple minor ) Contra in 2/4 ( Reel or --
     Hornpipe ) time.
  RSCDS ( 1927 ): progression =   1. Secondary source(s) - 1969P1.

1: cast; cast up;
1: figure of 8 across; (in down);;
1: down & back;
12: pousette;

MACHINE WITHOUT HORSES is a 32 bar ( triple minor ) Contra in --
     6/8 ( Jig ) time.
  RSCDS ( 1938 ): progression =   1. Secondary source(s) - 1969P1.

1 13: set cast; hands across;
1 12: set cast up; hands back;
12: lead down 2 cast up; lead up cast;
12: chain of 4;
```

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13 Glossary

Active. A term denoting that couple which is moving its way down a set, usually starting as first couple.

Air. A term denoting a light tune or song.

Allemande. A German dance of three walking steps followed by a greve or step-greve-step-greve wherein the couples, standing side by side with both hands joined, turn each other in various ways.

Almain. See Allemande.

Alman. See Allemande.

Anglaise. An 18th century French term referring to English country dances and occasionally hornpipes.

Assemble. To bring ones feet together.

Assembly. A social gathering, in this context for dancing.

Back-to-back. A dancing figure wherein one passes ones partner by the right and returns backwards by the left.

Balance. A setting figure, especially where persons are joined and facing opposite directions.

Barn dance (1). An American rural meeting held for dancing, and later (1910) programmes of other ethnic entertainment.

Barn dance (2). From 1880-1910, a British dance form more precisely known as the Military Schottische.

Basse dance. A court dance of the Renaissance involving a combination of dignified striding steps.

Bernicea. That part of the old kingdom of Northumbria now in Scotland, including the Lothian and Border regions.

Bourre'e. A French folk and court dance giving rise to one form of setting step or setting step movement.

Branle. An ancestor of the contradance, performed by couples in a circle or in a line. The term (earlier a basse dance step), after 1500 was substituted for the earlier carole.

Bumpkin set. A form of longways set in three lines down the room, with men only in the center line.

Called. A term indicating a dance where the figures are announced.

Caper. See Set.

Cast. To turn in one direction to dance up or down in another direction.

Ceilidh. A visit, implies group inspired entertainment including music, song, story, games, and dancing.

Ceum. Step, walk, pace, move. This Gaelic word has been associated with the terms 'coisich' and 'siubhail' to indicate the Strathspey (traveling step or change of step hop) and skip change of step (nimble step, two-step, or reel time traveling step) respectively. The origins of these terms are possibly to be found in modern and not traditional Gaelic.

Chain. A circular hey with hands.

Change of step hop. See Strathspey.

Character dance. A solo jig or hornpipe with miming actions.

Chasse. See Slip-step.

Circassian Circle. A dance form using Swedish progression which gives its name to several combinations of figures.

Circle. A term denoting any number of persons dancing in a ring.

Circular reel. See Round (2).

Clog dance. A type of step-dance performed by dancers wearing clogs. See Jig.

Common Schottische. See Setting.

Contradance. The term used for longways formation of country dance in this thesis.

Contratanz. German for contredanse.

Contredanse. Popular French dance of the 18th century, stimulated by the introduction of the English Country Dance into the French court, 1685-8.

Corner couple. One's corner and that corner's partner.

Corner. In a longways country dance the first corner is across the dance to the right, the second to the left. In a square dance the person nearest that is not one's partner.

Cotillion. A French square dance related to the quadrille, the music consisting of strings of waltzes at first, and later, polkas, mazurkas, and gallops.

Country dance. A traditional English dance in a set of two lines (longways) wheren the first couple performs figures with those below them and progesses down the room.

Couple dance. A dance where the room is organized by partners without reference to the rest of the assembly.

Cross. To move from one side of the set to the other.

Cutting. In piping, a form of doubling or ornamentation.

Dancing masters. Professional teachers of dance, often peripatetic in Scotland.

Deasil. To turn sunwise to induce good fortune (see withershins).

Delight. See Hornpipe (2).

Demonstration. See Exibition.

Dos-a-dos. See Back-to-back.

Double triangle. A figure in which the active couple set back to back with hands joined to the corners.

Ecossaise. A French couple dance after the 'Scottish' manner. See Schottische.

Eightsome. See N-some.

Fiddle. A generic term for any member of the violin family, including the kit.

Figure (1). A short musical idea, motif, or phrase, usually in two clauses of four bars each.

Figure (2). A combination of dance movements with a recognized name and description usually danced to a musical figure (1).

Figure of Eight. See Hey.

Fling. To dance, throw legs about, caper, a term also used for the Highland Fling.

Foot it. See Setting.

Foot positions. See Positions.

Footwork. See Stepping.

Foursome. See N-some.

Galop. A 2/4 time dance wherein the couple holding each other as in a waltz, proceeded with springing steps down the room. See Slip-step.

Games. See Highland games.

Gavotte. A French duple-metre dance derived from the Branle.

Gigue. See Jig.

Gille brogue. A serving man's shoe, now worn by the members of some organizations for dancing.

Greve. A step wherein one puts ones weight on one foot and holds a beat as the other foot is lifted.

Guizers. One who disguises oneself or goes about as a mummer.

Hands across. See Wheel.

Hands round. See Circle.

Hay. See Hey.

Hey (1). A dance form related to the carole and farandole.

Hey (2). A figure characterized by serpentine movements in line or round a circle.

High dance. A term denoting a Highland solo step dance.

Highland air. See Air.

Highland Fling. A Highland solo dance made up of various strathspey setting steps.

Highland games. Competitions associated with Highland gatherings, including dance, music, and traditional sports. Highland line. A Line drawn from northeast to southwest separating the Gaelic-Celtic from the Scots-Germanic populations of Scotland. The position of this line has moved and in historical times had been gradually moved inland and to the north.

Highland Schottische. See Schottische.

Highland. A term denoting that part of Scotland Northwest of its lower, more developed and non-Gaelic part.

Hopjig. See Slip-jig.

Hornpipe (1). A generic term for a form of wind instrument composed of a wooden pipe ending in the bell of a cows horn.

Hornpipe (2). A form of longways country dance devised by dancing masters of the 17th century in syncopated 3/2 time, displaced in the 18th century by 2/4.

Hornpipe (3). A form of solo step dance.

Hornpipe (4). A form of tune, formerly in syncopated 3/2 time, later in 2/4. The Hornpipe in Ireland has two accent to the bar as opposed to the reel with one. But in Scotland, there are many tunes which retain the term hornpipe in their name but are

actually played as reels.

Hullochan grip. A hold, used in the Reel of Tulloch, while turning.

Irish Jig. See Slip-jig.

Isles. A term usually denoting the Hebrides.

Jette. A term denoting the extension of the foot.

Jig (1). A Baroque instrumental dance which is, along with the Allemande, Courante and Sarabande, a movement of a suite.

Jig (2). A country dance done in 6/8 time.

Jig (3). A solo dance using a variety of stepping.

Jig (4). A term for any form of 19th century dance used interchangeably with hornpipe and reel.

Jig it. See Setting.

Jigg. See Jig (3).

Kit. A term for the dancing master's Fiddle.

Labanotation. A system of dance notation indicating both music and choreography (see Bibliography-Knust).

Ladies step dance. See Step-dance.

Lead out sides. A figure wherein the active couple casts apart on one side of the dance and follows the track of a hey round their corner couple.

Licht dancing. Light footed or less formal dancing.

Lilt. See Slip-jig.

Long-dance. See Country Dance.

Longways. A formation in which facing couples, form lines down the length of the room.

Maggot. See Hornpipe (2).

Measure. An English dance term denoting a sequence of dance steps corresponding to a strain.

Minor set. In a longways set, that subset which includes those dancing together.

Minuet. A French dance in slow to moderate triple metre, popular from mid-17th century to the late 18th.

Mixer. A dance where after a repetition, one changes partners.

Morris dance. A generic term applied to certain processional dances, sword dance, or mummers'play, usually in England.

Motif. A short musical idea or figure formed by the melody, harmony, and/or rhythm.

Mouth-music. Dance music made by singing.

Mummers. See Guizers.

N-some. A dance using 'n' number of persons.

National dance (1). Ethnic dance.

National dance (2). One of a collection of Scottish solo dances.

Nethergait. See Deasil.

Nine-eights jig. See Slip-jig.

Ninesome. See N-some.

Old time dance. A dance of a former historic era still performed. See round dance.

Partner. The person with whom one dances.

Pas-de-Basque. The standard setting step used in fast time country dances.

Piobcorn. See Hornpipe.

Pipe. A generic term for a tubular aerophone. In Scotland, often refers to the bagpipe, and sometimes the fife.

Polka. A popular two-step dance of the 19th century executed in 2/4 time.

Positions. The standard foot positions as in ballet.

Poussette. To dance round and round with hands joined as in a country dance.

Programme. A term for a listing of an evening's dancing entertainment.

Progression. The movement or way of movement of an active couple.

Promenade. A dance movement with a couple moving round a circle.

Puirt-a-bial. Mouth-music formed by a rhythmic song made up of both lexic and non lexic vocables.

Pyrrhic. A generic term for a dance performed by armed participants, which includes the Sword Dance.

Quadrille (1). A square contredanse popular in the 19th century.

Quadrille (2). A quadrille (as in 1) consisting of five distinct parts or figures with music to match each part.

Rant. A short country dance from the Scottish lowlands and northern England using a two-step in 2/4 or 6/8 time.

Reel (1). An indigenous Scottish dance with two elements: setting and traveling.

Reel (2). A serpentine dance figure also known as a hey.

Reel (3). A generic term for dance music of rapid smooth-flowing quaver movement.

Rigaudon (1). A popular form of countredanse in duple rhythm.

Rigaudon (2). A particular form of setting step characteristic of the bouree.

Rights and lefts. See chain.

Rondel. A modern form of two-couple progression in Scottish country dancing.

Round (1). A term referring to a country dance.

Round (2). A generic term for a dance with performers linked in an arc or circle. A dance related to the farandole or carole called the branle.

Round dancing. A choreographed form of old time dancing.

Round reel. See Round (2).

Round the room. See Swedish progression.

Ridhleach. A dance or reel.

Schottische. A couple dance like a two-step introduced into England in 1848 as a German Polka.

Scotch jig. See Hornpipe (3).

Scotch measure. A generic term for step dance in 2/4 time.

Scotch snap. A rhythmic motif where in the beat is divided into a very short first note followed by a longer note, often notated with a semiquaver and a unstressed dotted quaver.

Scotch. Pertaining to Scotland. See Scottish.

Scots. The Lowland language of Scotland as opposed to Gaelic.

Scottish. Pertaining to Scotland. See Scotch.

Seann Triubhas. A solo dance, refering to old trews (breeches and stockings in one piece).

Set (1). That combination of people who are dancing together, in longways or quadrille formation.

Set (2). One performance of a setting step.

Set dances. Dances, usually for exibition, which are complete in one repetition, and do not progress.

Setting. Dancing a step in place as opposed to traveling.

Six-eight jig. See Jig.

Sixteensome. See N-some.

Skip-change-of-step. See Two-step.

Skip-step. Step-hop.

Slip-jig. A form of jig in 9/8 time.

Slip-step. Step-assemble-step-assemble as in the galop.

Song tune. See Air.

Square dance. See Quadrille.

Step-dance. A generic term for solo dancing.

Steps. Combinations of movements for one or more bars which form a choreographic motif.

Strain. A musical phrase, sentence, or figure, usually the first half of a reel, Strathspey, or song medley.

Strathspey (1). A reel tune of slower tempo than a reel, allowing for more elaborate steps both in setting and traveling.

Strathspey (2). A slow country dance. A solo dance.

Strathspey minuet. A twasome, sometimes danced to a Strathspey tune.

Style. A term denoting the manner of expression in which a dance or melody is executed.

Suite. An ordered set of instrumental pieces to be performed at a single sitting.

Swedish progression. A form of round-the-room dance where couples face couples and progress the way they are facing.

Swing. See Turn.

Sword Dance. In Scotland, a solo dance performed over swords in a supine position. See Pyrrhic.

Tabor. A small side drum with gut snare.

Tackety-boot. A boot studded with hob-nails.

Tempo. The speed at which a musical or dance performance proceeds.

Thirty-twosome. See N-some.

Tournee. A modern form of two-couple progression in Scottish country dancing.

Traveling step. A step performed to change location within a dance.

Tulloch. A hillock or refering to the Reel of Tulloch.

Turning. To take one by one or two hands and perform part of a revolution.

Twasome. A Scots term for Twosome. See N-some.

Two-step. A fast dance step to a quick-quick-slow rhythm.

Variations. A form in which successive figures are altered or presented in altered settings.

Waltz. A triple time dance popular in the 19th century.

Wethergait. See Withershins.

Wheel. Dance in a circular direction with hands joined across the circle.

Whim. See Hornpipe (2).

Withershins. To move anticlockwise against the sun.