

TONAL DESIGN OF THE
AMERICAN ORGAN : 1910 - 1969

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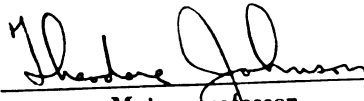
Tonal Design of the American Organ:
1910 - 1969

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ABSTRACT

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By

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Although organ design has been discussed a great deal in organ circles, little in the way of a broad historical survey has been forthcoming concerning the American instrument. The various changes which have come about in the past sixty years have been dealt with largely in piecemeal fashion and the observer is left with fragmented accounts of organ design in America.

The purpose of this study is to give an account of the changes in tonal design as they occurred after the first decade of the twentieth century. Attention is focused on the various builders who most significantly altered the course of American tonal design, and their contributions are analyzed in relation to those of their contemporaries. Specifications are quoted and examined in order to illustrate, insofar as possible, the basic approaches of American

organ builders.

This thesis is supplementary to three public organ recitals given on July 23, 1967; June 24, 1968; and May 6, 1969, in which the following compositions were performed: Jehan Alain, Choral Dorien; J. S. Bach, Prelude and Fugue in D Major (BWV 532), Toccata and Fugue in F Major (BWV 540), Dies sind die Heiligen zehn Gebot (BWV 678), and Schmucke dich, o liebe Seele (BWV 654); Dietrich Buxtehude, Magnificat primi toni; Nikolaus Bruhns, Prelude and Fugue in G Major; Jean Francois Dandrieu, Plein Jeu, Trio, and Basse de Trompette; Hugo Distler, Partita: Nun komm der Heiden Heiland; Cesar Franck, Choral in B Minor; Girolamo Frescobaldi, Toccata quinta (Book II, 1637), Toccata per l'Elevation (Mass of the Madonna), and Canzona seconda (Book II, 1637); Paul Hindemith, Sonate III; Felix Mendelssohn, Allegretto (Sonata IV); W. A. Mozart, two Kirchensonaten (K. 245 and K. 328); Jan Pieter Sweelinck, Fantasia chromatica; Leo Sowerby, Toccata; and Ralph Vaughan Williams, Bryn Calfaria, Rhosymedre, and Hyfrydol.

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James Raymond Sharp

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INTRODUCTION

When one considers the philosophies of tonal design at work in American organ building in 1969, one is confronted with a myriad of possibilities. Differing concepts are discernible, and it is possible to find builders whose sources of inspiration may be separated by as much as two hundred years. In addition, it is evident that tonal design and related problems have undergone significant and far-reaching changes since 1910. The process of change has been slow and has involved many individuals, both organists and organ builders. The facts surrounding these new tonal ideas have often been clouded because organ builders generally are more concerned with carrying out their aims than in writing about them.

It is the intent of this thesis to clarify the events and ideas which combined to bring about changes in the tonal design of the American organ. Particular attention is paid to those organ builders whose work was most significant. Stop lists have been selected to illustrate the various trends and changes which have occurred. Many specifications

have been studied, and the stop lists cited have been carefully chosen as representative. Stops are listed in three columns for those of narrow scale, wide scale, and reeds, respectively. A further division of narrow-scaled stops is made for strings and principals, respectively. A discussion of each disposition is presented in order to point out its significant characteristics and relationship, where applicable, to other instruments.

CHAPTER I

FUNDAMENTALS OF TONAL DESIGN IN THE CLASSIC ORGAN

The Basic Principles

The upsurge of interest in the tonal design of organs in the United States during the past thirty-five years has been remarkable. One needs only to compare pages of professional periodicals of the years 1920 and 1960 to see this. It seems undeniably true that by far the most interest in such matters centers around the problem of a tonal design which will satisfy the demands of literature for the organ, which is diverse in many ways.

It also seems reasonable to assert that the basic movement in reform of tonal design in the American organ has been, however slow-moving, a return to the fundamental principles of design epitomized by French and German organs of the late seventeenth and early eighteenth centuries, for it has become increasingly clear that organ building reached a very mature tonal level during that period.¹ Almost all current American organ builders have in one way

¹William L. Sumner, The Organ (London: Macdonald and Company, 1958), p. 201.

or another reassessed their own approaches to tonal design in relation to the fundamentals inherent in the old European organs of that time.

In order to have a complete perspective on this movement it is necessary to formulate some ideas concerning these basic principles. The choice of French and German organs as most representative may be justified by the fact that the organs of those countries most consistently and completely exhibit the principles of design which brought the instrument to one of its highest artistic expressions. On the other hand, it is apparent that the organs of the Latin countries followed somewhat different paths during that period. This does not mean that radically different aesthetic ideas were at work in these countries. On the contrary, certain fundamentals of design which are found in the North European organs are also found, albeit at times in truncated form, in instruments of the Latin countries. Nevertheless, the organs of Spain and Italy exhibit characteristics peculiar to their own cultures which render them less satisfactory for purposes of illustrating basic premises.

Representative of the tonal design of organs built in North Germany and Holland is the instrument in the Michaelskerk, Zwolle, The Netherlands. This splendid organ, built in 1718 by Arp Schnitger and

his son, Franz Caspar, is certainly one of the most complete tonal designs of the period. Since it has remained relatively unaltered through the years, it affords the observer a comprehensive and accurate picture of organ building at that time. The disposition of stops is as follows:²

Hoofdwerk

16' Prestant	16' Quintadena	16' Trompet
8' Octaaf	8' Roerfluit	8' Trompet
4' Octaaf	4' Speelfluit	8' Vox Humana
2' Prestant	2 2/3' Nasat	
II Ruischpijp		
IV Mixtuur		
III Cymbel		

Rugwerk

8' Prestant	8' Quintadena	16' Fagot
4' Octaaf	8' Roerfluit	8' Schalmei
2' Superoctaaf	4' Fluit	
IV Scherp	2 2/3' Quintfluit	
III Cymbel	II Sesquialter	

Bovenpositief

8' Prestant	8' Holpijp	8' Viool di
8' Viola	4' Holfluit	Gamba
4' Octaaf	2' Woudfluit	
2 2/3' Quinta	1 1/2' Sifflet	
2' Superoctaaf	II Terzian	
V Scherp		

Borstwerk

4' Prestant	8' Fluitgedekt	8' Dulciaan
2' Superoctaaf	4' Roerfluit	8' Regaal
IV Mixtuur	3' Spitsfluit	
	2' Gemshoorn	
	1' Nachthoorn	
	II Sesquialter	

²John Fesperman, The Organ as Musical Medium (New York: Coleman-Ross Company, Inc., 1962), pp. 59-60.

Pedaal

16' Prestant	16' Subbas	32' Fagot
8' Octaaf	8' Holpijp	16' Basuin
4' Superoctaaf	2' Vlakfluit	8' Trompet
VIII Mixtuur		4' Trompet
		2' Cornet

A description of the tonal effect of this instrument depends not only on the stops themselves but also has to do with the construction and layout of the organ. A survey of various organ cases built in the seventeenth century reveals that the placement and location of the pipes were precisely thought out and executed. Studies of representative specifications show that there is a definite correlation between the placement of a division and its tonal relationship to the other divisions within the total design.

The physical layout of the five divisions in the Zwolle organ is shown in Figure 1. It will be seen that each division, containing all the pipes playable from a given keyboard or pedalboard, is placed within its own enclosure which in turn forms a part of the total scheme (see Figure 2). The physical location of each division plays a part in the tonal scheme for, from the standpoint of the listener, the lively "presence" of the Rugwerk gives quite a different effect from the more distant Hoofdwerk. The pedal stops are divided between the two towers which flank the main

(A)
Manuals

(B)
Hoofdwerk

(C)
Rugwerk

(D)
Borstwerk

(E)
Boven-positief

Hoofdwerk
 Prestant 16'
 Quintadena 16'
 Octaaf 8'
 Roerfluit 8'
 Octaaf 4'
 Speelfluit 4'
 Nasaat 3'
 Superoctaaf 2'
 Cymbel 3 sterk
 Ruispijp 2 sterk
 Mixtuur 6 sterk
 Trompet 16'
 Trompet 8'
 Vox Humana 8'

Rugwerk
 Prestant 8'
 Quintadena 8'
 Roerfluit 8'
 Octaaf 4'
 Fluit 4'
 Quintfluit 3'
 Superoctaaf 2'
 Sesquialter 2 sterk
 Scherp 4 sterk
 Cymbel 3 sterk
 Fagot 16'
 Schalmei 8'

Bovenpositief
 Prestant 8'
 Holpijp 8'
 Viola 8'
 Quinta 6'
 Octaaf 4'
 Holfluit 4'
 Quinta 3'
 Superoctaaf 2'
 Woudfluit 2'
 Siffler 1½'
 Tertiaan 2 sterk
 Scherp 5 sterk
 Viool di Gamba 8'
 Trompet 4'

Borstwerk
 Fluitgedekt 8'
 Prestant 4'
 Roerfluit 4'
 Spitsfluit 3'
 Superoctaaf 2'
 Cemshoorn 2'
 Quintanus 1½'
 Nachthoorn 1'

Sesquialter 2 sterk
Mixtuur 4 sterk
Dulciaan 8'
Regaal 8'

Pedaal
 Prestant 16'
 Subbas 16'
 Octaaf 8'
 Holpijp 8'
 Superoctaaf 4'
 Vlakfluit 2'
 Mixtuur 8 sterk
 Fagot 32'
 Basuin 16'
 Trompet 8'
 Trompet 4'
 Cornet 2'

Arp en F. C. Schnitger
 1718-1721
 D. A. Flentrop, Restauratie
 1953-1955

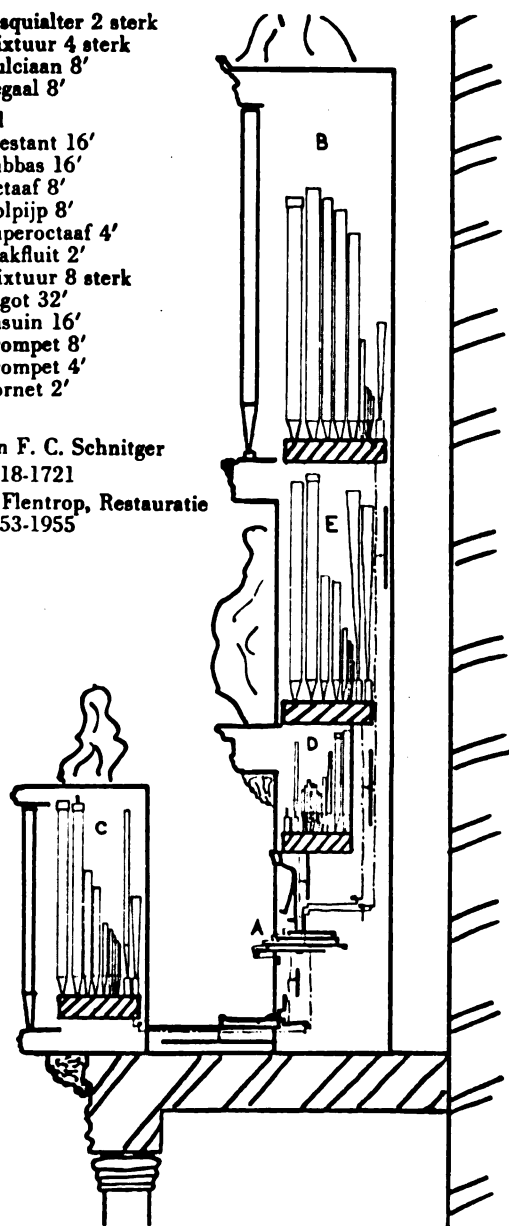


Fig. 1.--Organ in Michaelskerk, Zwolle, Holland

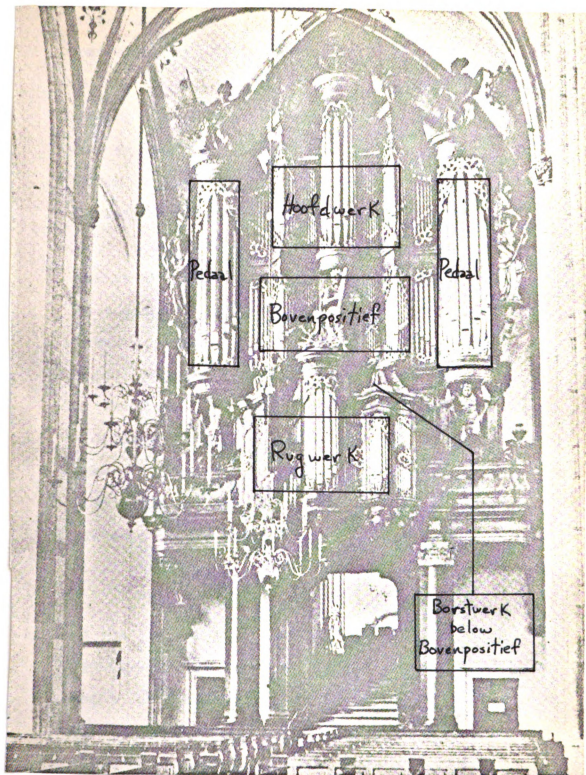


Fig. 2.--Front of the organ in Michaels-
kerk, Zwolle, Holland.

case, with pipes sounding C, D, E, F#, G#, and A# on one side, and those sounding C#, D#, F, G, A, and B on the opposite side. The technique of placing separately encased divisions in different locations was an important facet of the art, one which was taken up later by the organ reform movement in Germany and referred to as the werk-prinzip.

One of the important elements of the tonal design of these organs is the basing of each division on a given Principal pitch. Above this basic pitch the Principal chorus is carried up through stops of higher pitches, surmounted by the mixture stop(s) of the division. This is essential toward achieving a differentiation between divisions. Schnitger and other builders were very conscious of the need for variety of sounds and strove to impart this variety not only to the individual stops but also to the divisions as well.³

In the Zwolle organ the Hoofdwark is based on the sixteen-foot pitch (Prestant); above this foundation stop are the other Principal registers, the eight-foot Octaaf, the four-foot Octaaf, and a two-foot Superoctaaf. Completing the chorus are three mixtures, Ruispijp, Mixtuur, and Cymbel, each sounding at successively higher pitches.

³John Fesperman, The Organ as Musical Medium (New York: Coleman and Ross Company, Inc., 1962), p. 61.

The Rugwerk and Borstwerk are based on eight-foot and four-foot pitches, respectively, with correspondingly higher pitched mixtures. Actually, the Scherps of the two divisions sound the same pitches at the lowest key, but the Borstwerk stop has a different breaking pattern so that it sounds generally higher than that of the Rugwerk.⁴

The basic pitch of the Bovenpositief is eight-foot, but its Scherp sounds at a lower pitch than that of the Rugwerk.⁵ The pedal is pitched at sixteen-foot pitch (Prestant), with the chorus continued through a Mixtuur of eight ranks. Other similar instruments of this period often had pedal divisions pitched one octave below the Hoofdwerk, but the Zwolle organ duplicates the foundation pitch of the Hoofdwerk on the pedal. It has been suggested that the absence of a thirty-two-foot Prestant in the pedal may have been due to the lack of adequate height in the organ gallery.⁶

⁴Fesperman, The Organ as Musical Medium, p. 61.

⁵This writer can attest to the fact of the interchangeability of Mixture terminology as used by Schnitger and others, having encountered numerous instances while inspecting many old European organs.

⁶Fesperman, The Organ as Musical Medium, p. 61.

It is important to note that the tone quality of the pipes also played a role in the differentiation of divisions. The scaling and voicing of two identically pitched stops could produce quite different results, a technique which the seventeenth-century organ builders utilized to great advantage.

Complementing the narrow-scaled principal choruses were families of wide-scaled stops (flutes) sounding at various pitches from sixteen-foot through one-foot. Since these flute stops were generally of the same dynamic level as the principals, they could be used not only alone or in various combinations of flute stops but also with the principal stops. Almost all stops would blend with one another, allowing maximum possibilities for different qualities of sound in combining the various registers.

The variety of construction of the flute stops was considerable, giving a wide range of tone qualities in that group of stops. As with Principal stops, flute registers could also vary in scaling and voicing, further increasing the tonal possibilities of the flutes. In addition, the use of different types of flutes, e. g. Roerfluit 8' and Speelfluit 4' on the Hoofdwerk and Holpijp 8' and Holfluit 4' on the Bovenpositief, served to reinforce the practice of differentiating between divisions.

A few compound stops of flute quality were incorporated in the design, the most common being the Sesquialter (sic) and the Terzian. Although they are similar in quality, the Sesquialter sounded the twelfth and seventeenth, while the Terzian often was pitched higher, at the seventeenth and nineteenth.⁷

The remaining stops, the reeds, also were constructed in a variety of ways, which afforded the builder a wide assortment of sounds. Furthermore, reeds could be made in fractional lengths, a factor which affected their tone quality considerably. Whereas a Principal pipe of eight-foot length would sound but a single pitch, reeds of eight-, four-, two-foot, and even shorter lengths could be made, all of which would sound the same eight-foot pitch. This would enable the builder to place reeds of a suitable tone-quality within each division. As an example, the Principal pitch of the Hoofdwerk in the Zwolle organ is at sixteen-foot and the lowest sounding reed in that division is also at sixteen-foot pitch. Since the pitch of the Rugwerk is at eight-foot, the builder used a fractional length reed, the Fagot 16', in order that the more incisive

⁷Jack C. Goode, Pipe Organ Registration (New York: Abingdon Press, 1964), pp. 203-204.

sound of that stop would blend better with the eight-foot principal chorus. In a similar manner the Borstwerk was pitched at the four-foot level and included a fractional length reed at eight-foot pitch and a one-eighth length Regal 8'.

Other factors were at work in this approach to organ sound. The voicing of the stops, for example, was of critical importance. Nicking, the cutting of notches in the metal portions of the windway, was avoided. This enabled the builder to gain the maximum harmonic development from each pipe, giving a certain brightness and clarity to the sound. In addition, each pipe spoke with transient sounds at the initial instant of speech. This gave the sound life and vitality and contributed to rhythmic clarity.⁸

Voicing techniques produced sounds which were full and yet mild in character. Harmonic richness was always present, but there was not a trace of harshness. As a result, it was possible to combine stops on these old organs in almost endless ways and also possible to play for long periods of time without tiring the ear.

That the same fundamentals of design were applied

⁸ Joseph Blanton, The Organ in Church Design (Albany, Texas: Venture Press, 1957), pp. 57-58.

to small organs as well is shown in the disposition of the organ at the parish church in Ludingworth, Germany.⁹

Hauptwerk

8' Prinzipal	16' Quintade	8' Trompete
4' Oktav	8' Rohrflöte	
2' Oktav	4' Rohrflöte	
III Rauschquinte	3' Nasat	
VI Mixtur		
III Zimbel		

Rück-positiv

4' Prinzipal	8' Gedakt	8' Vox humana
2' Oktav	4' Spielflöte	
IV-VI Mixtur	2' Waldflöte	
	1 1/3' Sifflöte	
	II Sesquialtera	
	II Tertian	

Oberwerk¹⁰

2' Oktav	4' Gedackt	8' Regal
IV Mixtur	3' Hohlquinte	

Pedal

8' Prinzipal	16' Gedackt	16' Posaune
4' Oktav	2' Nachthorn	8' Trompete
III Rauschquinte		2' Kornett
V-VI Mixtur		

In this instrument the differentiation of pitches between divisions is carried out consistently, with

⁹Gotthold Frotscher, Geschichte des Orgelspiels und der Orgelkomposition (Berlin: Verlag Merseburger, 1966), I, 325.

¹⁰In 1959 the writer inspected the Ludingworth organ and had a lengthy conversation with the organist. The organ stood as originally constructed and had a Brustwerk, not Oberwerk, as quoted in Frotscher.

the Hauptwerk grounded at eight-foot, the Ruckpositiv at four-foot, and the Oberwerk at two-foot. Here also the pedal is pitched at the same level as the Hauptwerk. Corresponding to the manual pitches are the basic mixtures, Hauptwerk Mixtur at $1\frac{1}{3}'$, Ruckpositiv Mixtur at $\frac{2}{3}'$, and Oberwerk Mixtur at $\frac{1}{4}'$. Reeds are placed in the divisions as usual, with a plentiful assortment in the pedal. Flute stops are distributed at various pitches on all divisions, complementing the Principal stops. From the design of this smaller instrument it is clear that the fundamental approach is identical to that of the Zwolle organ.

The French Organ

Compared to the German organ of the period the French instrument is at once both similar and different. Numerous important organs had been built in France during the fifteenth and sixteenth centuries, a fact attested to by the survival of several fine cases. These organs laid the groundwork for the expansion of resources which characterize the instrument of the French Classic period. One of the most exhaustive treatises dealing with the French organ, its construction and tonal resources, dates from this period: Dom Bédos de Celles, L'Art du Factuer d'Orgues, published in Paris in 1766 and 1778. The work describes the art of French

organ building, giving copious information on matters such as the construction of the instrument, descriptions of pipe-work, principles of tonal design, as well as suggestions for combining the stops.¹¹

Typical of French organ building during this period is the instrument of St. Louis des Invalides, Paris, built in 1679 by Alexandre Thierry. The disposition of stops is as follows:¹²

Grand Orgue

16' Montre	16' Bourdon	8' Trompette
8' Montre	8' Bourdon	8' Vox Humaine
4' Prestant	4' Flûte	4' Clarion
2' Doublette	3 1/5' Grosse tierce	
V Fourniture	2 2/3' Nasard	
V Cimbale (sic)	1 3/5' Tierce	
V Grand Cornet	2' Quarte de nasard	

Positif

8' Montre	8' Bourdon	8' Cromhorne
4' Prestant	4' Flûte	8' Petite Vox Humaine
2' Doublette	2 2/3' Nasard	
IV Fourniture	1 3/5' Tierce	
III Cimbale	1 1/3' Larigot	

Récit	V Cornet	8' Petite Trompette
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¹¹Gustave Reese, Fourscore Classics of Music Literature (Indianapolis: Bobbs-Merrill Company, Inc., 1957), pp. 75-76.

¹²Felix Raugel, Les Grandes Orgues des Eglises de Paris et du Département de la Seine (Paris: Librairie Fischbacher, 1927), p. 57.

Écho

III Cimbale

8' Bourdon
V Cornet

8' Cromhorne

Pédales

8' Flûtes

8' Trompette

In essence, the French instrument parallels the German approach to tonal design. One of the basic tenets, the differentiation of pitch between divisions, is carried out in the two main divisions of the French organ, the Grand Orgue and Positif, which are pitched at sixteen-foot and eight-foot respectively. Each division contains Principals from foundation pitch through one or two mixtures, designated Fourniture and Cimbale. The scaling of these stops was made somewhat smaller for the Positif than for the Grand Orgue.

Appropriately, the French builders spared little expense in the making of organs. Expensive materials were put into the pipework throughout the organ. Almost all wood stops were made of oak and the metal registers were made of tin, including not only those in the case prospect, but also those inside the case.¹³

One point of divergence from the typical German organ is in the expanded use of mutation stops.

¹³Hans Klotz, Das Buch von der Orgel (Kassel: Barenreiter Verlag, 1955), p. 129.

In the St. Louis des Invalides organ there are no less than three such stops on the Grand Orgue and three on the Positif. These mutations, in addition to the five-rank Cornet (8', 4', 2 2/3', 2', 1 3/5') on the Grand Orgue, give a total of eight off-unison ranks between the two divisions, a larger number than was usually found in the German instrument.

Of further interest are the reed stops which were made in a slightly different way from those of the German style. Shallot openings were wide and parallel, giving an intensely rich tone with strong upper partials.¹⁴ In this respect the French builders must have excelled, for their reeds were instantaneous in speech and possessed a tone which was light but intense, giving the full ensemble a sense of great power.

On the St. Louis des Invalides organ there are two chorus reeds on the Grand Orgue, a Trompette 8' and Clarion 4'. In all there are seven reeds distributed over the four manuals. It should be pointed out that Dom Bédos in his L'Art du Facteur d'Orgues gave several suggestions for drawing up the disposition of stops for an organ; in each case, he called for a substantial number of reeds.¹⁵

¹⁴Robert Noehren, "Poitiers Cathedral has Famous Cliquot Organ Built in 1791," The Diapason (June, 1949), pp. 28-29.

¹⁵Dom Bédos de Celles, "L'Art du Facteur d'Orgues," translated by William L. Sumner, Organ Institute Quarterly, VII, No. 3, pp. 29-31.

Another major difference between French and German approaches is in the make-up of the third and fourth manual divisions. In the German scheme these divisions are given their own completeness and are kept in a logical pitch relationship to other manuals. The French organ exhibits a contrasting concept. For the most part these manuals consist of a few solo stops, usually sounding from c' upwards. In the St. Louis instrument the Recit consists of a Cornet stop of five ranks and a Trompette 8', while the Echo includes a Bourdon 8', Cromhorne 8', Cornet of five ranks, and a Cimbale of three ranks. Both manuals commence at c' and extend to c³, indicating they were intended primarily for treble melodic lines.

Perhaps the most striking difference lies in the design of the pedal, for while the German instrument displays a complete division, that of the French organ is usually marked by a paucity of stops. The St. Louis instrument has only two registers in the pedal, and other French organs of the period show similar pedal design.¹⁶

Although numerous French organs utilized separate cases for the Grand Orgue and Positif, the

¹⁶These stops were intended for use in playing a bass part or a cantus firmus.

idea of the werk-prinzip approach, so typical of the German organ, was not carried through the entire organ. The Récit and Écho divisions were placed inside the case of the Grand Orgue and, in many cases, the pipes of the Écho were located below the chestwork of the Grand Orgue giving a rather muffled and distant sound.¹⁷

It is, however, the similarities of the French and German organs which are most basic to the consideration of the reform of American tonal design. These elements, the differentiation of pitch between divisions, the building-up of complete choruses, and the division of stops into wide and narrow flues and reeds, are the fundamentals which provided the point of departure for American organ builders. Of equal importance is the general quality of voicing, characterized by clarity and assertiveness.

From a secondary standpoint, individual characteristics of these two national styles played a significant role. In this particular connection, the French practice of including numerous mutations, especially the tierces, and the voicing of reed stops

¹⁷E. Harold Geer, Organ Registration in Theory and Practice (Glen Rock, New Jersey: J. Fischer and Bro., 1957), p. 245.

to give a brilliant and assertive tone must be mentioned. The German werk-prinzip and the evident insistence on a wide tonal range in every division, including the pedal, are also of great significance.

CHAPTER II

THE AMERICAN ORGAN OF THE EARLY TWENTIETH CENTURY

State of the Art

In the two hundred years following the end of the seventeenth century numerous changes had been brought about in the organ. The realm of tonal design was no less affected, and the changes in concepts, new ideas, and techniques which took place during the nineteenth century profoundly altered the tonal structure of the organ.

The magnitude of these changes is shown in a comparison of the specifications of the organ in the parish church at Himmelforten, Germany, built in 1624 by Hans Scherer,¹ and the instrument for the Evangelical Lutheran Friedens Church, Kenosha, Wisconsin, built by Weickhardt in 1910.²

Himmelforten

Hauptwerk

8' Prinzipal
8' Rohrflöte
4' Oktave
4' Spielflöte
2' Oktave
VI Mixtur
8' Trompete

Kenosha

Great

8' Open Diapason
8' Melodia
8' Gambe
8' Dulciana

¹This instrument was inspected by the writer in 1959. The stops and voicing were largely intact from the original construction.

²The Diapason (January, 1910).

Brustwerk

8' Holzgedackt
 4' Spitzflöte
 2' Prinzipal
 2' Waldflöte
 1 1/3' Nasat
 II Terzian
 III Scharff
 8' Regal

Swell

8' Open Diapason
 8' Stopped Diapason
 8' Salicional
 4' Flute Harmonic
 8' Cornopean
 8' Oboe

Pedal

16' Subbass
 8' Prinzipal
 4' Oktave
 2' Nachthorn
 VI Mixtur
 16' Posaune
 2' Kornett

Pedal

16' Open Diapason
 16' Bourdon
 8' Octave (16')
 8' Flute (16')

The difference in tonal design between the two instruments is striking, particularly in regard to the distribution of pitches. The Himmelpforten organ shows the customary German reliance on complete choruses in all divisions and differentiation of pitch between manuals, but any semblance of chorus is absent from the Kenosha instrument. Indeed, there is an obvious preponderance of eight-foot and four-foot stops on both manual divisions, while the pedal shows only two independent registers. The Himmelpforten organ speaks with great precision of speech, clarity, and brilliance, but the design of the Weickhardt instrument reveals a certain thickness and heaviness of tone.

The observer may ask what had brought about changes of so radical a character. The process of change had taken different paths in the various European countries, as well as in America. Many foreign influences

were felt in varying degrees in the United States, although the gradual emergence of English ideas as the primary influence had the greatest effect.

It is possible to see the gradual dissolution of the old werk-prinzip approach through the eighteenth and nineteenth centuries. More and more eight-foot registers were introduced to the general design; at the same time mutations were less numerous and mixtures were composed of fewer and fewer ranks.³

The emphasis on clarity gradually gave way to a desire for dynamic variation and greater variety of unison tone. The conceptions of the Romantic era brought about profound changes in the organ in order to make the instrument capable of the artistic demands of the time. The Barker Lever freed the builder from the restriction of lower wind pressure. This in turn gave builders the ability to produce stops of great power, which demanded more wind than had previously been possible. In addition, the number of stops on any given division was no longer limited; organists began to have at their control any number of stops. Along with this came numerous devices for changing registers such as free combinations, collectives (combination pistons), and

³Foul-Gerhard Andersen, Organ Building and Design, translated by Joanne Curnutt (London: George Allen and Unwin Ltd., 1969), pp. 247-252.

crescendo pedals. The result was larger, louder organs, more stops and more "gadgets" for the control of such instruments. Periodicals often referred to large new organs as monsters.⁴ The attempt to make the organ a one-man orchestra was in full sway.

In the United States the influence of English builders had always been strong. Many of the earliest organs in this country had been imported from England, and those built in the United States were, in many cases, by men of English tutelage.⁵ One of the most notable builders, David Tannenberg, created many fine instruments during his life's work in this country, a few of which are still preserved. His organs show some influence of the past glories of the instrument, as a glance at some of the specifications will reveal.⁶ Unfortunately, the work of these early American builders was lost in the overwhelming surge of nineteenth century ideas, and the instrument was swept along the same paths as in the European countries. By the end of the century the concept of the organ as

⁴"Large Monster for City Hall, Portland, Oregon," The Diapason (April, 1911).

⁵Fesperman, The Organ as Musical Medium, pp. 5-6.

⁶William H. Armstrong, Organs for America (Philadelphia: University of Pennsylvania Press, 1967), pp. 83-112.

a chorus instrument was gone. Organ tone became thick and dark, and upper-work appeared with less frequency. Scales grew larger, and heavier wind pressures were in vogue.

Clifford Demarest expressed the view of many organists in an article in The Diapason which included a stop list of what he considered to be an ideal organ.⁷ The stop list is given below:

Great

8' Gamba	8' Flute	8' Trumpet
	8' Gemshorn	
16' Open Diapason	4' Flute	
8' Open Diapason	Harmonique	
8' Open Diapason		
4' Octave		
2' Fifteenth		

Swell

8' Aeoline	16' Bourdon	8' Oboe
8' Salicional	8' Hohlflöte	8' Cornopean
8' Vox celeste	8' Gedeckt	8' Vox
8' Viole	4' Flauto	Humana
d'orchestra	Traverso	
4' Violino	2' Flautino	
8' Open Diapason		
III Dulciana Mixture		

Choir

16' Dulciana	8' Concert	8' Clarinet
8' Dulciana	Flute	
(16')	8' Quintaden	
8' Muted Viol	4' Chimney Flute	
	2' Piccolo	
8' Open Diapason		

⁷Clifford Demarest, "Tone Colors in the Organ," The Diapason (September, 1914), pp. 4-5.

Pedal

16' Dulciana (Ch.)	16' Bourdon	16' Trombone
16' Violone	16' Gedeckt (Sw.)	
	8' Flute	
16' Open Diapason		
16' Open Diapason (Gt.)		
8' Octave		

Demarest wrote that the diapasons should be ". . . full, dignified, and pervading." Claiming that mixtures were merely shrieking devices, he lauded American builders' efforts to eliminate them in lieu of ". . . useful, artistic foundation tone." He asserted that mixtures were used as a means of cutting corners on expenses and lamented the fact that people could not seem to be able to tell the difference between noise and pure tone.⁸

The solitary compound stop in Demarest's disposition was a soft (according to his own suggestion) Dulciana Mixture, which did not break throughout its entire compass. The lack of chorus is apparent in this instrument. Indeed, the orchestral concept is most evident with the emphasis placed on the variety of stops of differing tone quality. Strings appear on all manuals; flutes and diapasons are scattered about the design, generally at eight-foot and four-foot pitches.

⁸Ibid.

Conspicuously absent are mutations, an obvious victim of the orchestral approach. The concept was clear--tone color was thought of in terms of orchestral counterparts. Tone qualities were created by various types of stops sounding at unison or octave pitches. The idea of producing sounds through use of the harmonic-corroborating stops (mutations) was rejected.

It is of interest to note the presence of two eight-foot diapasons on the Great. This practice, which gives massiveness to the overall sound, was rather consistently carried out by other American builders.

The Austin organ, built in 1918 for the Saint James Church, Barrington, Massachusetts, is illustrative of the fact that most builders concurred with the premises set forth by Demarest. The disposition is as follows:⁹

Great

16' Double Open Diapason	8' Flauto Major	8' Harmonic Tuba
8' Horn Diapason	8' Gemshorn	
8' Principal Diapason	4' Waldflute	
4' Octave		

⁹"Austin Builds for St. James Church," The Diapason (November, 1918), p. 16.

Swell

8' Viole	16' Bourdon	8' Oboe
d'orchestra	8' Rohrflute	8' Cornopean
8' Viole Celeste	4' Flauto	
8' Echo Salicional	traverso	
	2' Flageolet	
8' Open Diapason		

Choir

8' Dulciana	8' Concert	8' Clarinet
	Flute	
8' Geigen Principi-	8' Flute Celeste	
pal	4' Flute d'amour	

Echo

8' Viole	16' Lieblich	8' Horn
Aetheria	Gedackt	8' Vox Humana
8' Vox Angelica	8' Gedackt (16')	
	4' Fern Flute	
8' English Diapason		

Pedal

16' Violone	32' Resultant	8' Tuba
	16' Bourdon	Profunda (Gt.)
16' Open Diapason	16' Lieblich	
	Gedackt (Ec.)	
	8' Gross Flute	
	8' Flute Dulce (Ec.)	

The pervasiveness of eight-foot tone is clearly evident in the design of this instrument. From a total of thirty-two manual stops only one sounds above four-foot pitch, the Flageolet on the Swell. Similarly, there are no stops above eight-foot pitch in the pedal. There is an abundance of orchestral stops with no apparent relationship one to the other.

Not a single mutation is present; neither are there any mixtures. With such a tonal design it is apparent that the manuals have no functional tonal relationship to each other.

The Barrington organ illustrates another facet in the tonal design common to most instruments of the period--that of having a Choir division designed for suitable accompaniment of the other divisions. Noel Bonavia-Hunt has pointed out the process by which the third manual developed into an assortment of quiet stops suitable for that purpose. Furthermore, in many organs a group of highly colorful stops was included to make the Choir a collection of both soft, accompanying voices and color registers for solo use.¹⁰ The Choir manual of the St. James Church organ with five stops at eight-foot pitch is typical. Many volumes of music were printed during the period which called for extensive solo use of such stops. This instrument amply demonstrates its suitability for such tasks.

Further evidence of orchestral thinking is seen in the various books dealing with the problems

¹⁰Noel Bonavia-Hunt, The Church Organ (London: William Reeves, 1967), pp. 91-92.

of transcribing orchestral music for the organ. Hubert F. Ellington devotes a significant portion of his book to a description of the principles governing techniques of transcribing. Going into elaborate detail he includes numerous works and discusses the appropriate stops to use in order to achieve an artistic result.¹¹ Obviously an organ full of Oboes, French horns, Strings, and Flutes would be most suitable.

In The Making of Sound in the Organ and in the Orchestra, Hermann Smith examines the physical factors at work in the production of sound from organ pipes and attempts to draw parallels with various orchestral instruments.¹² Numerous other books and articles provide evidence that orchestral thinking was widespread among American builders. This should not be surprising, especially when the typical organ recital of the day would devote a portion of the program to orchestral transcriptions. Theatrical effects were common and recitalists often produced dramatic improvisations such

¹¹Hubert F. Ellington, The Art of Transcribing for the Organ (New York: H. W. Gray Company, 1922), pp. 38-112.

¹²Hermann Smith, The Making of Sound in the Organ and in the Orchestra (New York: Charles Scribner's Sons, 1911), Passim, chap. iii.

as The Thunder Storm, complete with lighting effects.¹³

One further consideration of significance is the fact that the organ as an instrument was in greatest use in connection with the church. Sunday after Sunday the organ was used as a liturgical instrument, playing hymns, providing interludes, and accompanying anthems. Use of the instrument for insipid interludes and background music for prayers hardly inspired builders and organists to design the type of organ that embodied the ideals of chorus, clarity, and brilliance. On the contrary, what served their purposes most admirably was the type of organ based on an orchestral approach.

The practice of enclosing divisions within a swell box was also in full sway. This box enclosed the stops on all sides save one, which was fitted with louvers that were controlled by the organist at the console. Since its invention in the early eighteenth century it had been applied to one or more divisions. As the Romantic era progressed, the swell box also gained favor. Some organists advocated its application to every division in the organ. George Ashdown Audsley, the noted British organ expert, was one such advocate, writing:

Whilst we do not expect a storm of opposition to the proposal to extend the application of the

¹³Barbara Owen, "American Organ Music and Playing, from 1700," Organ Institute Quarterly, X, No. 3 (1963), 7-13.

swell box to such divisions of the organ as the Choir and Solo, we are prepared to meet with a whirlwind of objections--unreasonable and illogical for the most part--against the proposal we have to urge to apply the swell box to both Great and Pedal organs.

Emphasizing his statement, he continued:

There is no more reason in making any division of the organ unexpressive and invariably uniform in the strength of its tones, than there would be in destining any division of the Grand Orchestra to deliver its sounds at one unvarying strength and without any expression whatever.¹⁴

The justification of certain aspects of organ sound is again made on the basis of the orchestra. An examination of dispositions of the period indicates, however, that not even experts such as Audsley were able to convince the majority of organ builders, for the most common practice was to enclose the Swell, Choir, and Solo, while leaving the Great and most of the Pedal unenclosed.

Organ builders, freed from past limitations, devoted their attention wholeheartedly to new mechanical devices. Various key actions and windchest designs were invented or improved. Couplers, sub-couplers, and super-couplers, which made possible the coupling of an entire manual to other manuals and to the pedal, were widely used. Electro-pneumatic action enabled builders

¹⁴George Ashdown Audsley, The Art of Organ Building (2 vols.; New York: Dodd, Mead, and Company, 1905), II, 48-49.

to place the organ in unusual locations and at great distances from the performer.

Joseph Blanton quotes from a printed program for the dedication of an organ in a large New York City church:

The console rests on a large elevator and it can be elevated or lowered, as desired. Despite the large number of electric wires that connect the console with the different divisions of the organ system, it is possible, by means of a flexible cable thirty feet long, to roll the console out on the floor of the Chancel so as to face the congregation when concerts are being given or other events make this desirable.

The term "organ" is a misnomer, as such wonderful and unique tonal effects can be secured that it is more like a great modern orchestra, and perhaps the most marvelous thing is that all six of these organs--even the remote Echo organ--is [sic] under the control of a single performer. This mechanism seems positively human, actuated by unseen power, far away from the organist, yet absolutely under his control, it interprets his touch and feeling.

Electric cables run in various directions and multiple switches, motors, etc., are used, and while we are looking at this intricate mechanism, the organist begins to play and this inanimate matter is endowed with life and motion; valves open and close, pneumatic engines expand and contract, all in immediate response to the lightest touch.

An instrument so modern and so complicated demands the employment of an artist of exceptional ability. No ordinary player would be capable of holding it within bounds and compel it to obey his will, to thrill either by its soft cadences or by its elemental grandeur.¹⁵

¹⁵Joseph Blanton, The Organ in Church Design (Albany, Texas: Venture Press, 1957), pp. 54-55.

Similar articles and comments on new organs indicate a wide-spread preoccupation with such mechanical matters.¹⁶ Builders were constantly striving toward meaningful new devices. W. L. Sumner gives a list of inventions by American organ builders:¹⁷

J. T. Austin

A universal chest to provide constant wind pressure

Robert Hope-Jones

Sforzando mechanism to cause the swell shutters to close tightly as soon as a note or chord was begun

E. M. Skinner

A "whiffle-tree" action box to operate the swell shutters

W. E. Haskell

A means of producing an open flue tone from pipes of half-length, using a smaller diameter tube, closed at one end, in the pipe

A device to produce Saxophone, Tuba, and Clarinet tone from flue stops

These experiments were not confined to mechanical matters, as the orchestral registers indicate. Builders

¹⁶While touring in England in 1959 the writer was shown several instruments by Henry Willis IV, one of which had an attachment for a device similar in size and shape to a rectangular cigarette holder. By squeezing the device between his teeth the organist could control the swell shutters.

¹⁷William L. Sumner, The Organ (London: MacDonald and Company, 1958), pp. 195-196.

sought new tone colors and applied new techniques to scaling and voicing which had not been used in the past. One such stop common to many organs was the Diapason Phonon. This register was a large-scale specimen of great volume. It most commonly appeared on the Great at eight-foot pitch. A roll of metal or leather surrounded the upper lip of the pipe, which resulted in a dull, round tone of little harmonic development. It served as a solo stop which provided the maximum power at the fundamental harmonic.¹⁸

Other stops of a similar nature were usually present in ample number. This is shown by the specification of the E. M. Skinner organ built in 1914 for the Finney Memorial Chapel, Oberlin College, Oberlin, Ohio:¹⁹

Great

16'	Diapason	16'	Bourdon	16'	Ophicleide
8'	Diapason	8'	Philomela	8'	Tromba
8'	Second	8'	Claribel	4'	Clarion
	Diapason		Flute		
4'	Octave	4'	Flute		
2 2/3'	Twelfth				
2'	Fifteenth				
III	Mixture				

Swell

16'	Dulciana	16'	Bourdon	16'	Contra
8'	Salicional	8'	Spitzflöte		Posaune
8'	Voix Celeste	8'	Clarabella	8'	Posaune
8'	Aeoline	8'	Erzaehler		(16')

¹⁸Ibid., p. 287.

¹⁹The Diapason (July, 1914), p. 1.

8' Unda Maris	8' Gedeckt	8' Fluegel
	4' Flute	Horn
8' Open	2' Flautina	8' Vox Humana
Diapason		4' Clarion
4' Octave		

Choir

16' Gamba	8' Concert	16' Fagotto
	Flute	8' Clarinet
8' Geigen	8' Kleine	8' Orchestral
Principal	Erzaehler	Oboe
	8' Quintadena	
	4' Flauto	
	Traverso	
	2' Piccolo	

Solo

8' Gamba	8' Philomela	16' Fagotto
8' Gamba	8' Harmonic	(Ch.)
Celeste	Flute	8' Clarinet
		(Ch.)
		8' Orchestral
		Oboe (Ch.)
		8' French Horn
		8' Tuba
		Mirabilis

Echo

8' Cor de	8' Vox Humana
Nuit	

Pedal

16' Violone	16' Bourdon	32' Bombarde
16' Gamba	16' Echo	16' Posaune
8' Cello	Lieblich	16' Ophicleide
	(Echo)	8' Tromba
32' Diapason	10 2/3' Quint	4' Clarion
16' First	8' Gedeckt	
Diapason	8' Still	
16' Second	Gedeckt	
Diapason		
8' Octave		

This general design was common for the period,
with a heavy preponderance of eight-foot and four-foot

tone. As was usually the case with Skinner's organs, the instrument displays quite a large variety of stops of string and reed quality inspired by the orchestra. Despite the fact that there was very little in the way of upper work, the Great did contain a diapason chorus, albeit diminutive, including a three-rank mixture. The tonal structure of the other divisions, however, shows a lack of chorus ensemble. They are collections of colorful but, for the most part, unrelated foundation stops. It seems unthinkable that in an organ of seventy-one stops the builder saw no need to include any pedal stop sounding above eight-foot pitch.

Of special interest is the relatively large number of color stops, many of which were invented and used for the first time in the early twentieth century. Since this type of register occupied such an important place in the tonal scheme, a description of a few of the more interesting and unusual ones is appropriate. This will afford a deeper insight into the thinking concerning tone quality in the organ at that time.

The Great organ contained several color stops, one of which was the Erzaehler. E. M. Skinner claimed to have been the inventor of the register and several dictionaries of organ stops support his claim. The stop itself, commonly found at eight-foot and four-foot

itches, is of conical pipes, somewhat more pointed at the top than the more traditional Spitzflöte. Its purpose was to integrate the tones of both bright and dull stops and of high and low-pitched stops. The register was voiced so that the lower harmonics were full and complete and gave cohesion of tone. Stevens Irwin states that the Erzaehler points up the pitches of the other stops, without changing their character.²⁰

Another flue stop which builders attempted to use as the organ counterpart of an orchestral prototype was the Concert Flute. This stop, usually made of metal, is an open harmonic pipe (twice the normal length and pierced with a hole midway along the tube). It is characterized by a sound which is somewhat louder and smoother than its orchestral relative.²¹ A similar register, but of much larger scale, is the Clarabella. This stop gives a thicker tone and appears most often on the Great organ, as in the Oberlin College instrument.

Orchestral instruments of the wind section seemed to have been a particularly strong source of sounds for the organ builders of the period, as the large number of such stops witnesses. In the Finney

²⁰Stevens Irwin, Dictionary of Pipe Organ Stops (New York: G. Schirmer, Inc., 1962), p. 90.

²¹The Skinner Organ (New York: Fay-Leone-Faurote), p. 17.

Chapel organ there are several stops of this type such as the Fluegel Horn, Clarinet, Orchestral Oboe, and the French horn. Skinner is reputed to have developed a type of French horn stop which was remarkably like its orchestral counterpart, even producing the characteristic "bubble" inherent in that instrument's attack. Outwardly the pipe resembled a trumpet surmounted by a pyramidal cap which was soldered on.²²

Another very common example was the Clarinet, a register found in many organs, usually on the Choir. It resembled the Baroque Dulcian in appearance and gave a limpid, round, and full-toned effect similar to the orchestral instrument. The tonal palette of the typical Clarinet is characterized by a strong fundamental, weak second harmonic, a strong third, and a variety of higher-pitched harmonics. Perhaps this stop comes closest toward matching the sound of the orchestral model.²³

The list of registers in the Finney Chapel organ and the cursory description of some of the more exotic ones has served to underscore the fact that interest in orchestral imitations had taken a position of higher priority than choruses and pure organ tone with the

²²George Ashdown Audsley, The Organ of the Twentieth Century (New York: Dodd, Mead, and Company, 1919), p. 466.

²³Irwin, Dictionary of Pipe Organ Stops, p. 48.

builders of the period. The ingenuity of those organ craftsmen cannot be denied. Their many inventions were quite successful from the standpoint of mechanical matters. It seems clear, however, that the apparent gains were made at the expense of more fundamental considerations, those of full choruses, relationship of stops, blend, clarity, and brilliance. It was unfortunate for the organ as an instrument that these basic ideas had gradually been forgotten and lost in the wave of technical innovations and new techniques.

Perhaps the one individual who had the most influential (ruinous?) effect on organ building in the early part of the twentieth century was an Englishman who immigrated to the United States, Robert Hope-Jones.²⁴ His invention, the unit chest, wrought terrible damage to the tonal design of the organ and helped make possible the ultimate degradation of the instrument, the cinema organ.²⁵ Stated simply the unit chest allows any given stop to be played at any

²⁴Hope-Jones invented the Diaphone which was used by the Canadian Government for its fog signal stations. He later modified the device for inclusion in his organs.

²⁵Sumner, The Organ, pp. 230-231.

number of pitches by means of a multiplicity of electric wirings. For example, a Bourdon with ninety-seven pipes is playable at eight-foot, four-foot, two-foot and one-foot pitches. Wired in additional ways the stop is also playable on any manual or pedal, a technique which is called duplexing. Since different pitches call for differing scales, however, this technique produces sounds which are not completely satisfactory and represent a compromise in the interest of saving space and money.

Unification, often referred to as augmentation, was increasingly applied to organs. Instruments actually possessed far fewer pipes than one would expect from the large number of stop knobs on the console. The pedal division suffered most from this practice, since many builders reduced the number of registers drastically.²⁶

Few organists complained about this new technique, which appeared to increase the tonal possibilities of the instrument. Ferdinand Dunkley described the unit chest and claimed that it was superior in both tone quality and in possibilities to the older style, which he viewed as wasteful. He was so convinced of its

²⁶Ernest M. Skinner, The Modern Organ (New York: H. W. Gray Company, 1917), pp. 14-18.

validity that he proclaimed it the " . . . organ of the future."²⁷

G. R. Peters stated that the unification technique was valid because of the tremendous reduction in costs it made possible. Furthermore, he asserted it was a great help in solving the all-too-frequent problem of lack of space. He likened unification to " . . . individual couplers," and claimed that since certain stops sounded so much alike, they could successfully be dispensed with in favor of the unit chest.²⁸

Illustrative of the unification approach is the Hillgreen-Lane organ built in 1923 for Trinity Community Church, Grand Rapids, Michigan:²⁹

Great

8' Dulciana	8' Doppel-	8' Tuba
4' Dulcet	Flute	Mirabilis
(8')	4' Harmonic	
	Flute	
16' Open	2' Piccolo	
Diapason		
8' Open		
Diapason		
4' Octave		
2 2/3' Quint		

Swell

8' Virole	16' Bourdon	8' Orchestral
d'orchestra	8' Gedeckt	Oboe
8' Virole	(16')	8' Vox Humana
Celeste	8' Quintadena	

²⁷Ferdinand Dunkley, "Organist Praises Unit Plan," The Diapason (January, 1910).

²⁸G. R. Peters, "The Duplex Organ," The Musician, XXIII (November, 1918), 26.

²⁹The Diapason (July, 1923), p. 15.

8' Aeoline	4' Flûte à cheminée
8' Open Diapason	

Choir

8' Dolce	8' Concert Flute	8' Clarinet
8' Geigen Principal	4' Flute d'amour	
	2' Flautino	

Pedal

16' Violin (Sw.)	32' Resultant
8' Violin (Sw.)	16' Doppel- flute (Gt.)
8' Dolce (Ch.)	16' Lieblich Gedeckt (Sw.)
	8' Grosse Flute (Gt.)
16' Open Diapason	
8' Octave (16')	

Of a total of twenty-five independent stops the pedal division commands only one. Duplexing has allowed the borrowing of stops from the Great, Swell, and Choir manuals. Unification is even applied to the Great with the Dulciana sounding at both eight-foot and four-foot pitch. Recalling the magnificently endowed pedal divisions of the seventeenth-century German instruments, the Trinity Church organ seems a pitiable affair.

The most extensive application of unification and duplexing was in small organs such as practice organs. Large or small, however, the extent to which it reduced the number of independent stops and compromised the tonal integrity of the organ reached alarming

proportions with many builders.

Perhaps the ultimate application of this technique was in the cinema organ which flourished during the early part of the century. Stops of all qualities were made playable at an almost endless succession of pitches and were duplexed around the manuals with little or no restraint. Joseph Blanton wrote of such organs:

The mighty organs of the motion-theaters had a ruinous effect on the already decadent American church organ. The movie-goer became enamoured of the wails of the Vox humanas and the gushiness of the tremulous Celestes and insisted on hearing the same wierd sounds in the church service; needless to say, most builders obliged.³⁰

The integrity of the organ could sink no lower. Tonal design had so degenerated that the principles which had brought about the great instruments of the past had vanished. There remained only one direction for organ tonal design, and that was a return to the principles of the seventeenth- and eighteenth-century German and French organs.

³⁰Blanton, The Organ in Church Design, p. 54.

CHAPTER III

1925-1932: INCHOATE REFORM

Reappearance of Mixtures and Mutations

It has always been difficult to make a clear and definitive delineation between various segments of an historical process. It is no less true in the matter of organ tonal design. There are, however, certain developments in the latter half of the nineteen-twenties which suggest that the tonal design of the organ was being reexamined. It has been shown that the organ in America exhibited a dismally poor tonal design around the turn of the century. It is significant that few American composers of prominence chose to write music for such an instrument.¹

It is necessary to point out that the changes brought about during this period, while certainly improving the scheme of the organ, did not reflect a fundamental reassessment of tonal design. Although there were certain long neglected elements in design which were returned to the instrument, they represent

¹John Fesperman, The Organ as Musical Medium (New York: Coleman and Ross Company, Inc., 1962), p. 32.

additions to an existing approach rather than a reordering of the basic ideas.

For the most part, advances in tonal design during these years consisted of the gradual reappearance of mixture and mutation stops. While specifications of organs built from 1890 to 1925 show an almost complete absence of such registers, later instruments reveal that more and more were included gradually. Professional periodicals began to yield letters and articles dealing with such matters around the middle of the thirties. It is apparent that not all organists and builders shared the same opinions, but there can be no doubt that changes in thinking were taking place in some people's minds.

The matter of unification, which had dealt the organ a serious blow, was one of the techniques which came under particular attack. Ernest L. Mehaffey was highly critical of the practice, citing instances in which pedal divisions contained only one or two ranks of pipes. He deplored this practice since, in his view, it left the pedal without any true independence. Mehaffey laid the blame for such practices at the feet of organists as well as builders, attributing it to their desire to cut costs at the expense of the pedal.²

²Ernest L. Mehaffey, "Augmentation and the Modern Organ," The Diapason (January, 1924), p. 29.

Edwin H. Lemare, an organist of note, likewise was highly critical of unification. " . . . robbing Peter to pay Paul," wrote Lemare in pointing out that the practice left the organ without the proper variety of sounds. He further noted that unification produced dead notes which tended to obscure musical lines, particularly in polyphonic music. Obviously concerned with a good ensemble sound, he cited the fact that the scaling of pipes should differ at various pitches, a situation which was impossible with unified stops. Lemare was also critical of the concept of substituting super couplers for upper work. In his opinion, this was unacceptable, since it would not produce a proper chorus. Furthermore, he maintained that this also produced the undesirable effect of dead notes.³

That not all writers and builders shared these views is shown in an article written by Senator Emerson Richards. He wrote that judicious unification was in order. Richards stated such a practice was justifiable on financial grounds. While defending the theory that the organ needed proper ensemble groups, he saw nothing wrong with unifying some stops, particularly in the

³Edwin H. Lemare, "The Evils of Unification," The Diapason (March, 1925), pp. 32-33.

pedal. This, he felt, would not sacrifice too much in the general design.⁴

An examination of specifications during this period shows that the practice of unification and duplexing was on the decline, but at the same time it is clear that unifying stops in the pedal still held forth in full sway with many builders. The organ built by the Reuter Organ Company in 1926 for the Concordia Teachers College, Seward, Nebraska, shows the approach common to many builders. The disposition of stops is shown below:⁵

Great

8' Virole d'gambe	8' Doppel- flute	8' French horn
8' Open Diapason	8' Gemshorn 4' Flute Harmonique	

Swell

8' Virole d'orchestra	16' Bourdon 8' Stopped Diapason	8' Cornopean 8' Oboe 8' Vox Humana
8' Salicional	4' Waldflote	
8' Voix Celeste	2 2/3' Nasard	
8' Aeoline	2' Flautino	
8' Open Diapason		

Choir

8' Dulciana	8' Concert	8' Clarinet
8' Unda Maris	Flute	
	4' Flute	

⁴Emerson Richards, "Senator Richards Answers Lemare's Article," The Diapason (June, 1925), p. 26.

⁵The Diapason (September, 1926), p. 30.

Pedal

8' Violon- cello (Gt.)	16' Bourdon	16' Trombone
	16' Lieblich	
	Gedeckt (Sw.)	
16' Open	8' Dolce	
Diapason	Flute (16')	

Only three out of a total of twenty-seven stops are allotted to the pedal division. The remaining pedal stops are merely unifications from other pedal registers or duplexes from manual stops. It seems amazing that in a three-manual organ of perhaps thirty to thirty-five stops, there would be such a small number of independent pedal registers. Furthermore, in many similar instruments no pedal stop sounding above eight-foot pitch could be found, a situation which made necessary the employment of pedal couplers for the playing of almost any pedal part.

Another consideration which engaged the attention of organists and builders during this period was the question of the proper place of mixtures and mutations within the tonal scheme. Max Hess, writing in The Diapason, decried the omission of these stops. His article set forth a brief history of mixtures and went into great detail concerning the composition and voicing of such stops. He insisted that each division needed a mixture to complete its ensemble. For the Choir he suggested a softer voicing of the mixture in order that it

would blend with the other voices in that division. In addition, he was in full agreement with the idea of returning mutation stops to the organ.⁶

Dr. Kaspar Koch, a noted organist, lauded the restoration of mutations by some builders. He wrote that the organ had become a deplorable type of one-man orchestra, a collection of nothing more than a large assortment of unrelated solo stops. Dr. Koch exhorted builders to include proper ensembles, including mixtures, which he felt were absolutely necessary. Concerning the inclusion of string stops, Koch felt they were acceptable, but cautioned that such stops should be kept apart from the ensemble, as they tended to obscure the transparency of the whole ensemble.⁷

J. E. Pasquet went even farther. He claimed that no organ builder in the world was building mixtures properly. Pasquet suggested that mixtures be put on separate wind chests so that they would not be affected by super octave couplers. This, he proposed, would enable these stops to achieve their true purpose which was to provide correct upper harmonics, rather than to make more noise.⁸

⁶Max Hess, "Mixtures: their History," The Diapason (December, 1928), p. 39.

⁷Caspar Koch, "Conservation and Progress in Tonal Equipment in the Organ," The Diapason (October, 1926), pp. 12-13.

⁸Other upper work would, however, be so coupled.

He stated further that the mixtures should be voiced so as to be useable with a single other stop. This he claimed would work quite satisfactorily, writing,
 " . . . combining a soft Swell mixture with the Stopped Diapason is the nearest approach to a real harp that I have been able to make."⁹

It must be pointed out that, despite the numerous articles and letters by musicians urging the return of these elements of tonal design to the organ, the actual inclusion of them in instruments by organ builders was sometimes a very timid affair. One of the leading builders of the period, E. M. Skinner, agreed with these ideas, at least up to a point. His organ for the Warner Concert Hall, Oberlin College, Oberlin, Ohio, built in 1926 typifies some of the early attempts at building a more inclusive type of organ:¹⁰

Great

16' Diapason	8' Flute	8' Tromba
8' First	Harmonique	(Ch.)
Diapason	4' Flute	4' Clarion
8' Second		(Ch.)
Diapason		
4' Octave		
2 2/3' Twelfth		
2' Fifteenth		
IV Mixture		

⁹J. E. Pasquet, "Are Organ Mixtures Constructed Properly?" Etude, XLV (July, 1927), 432.

¹⁰The Diapason (October, 1927), p. 2.

Swell

8' Salicional	16' Bourdon	16' Waldhorn
8' Voix Celeste	8' Rohrflöte	8' Cornopean
	8' Flute Dolce	8' Oboe d'amour
8' Diapason	8' Flute	8' Vox Humana
4' Octave	8' Celeste	4' Clarion
III Chorus Mixture	4' Flute Triangulaire	
	2' Flautino	
	V Cornet	

Choir

16' Gamba	8' Concert	8' Tuba
8' Gamba (16')	Flute	Mirabilis
8' Gamba Celeste	4' Flute	8' Clarinet
2 2/3' Nasard		
8' Dulciana	2' Piccolo	
8' Unda Maris		
4' Gambetta (16')		
8' Diapason		

Pedal

16' Gamba (Ch.)	16' Bourdon	16' Trombone
8' Cello (Ch.)	16' Echo Bourdon (Sw.)	8' Tromba (16')
16' Diapason	8' Gedeckt (16')	4' Clarion
16' Diapason (Gt.)	8' Still Gedeckt (Sw.)	
8' Octave (16')	4' Flute (16')	
4' Super Octave (16')		

The most obvious advance this organ reveals over past instruments is the inclusion of a full chorus of diapason tone quality on the Great, including a four-rank Mixture. In addition, the Swell incorporates two compound stops, one of which is a Cornet, the other a Chorus Mixture of three ranks. Heretofore, if there

had been a mixture in the Swell, it was a rather innocuous register with voicing so soft and unobtrusive as to be practically neutral. Skinner had included two chorus mixtures that, as indicated by their titles, functioned as full-voiced members of their respective ensembles. The specification, however, also reveals the preoccupation with color stops since there are three celestes on the organ in addition to the usual assortment of orchestral reeds.

The orchestral organ, however, was by no means being replaced, as is shown by organs of the period and articles by interested parties. H. F. Parks, writing in Etude, sought to treat the question of registration by applying colors to the basic tone qualities which he in turn related to the sections of the orchestra. Parks dwelled at great lengths on the effects of mixing colors and described the results in highly colorful, but rather un-organistic terminology.¹¹

On the same topic, J. H. Stewart saw nothing wrong with the concept of the orchestral organ, though " . . . within limits," which he neglected to describe in his article. The key to grasping his concept of organ tone is in his suggestions for registering the

¹¹H. F. Parks, "The Art of Tone-Coloring on the Organ," Etude, XLVIII (May, 1930), 360.

Prelude and Fugue in E Minor, by J. S. Bach. The great lengths to which he goes in adding and retiring stops throughout the work reveal an approach to registration which is strongly, if not completely, orchestral.¹²

Indicative of the fact that not everyone shared the opinions of those who advocated the liberal use of mixtures and mutations is the Pilcher organ built for the Hebrew Benevolent Congregation of Atlanta, Georgia, in 1930. The specification is given below:¹³

Great

16' Open	8' Melodia	8' French
Diapason	8' Gemshorn	Trumpet
8' First	4' Flute	
Diapason	Harmonique	
8' Second		
Diapason		
4' Octave		
2' Super-octave		

Swell

8' Virole	16' Contra	16' Contra
d'orchestra	Clarabella	Fagotto
8' Virole	8' Clarabella	8' Cornopean
Celeste	(16')	8' Oboe
8' Aeoline	8' Gedeckt	8' Vox
8' Aeoline	4' Flute	Humana
Celeste	2 2/3' Nasard (4')	
	2' Piccolo (4')	

¹²J. H. Stewart, "Registration," Etude, XLVIII (February, 1930), 130-131.

¹³The Diapason (June, 1930), p. 2.

8' Diapason
Phonon
8' Horn
Diapason
III Dolce Cornet

Choir

16' Contra	8' Concert	8' Clarinet
Dulciana	Flute	
8' Muted Viol	8' Flute	
8' Viol	Celeste	
Celeste	8' Quintadena	
8' Dulciana	4' Flute	
(16')	d'amour (8')	
4' Dulciana	2' Piccolo (8')	
(16')		
2 2/3' Dulcet		
(16')		
2' Dulcet		
(16')		
8' English		
Diapason		

Pedal

16' Violone	32' Resultant	16' Contra
16' Contra	16' Bourdon	Fagotto
Dulciana	16' Gedeckt	(Sw.)
(Ch.)	(Sw.)	16' Ophicleide
8' Cello (Sw.)	8' Gross Flute	8' Tuba (16')
	(Sw.)	
16' Open	8' Dolce Flute	
Diapason	(Ch.)	
16' Second Open	8' Still	
Diapason	Gedeckt (Sw.)	
8' Open Diapason		
(16')		
5 1/3' Quint (16')		
4' Octave (16')		

This organ shows very little change from the organ of the first decade of the century. Conspicuously absent are mixtures, and it must be pointed out that the two mutation stops which are found on the organ are

the result of unification. In fact, unification is used extensively throughout the instrument, particularly in the pedal division, which possesses only five independent stops out of some eighteen stop-knobs on the console.

The leathered Diapason under high wind pressure, too typical of organs of that period, is present on the Swell. The large number of orchestral stops and the almost total absence of independent stops above four-foot pitch are certainly two of the most obvious characteristics of this organ. There are twenty-nine instances of unification and duplexing, twelve of which occur in the pedal division, a situation which hardly qualifies the instrument to be classified as an example of judicious unification. The solitary compound stop on the organ, the Swell Dolce Cornet, is an unbreaking mixture of 2', 2 2/3', and 1 3/5'. The voicing of this stop was rather standardized among builders, being rather soft and unobtrusive. In any event, it was obviously not intended to function as an ensemble mixture.¹⁴

It is obvious that in designing an instrument of only a small number of stops the designer necessarily must be more discriminating in his choice of registers.

¹⁴Stevens Irwin, Dictionary of Pipe Organ Stops (New York: G. Schirmer, Inc., 1962), pp. 75-76.

It is, therefore, easier for the observer to discern with accuracy the fundamental approach and order of priorities of the designer. Thorndike Luard dealt with this problem in an article which appeared in The Diapason. In it he discussed the two fundamental issues as he saw them--the relative importance of chorus and variety of sounds. In his suggested dispositions he revealed himself as being strongly wedded to the concept prevalent in the early twentieth century. One of his specifications is given below:¹⁵

Great

8' Dulciana	8' Melodia
	4' Flute
8' Open	Harmonique
Diapason	

Swell

8' Salicional	8' Gedeckt	8' Oboe
8' Voix	4' Flute	
Celeste	d'amour	
8' Diapason		

Choir

8' Dulciana	8' Melodia
(Gt.)	(Gt.)
8' Unda Maris	4' Flute
	Harmonique (Gt.)

Pedal

16' Bourdon

¹⁵Thorndike Luard, "Designing Plans for Small Organs," The Diapason (May, 1929), p. 49.

16' Lieblich
 Gedeckt (Sw.)
 8' Flute (16')

The specification above reveals complete reliance on eight- and four-foot stops. There is some unification as well as duplexing. In fact, the Choir consists of a single independent stop, the others being duplexed from the Great division. Luard also allows only one independent stop for the Pedal out of a total of fifteen in the entire organ. The concept of chorus is obviously absent since there is provision for principal stops only at eight-foot pitch. The view that variety of sounds should come only through registers of different tone qualities and those at eight- and four-foot pitch is evident.

Another organist who wrote on the subject of small organs was William H. Barnes, a man who rose to a position of considerable influence in organ circles in later years.¹⁶ One of his articles began with a description of the Great division of the old instrument in the Boston Music Hall. The organ had originally been built by the firm of Walcker of Ludwigsburg, Germany, in 1863. The instrument displayed many characteristics of the German Baroque organ, such as

¹⁶Barnes' name appears continuously in periodicals from 1925 to the present. His book, The Contemporary American Organ, 1930, has gone through numerous editions and has been quoted frequently by other authors.

full and independent choruses in each division, differentiation of pitch between manuals, and voicing which was clear and incisive. Barnes alluded to the brilliance and grandeur of the instrument and pointed out the unique effects of its mutation stops. When he then set forth his own ideas on tonal design, however, the approach of relying on eight- and four-foot stops plus super octave couplers asserted itself. In his concept strings and especially reeds were of high priority. Concerning mixtures he wrote, " . . . a mixture would come last in my estimation," and " . . . if Choir reeds were what they should be, the mixture would be almost unnecessary."¹⁷

After lavishing such high praise on the Boston organ it is curious that he could espouse an approach which was diametrically opposed to the principles inherent in the older instrument.¹⁸

Another common practice in the building of small organs was the use of what builders referred to as synthetic reeds. This contrived effect was arrived

¹⁷William H. Barnes, "Tonal Design and Proper Ensemble for Small Organs," The Diapason (October, 1931), p. 37.

¹⁸It is interesting that Barnes, long-time critic of tracker action and classic design, recently was very complimentary about the Casavant tracker action instrument at Colorado State University.

at by combining different pitches of various stops to give a tone which vaguely resembled a reed register. One such method included a Salicional at eight-foot, a flute at four- and two and two-thirds-foot pitches, all controlled by a single stop-knob labelled Oboe. Two justifications were put forward in defense of this practice--that of the limitation of finances and that reeds tended to go out of tune often. Actually, the technique resulted in nothing more than a type of unification with not very satisfactory results.¹⁹

H. B. Parker decried this method of obtaining reed sounds in the organ. He laid the blame at the feet of organists as well as builders and asserted that it was an improper procedure. Parker suggested that if organists would keep reeds in tune there would be fewer problems with those stops and there would be no need to resort to synthetic sounds.²⁰

Ernest M. Skinner exhibited in his organs an approach to tonal design which was somewhat more eclectic than that of many other builders. He was responsible for the erection of many instruments and advocated the inclusion of choruses as well as solo stops

¹⁹A visit to almost any older organ in a college or university practice room will support this assertion.

²⁰H. B. Parker, "Plea for Genuine Reeds as Necessity in Small Organs," The Diapason (December, 1927), p. 31.

within the complete design. Various articles by Skinner leave no doubt about his thinking concerning the organ, and he evidently was a man who did not hesitate to express his views in the most forthright manner. One of his largest instruments was the organ he installed in Hill Auditorium at the University of Michigan, Ann Arbor, in 1928. It illustrates his concept of tonal design:²¹

Great

32'	Violone	8'	Stopped	16'	Trombone
8'	String [#]		Diapason	8'	Orchestral ^{**}
	Organ	8'	Claribel ^{**}		Trumpet ^{**}
IV	String		Flute	8'	Tromba
	Mixture [*]	8'	Erzaehler	4'	Clarion
		4'	Flute		
16'	Diapason				
8'	Diapason				
8'	Diapason				
8'	Diapason ^{**}				
5 1/3'	Quint				
4'	Octave				
4'	Principal				
2 2/3'	Twelfth				
2'	Fifteenth				
V	Mixture				
IV	Harmonics				

Swell

16'	Dulciana	16'	Bourdon	16'	Posaune
8'	Viola	8'	Clarabella	8'	Trumpet
	d'orchestra	8'	Rohrflute	8'	Cornopean
8'	Voix Celeste	8'	Flauto	8'	Oboe
8'	Echo Dulcet		Dolce	8'	Vox Humana
		8'	Flute	4'	Clarion
			Celeste		

*Playable on the Great, Swell, Choir, and Solo
 **Enclosed in Great expression box

²¹The Diapason (April, 1928), p. 29.

8' Diapason	4' Flute
4' Octave	Triangulaire
V Mixture	2' Flautino
V Cornet	

Choir

16' Contra	8' Concert	16' Heckel-
Gamba	Flute	phone
8' Gamba	4' Flute	(Solo)
(16')	4' Gemshorn	16' Bassoon
8' Dulcet II	2 2/3' Nasard	8' French
8' Dulciana	2' Piccolo	horn (Solo)
	1 3/5' Tierce	8' English
8' Diapason	1 1/7' Septième	horn
		8' Harmonica
		8' Heckel-
		phone
		(Solo)
		8' Bassoon
		(16')
		8' Clarinet

Solo

8' Gamba	8' Flauto	16' Heckel-
8' Gamba	Mirabilis	phone
Celeste	4' Orchestral	16' Contra
	Flute	Tuba
8' Stentor-		8' Tuba
phone		Mirabilis
4' Octave		8' Tuba (16')
		8' Heckel-
		phone
		8' Corno di
		Bassetto
		8' French horn
		8' Orchestral
		Oboe
		4' Clarion

Echo

8' Muted	8' Gedeckt	8' Vox
8' Unda Maris		Humana

Pedal

32' Violone (Gt.)	16' Bourdon	32' Bombarde
16' Violone (Gt.)	16' Echo	16' Ophicleide
16' Gamba (Ch.)	Lieblich (Sw.)	16' Posaune (Sw.)
16' Dulciana (Sw.)	10 2/3' Quint	16' Bassoon (Ch.)
8' Cello (Gt.)	8' Gedeckt	8' Still 10 2/3' Quint
	8' Still 10 2/3' Quint	8' Trombone (Gt.)
	4' Flute	8' Tromba
		4' Clarion
32' Diapason		
16' Diapason		
16' Diapason		
16' Diapason (Gt.)		
8' Principal		
8' Octave		
5 1/3' Quint		
3 1/5' Tierce		
2 2/7' Septième		
IV Mixture		

Skinner described the Hill Auditorium organ as one in which he sought to include elements of all schools of classic organ building along with what he referred to as modern improvements. He stated that every care and much time had been devoted to the proper voicing of all the mixtures and mutations. Concerning these he chided those organists who " . . . like smothered Diapason tone . . . and those who prefer the octave coupler as against the ensemble of pipes." Of those organists he wrote, " . . . I have formed the honest conclusion that they have no ears."²²

On the other hand, Skinner berated those who opposed what he considered to be modern improvements,

²²Ernest M. Skinner, "Mr. Skinner Writes of his Latest Work and Other Matters," The Diapason (April, 1928), p. 35.

especially his own. He outlined in The Diapason what he saw as the numerous advances in organ building during the preceding fifty years, namely such items as the Berker Lever, various pneumatic actions, coupling systems, and adjustable pistons. The main thrust of his case, however, was that American organ building had contributed most significantly to the area of orchestral color stops, several of which he had perfected and patented himself. He saw these developments as substantial contributions to the tonal vocabulary of the organ and was obviously annoyed with those who did not share his opinions.²³

A glance at the specification of the Ann Arbor organ makes it difficult to see the justification for Skinner's claim that it included the elements of all schools of classic organ building. Nevertheless, the instrument does display a significant advance over the typical organ of fifteen years earlier. The organ is arranged in six divisions, five manual and one pedal, and includes 129 ranks of pipes in all. Although the specification reveals a certain prevalence of eight-foot stops, there are several high pitched stops. When it is compared to the instruments of many other builders

²³Ernest M. Skinner, "Improvements in the Organ during the Last Fifty Years," The Diapason (February, 1929), p. 46.

of the same period, it shows a higher percentage of chorus registers.

The Great includes a complete principal chorus with independent 16', 8', 5 1/3', 4', 2 2/3', and 2' registers, topped with a five-rank mixture and a four-rank Harmonics. Similarly, the Swell contains a principal chorus of eight- and four-foot principal stops, capped by a five-rank mixture. The Swell also includes a five-rank Cornet which gives a total of four compound stops between those two divisions.²⁴ The Pedal includes a principal chorus of 32', 16', 8', and 5 1/3', surmounted by a four-rank mixture. There are numerous flute stops of various pitches which complement the principal choruses and encompass a range from 16' to 1 1/7' pitch. It should be noted that Skinner retained the practice of including several eight-foot diapason stops of the same pitch on a single manual.

Mutation stops, which had been so sorely lacking in organs of the early twentieth century, are present in this organ in much greater numbers. Most are confined to the Choir, although two appear on the Great. The mutations in the Pedal at 5 1/3', 3 1/5', and 2 2/7' pitches belong to the 16' overtone series.

²⁴A compound stop is one in which there are several pipes sounding for each key.

Of particular interest is the 10 2/3' Quint of reed quality which reinforces the thirty-two-foot series.

Skinner was favorable toward the inclusion of orchestral stops and the fact is shown very clearly in this organ. Registers of that type are present in every division, including the Great, although the majority are placed in the Choir and Solo. Typical examples are the English horn, Bassoon, and Clarinet on the Choir, and the Heckelphone, French horn, and Orchestral Oboe on the Solo. Skinner's interest in mechanical devices is expressed by the presence of two stops on the Great labeled Piano 8' and Piano 4'.

Chorus reeds are plentiful in the design and several reeds of wide scale were placed on very high wind pressure. One was the Tuba Mirabilis in the Solo division which produced a very loud and heavy tone.

Strings are numerous throughout all the divisions; they are most abundant in the Swell and Choir. The usual two-rank celestes are present, giving the undulating effect characteristic of two ranks of similar construction tuned to produce a slight beat. Also present is a compound stop designated String Organ 8', which includes six sets of narrow-scaled strings. This stop is duplexed so that it is playable on the Great, Swell, Choir, and Solo manuals. Intended for use with

this register was another stop labeled String Mixture IV which consisted of four ranks sounding 4', 3 1/5', 2 2/3', and 2' pitches.

The inclusion of so many colorful stops such as these with the chorus ensembles was in accord with Skinner's stated view that both were necessary in the modern organ. It is important, however, to remember that the instrument did contain chorus stops, mixtures, and mutations, registers which had long been non-existent in the American organ.

In 1931 an interesting experiment in organ building took place in Claremont, California, which, in its own way, foreshadowed new ideas which were to become important in the years after 1932. An organ was built for the College Auditorium at Claremont College by the Estey Organ Corporation. This instrument, referred to as a new universal school of organ building, was an amalgamation of pipes from a variety of sources, including both European and American builders. An attempt was made to include the sounds characteristic of various eras of organ building. Copies of certain past builders' stops were constructed and sent to Estey for inclusion in the organ. Those included were reproductions of Harrison and Harrison and Schulze diapasons, Cavaillé-Coll reeds, harmonic flutes, and celestes, and German mutations. All these ranks were combined to

form the total design in which mutations figured prominently. Although this exercise led nowhere insofar as the copying of old masters' secrets are concerned, it should be viewed, nevertheless, as a commendable effort to take advantage of the best which older schools of organ building had to offer. In short, it does indicate that a few builders were interested in some elements of the glories of past organ builders.²⁵

A further indication that interest in past eras was beginning to flower lies in articles relating visits to famous old European organs which began to appear sporadically in professional periodicals.

As early as 1926 O. E. Schminke wrote in Etude of his visit to see the Gottfried Silbermann organ in the Cathedral of Freiburg, Germany, built in 1710. He describes the stops in great detail and compares them to some of those found in American organs, finding fault with the latter in many cases. Although Schminke was impressed with what he saw, he evidently failed to grasp the fundamentals of design involved and found fault with the lack of swell pedals and complained that on the Silbermann instrument one " . . . can't play expressive melodies."²⁶

²⁵"New Universal School of Organ-building Represented in Instrument Being Installed at Claremont, California," The Musician, XXXVI (August, 1931), 23.

²⁶O. E. Schminke, "Old Silbermann Organ Dating from the Time of Bach," Etude, XLIV (February, 1926), 93.

Seth Bingham, who was later to gain widespread prominence in organ circles as a composer for the organ, wrote of his visit to Geneva, Switzerland, and of his playing the historic organs of that city. He professed to see some good in the more classically oriented organ, namely its clear ensembles and brilliant sounds but, like Schminke, Bingham declared the American instrument to be superior due to its wider variety of color stops. He, too, failed to perceive the fundamentals of design which governed the structure of those organs and was more concerned with the character of the individual stops and the noisiness of the old tracker action.²⁷ It remained for others to discover the secrets of the seventeenth- and eighteenth-century French and German instruments.

²⁷Seth Bingham, "Geneva and its Organs," The Diapason (February, 1932), pp. 22-23.

CHAPTER IV

THE RETURN TO CLASSIC PRINCIPLES: 1932-1950

The Background in Europe

We have considered the poor state of the American organ of the early twentieth century; it must be observed that the European organ had not escaped the same fate, although the circumstances surrounding its decline were somewhat different. The decline of the Baroque organ had begun even with the work of the noted German builder Gottfried Silbermann. The old werk-prinzip was altered with the substitution of an Oberwerk for the Rückpositiv. Mixtures were similar in pitch between the divisions, and voicing suggested a homogenous, sweet tone.¹ The Baroque instrument was then in the early stages of a development which would eventually liquidate it as an accepted concept of tonal design. The process lasted from the latter part of the eighteenth century until the early twentieth century.

Many factors were at work. The music of the

¹Poul-Gerhard Andersen, Organ Building and Design, translated by Joanne Curnutt (London: George Allen and Unwin Ltd., 1969), pp. 197-198.

late eighteenth century was moving inexorably away from polyphony and toward homophony and made new demands on the organ and drastically changed its function.

Discoveries in acoustics also exercised an influence over the design of organs. The theories concerning combination tones, the creation of fundamental tones by utilizing certain higher overtones, were applied to the organ. One of the most dynamic organ builders of the period, Franz Caspar Vogler, attempted, as a result of his own views on physical acoustics, to change the basis for tonal design completely. He believed that his simplification system would produce a greater effect with many fewer pipes and aimed at creating grandeur and dignity by the use of combination tones.² The specification of the manual divisions of the organ in St. Peter's Pfarrkirche in Munich, Germany, shows Vogler's conception of ideal tonal design:³

I Manual

16' Principal	5 1/3' Nasat
8' Principal	3 1/5' Terz
2' Principal	1 1/3' Quint

²Johann Seidel, Die Orgel und ihr Bau (Amsterdam: Frits A. M. Knuf, 1962), p. 13.

³Andersen, Organ Building and Design, p. 248.

II Manual

16' Principal
 10 $2/3$ ' Gross Nasat
 4' Principal
 3 $1/5$ ' Terz
 II Carillon (2 $2/3$ ' and 1 $3/5$ ')
 1' Principal

III Manual

16' Posaune
 16' Contrafagotto
 8' Krummhorn
 4' Trompet

IV Manual

16' Theorbe
 8' Viola da gamba

V Manual

8' Flauto
 4' Gemshorn

Gone is the werk-prinzip. In its place is an orchestral concept with reeds allotted to the third manual, strings to the fourth, and flutes to the fifth. The first two manuals show clearly the use of difference tones, e.g., 10' and 10 $2/3$ ', to create the 32' pitch.

Fortunately, not everyone shared Vogler's views, but the concepts governing the Baroque organ were slowly being discarded and forgotten. Organs built in Germany during the twentieth century contained more and more eight-foot stops and especially orchestral stops. Mixtures and mutations were present, but in drastically reduced numbers. Furthermore, their function was not

clearly understood, and they were consequently voiced too loudly, giving a harsh, penetrating tone and one that did not blend satisfactorily.⁴

In France the classic traditions were also lost. Although a few elements of the early designs were recognizable in the specifications of nineteenth century French instruments, the differences were great. Scales were much wider. Wind pressures and voicing were stronger and gave a massive tone. The whole concept was symphonic. Swell boxes and couplers contributed to enormous tutti, with crescendos leading to the tutti and decrescendos leading away from it.⁵

The German Orgelbewegung

By the late nineteenth century the symphonic organ was common in Germany, but not all voices were unanimous in praise of it. As early as 1906 Albert Schweitzer wrote of his disenchantment with the modern organ even though it was considered by many to be a miracle of advanced technical skill. After traveling in Germany for many years to see organs old and new, Schweitzer professed to see an advantage in certain methods used by older organ builders such as the slider chest, mechanical connections from key to chest,

⁴William L. Sumner, The Organ (London: Macdonald and Company, 1958), p. 207.

⁵Andersen, Organ Building and Design, pp. 258-264.

and stops of round and soft but full tone. He also decried the practice of imitating the stringed orchestral instruments.⁶ Schweitzer praised Silbermann's organs and exerted considerable influence in the effort to persuade musicians to reexamine the tonal precepts which were then widely accepted.

Interest in the venerable old instruments of Germany increased rapidly. Organs which were regarded as quaint old relics and now out of date were examined. Hans Jahn brought the old Scherer-Schnitger organ in St. Jacobi Kirche in Hamburg and the Gottfried Silbermann instrument in the cathedral at Freiburg to the attention of other organists. Descriptions of the stops, scaling, registration and dispositions of these old instruments appeared in print, and, for the first time in more than one hundred years, organists listened sympathetically and began to hear the organs in a new way.⁷

The scholarly works of Werner Lottermoser aided the process through scientific investigation into the sounds of these old instruments. Under the direction of Professor Wilibald Gurlitt, Walcker built an organ to the specifications given by Michael Praetorius in his

⁶Albert Schweitzer, Out of My Life and Thought, translated by C. T. Campion (New York: Holt, Rinehart and Winston, Inc., 1933), pp. 87-101.

⁷Andersen, Organ Building and Design, p. 301.

Syntagma Musicum, II. The problems raised by these revelations were seriously studied and discussed in Germany for many years, with the eventual result of a return to the principles of design as revealed in the Baroque organs.⁸

The return, however, was neither swift nor unanimous. At first builders cautiously included some low mutations. Eventually they began to experiment with mixtures and high mutations and changed their methods of scaling to conform to Baroque practice.⁹ The gulf between the two practices is seen rather vividly in a comparison of the specifications of the organ built by Gottlieb Voigt in 1848 for St. John's Church, Halberstadt,¹⁰ and the instrument built by Wilhelm Sauer for the University of Königsberg in 1928.¹¹

Halberstadt

Königsberg

Hauptwerk

Oberwerk

16' Bordun
8' Prinzipal

8' Prinzipal
8' Rohrflöte

⁸Hans Klotz, Das Buch von der Orgel (Kassel: Barenreiter Verlag, 1955), p. 131.

⁹Andersen, Organ Building and Design, p. 302.

¹⁰Gotthold Frotscher, Geschichte des Orgelspiels und der Orgelkomposition (Berlin: Verlag Merseburger, 1966), II, 1002-1003.

¹¹Sumner, The Organ, pp. 425-426.

8'	Gedackt	4'	Oktave
8'	Gemshorn	4'	Gemshorn
8'	Viola	IV	Mixtur
	da Gamba	III	Cymbel
4'	Oktave	16'	Rankett
2 2/3'	Quint	8'	Krummhorn
2'	Superoktave		
III	Kornett		
IV	Mixtur		

Oberwerk

Brustwerk

16'	Lieblich	8'	Quintade
	Gedackt	8'	Violflöte
8'	Flauto	4'	Gedacktflöte
	Traverso	2'	Prinzipal
8'	Gedackt	2'	Nachthorn
8'	Salizional	1'	Blokflöte
8'	Geigenprinzipal	II	Sesquialtera
4'	Spitzflöte	8'	Vox Humana
4'	Flöte		

Pedal

Pedal

16'	Subbass	16'	Untersatz
16'	Viola	8'	Prinzipal
10 2/3'	Quint	8'	Rohrflöte
8'	Oktave	4'	Gemshorn
8'	Gedackt	16'	Dulzian
8'	Violoncello	16'	Rankett
4'	Oktave	4'	Cornet
16'	Posaune		

The difference is obvious. The Königsberg organ has turned away from the predominance of unison tone as exemplified in the Halberstadt instrument. Furthermore, Sauer has refrained from including any orchestral stops and has returned short resonator reeds to the scheme. The pitches of the pedal registers in the Königsberg organ are more evenly spread; Sauer evidently saw no need for a large number of stops of low pitch.

Eventually all components of the Baroque organ were reevaluated by the adherents of the German Orgelbewegung. Succeeding years saw the reappearance of the werk-prinzip, mechanical action, and organ cases. Practices of the nineteenth century were largely discarded.¹²

Senator Emerson Richards and
G. Donald Harrison

It is impossible to define exactly the precise time of the first changes of opinion concerning tonal design in the United States. One fact is clear, however: the new ideas provoked a controversy which not only raged for years but continues today. Several organ builders and organists contributed substantially to the American organ reform. A survey of professional periodicals from about 1932 to 1950 reveals that the change in attitude was very slow. The few who called for reevaluation of basic premises were a minority. Indeed their efforts were to consume many years before achieving some success.

One of the primary sources of inspiration for the American reform was the historical instruments of Europe. Americans had visited these old organs in the past, but they either failed to see the underlying

¹²Andersen, Organ Building and Design, pp. 302-303.

principles of design or, if they did understand the principles, they rejected them. Emerson Richards, U. S. Senator from New Jersey and well-known organ enthusiast, was one of the first authors to write articles which appeared in professional periodicals advocating a change in tonal design for the American organ. He traveled in Europe a great deal, playing and inspecting old organs. He probably had some discussions with various European organists about the trends in organ design in their own countries. Richards' suggestions were quite radical for an organ world still strongly wedded to orchestral organ design. He asserted that the proper vehicle of expression was necessary for an adequate understanding and appreciation of Baroque composers. To him it was impossible to design a modern organ without knowing the Baroque instrument. The basic question, as Richards saw it, was one of ensembles, particularly the diapason chorus. To achieve the proper chorus he suggested a Double Open Diapason 16', two diapasons 8' of differing tone quality, a Quint $5\frac{1}{3}'$, two Octaves 4', a Twelfth $2\frac{2}{3}'$, Fifteenth 2', and two mixtures, one of fifths and octaves, and the other a Sesquialtera which might contain thirds.¹³

Considering the typical instrument of his time, Richards' proposals for such a full principal chorus were advanced, to say the least. It is interesting that,

¹³Senator Emerson Richards, "Ideal Tonal Design of Modern Organ as Based on the Classic," The Diapason (October, 1932), p. 18.

despite his acquaintance with the old organs of Europe, he allowed one facet of the unison approach to linger in his proposals: the inclusion of two similar stops of the same pitch. He did, however, insist that the diapasons should possess qualities of harmonic development which would facilitate their blending with other members of the chorus. It is no surprise that he regarded the leathered, phonon diapason completely unsuitable.¹⁴

The typical pedal division of two or three stops was severely criticized by Richards. He called for pedal divisions of complete harmonic structure. To attain this, he suggested as a minimum that the pedal should include loud and soft registers at all pitches and at least one mixture.¹⁵ To organists who were content with two sixteen-foot pedal stops and the usual battery of couplers, Richards' proposals must have seemed unnecessarily elaborate.

The typical Choir division was also criticized. Richards explained how it had become a collection of soft, accompanying stops and solo registers. This was in conflict with Baroque Rückpositiv which he claimed was the direct survivor of the Positive, a small organ carried in religious processions and used for accompanying small

¹⁴Ibid.

¹⁵Ibid., pp. 18-19.

groups of singers.¹⁶ According to his reasoning, the stops best suited for accompanying singers were principals. The Choir division therefore should have its own principal chorus and serve as a small Great organ. He praised the efforts of some builders who included a large number of mutation stops in the Choir which, he felt, would give an almost unlimited opportunity for color combinations.¹⁷

To illustrate his comments about the Choir division Richards listed three examples: those found in the organs of St. Jude Church, Thornton Heath, England, built by Henry Willis; Trinity Chapel, Hartford, Connecticut, built by E. M. Skinner; and Passau Cathedral in Germany, built by Steinmeyer.¹⁸

Thornton Heath	Hartford	Passau
16' Rohr- gedeckt	16' Contra	16' Quintadena
8' Open	Spitzflute	8' Prinzipal
Diapason	8' Spitzflute	8' Violflöte
8' Violon- cello	(16')	8' Rohrflöte
8' Hohlflute	8' Concert	4' Oktave
8' Dulciana	Flute	4' Spitzflöte
8' Vox	8' Dulciana	2 2/3' Rauschquint
Angelica	8' Unda	II
	Maris	V-VII Mixtur
	4' Gemshorn	III Cymbel
	2 2/3' Nazard	16' Trompete
	2' Piccolo	
	IV Sesquialtera	

¹⁶It is generally accepted that the Baroque Rückpositiv was the successor of the Positive. The small organ, usually of only one or two stops, which was carried about and used in processions was not the Positive, but the Portative.

¹⁷Richards, "Ideal Tonal Design," p. 18.

¹⁸Ibid.

8' Trumpet
8' Clarinet

Richards complimented each example and was particularly pleased with the good chorus effect of the Hartford organ. It is curious, however, that he expressed no special satisfaction with the design of the Passau Choir division, since it contained the principal chorus which he had stated was necessary. It also seems strange that he complimented the Thornton Heath instrument, because it contained a certain heaviness at eight-foot pitch and had no principal stop sounding above eight-foot pitch.

Not everyone agreed with Richards' conclusions. E. M. Skinner gave his reply to the Richards article in the November issue of The Diapason. He disagreed with what he saw as pitting ensemble against solo registers. Skinner defended orchestral reeds as being artistic in a way which harmonic-corroborating stops could not duplicate. He stated that, although the twelfth and fifteenth were satisfactory to a certain extent, they were really not very good for church responses because the organ needed flute celestes and other such registers for such purposes. Skinner asked what the chorale-preludes of J. S. Bach would sound like on one of Richards' organs. He answered his own question by asserting that such works had found perfect expression

on new voices such as the Erzähler, Unda Maris, English Horn, and Pedal Dulciana.¹⁹ Skinner also claimed that leathered, high pressure diapasons would produce a beautiful tone which would blend perfectly with mixtures.²⁰ J. B. Jamison disagreed. He stated that leathering greatly lessened the harmonics of a pipe, thus decreasing its ability to blend. In addition, he felt a leathered diapason would inevitably dominate the ensemble. Jamison did, however, agree that the tonal design should include both ensembles and solo registers.²¹

Jamison's approach was set forth in detail in the September, 1933, issue of The Diapason. It was his opinion that the heavy preponderance of eight-foot tone was the wrong concept. Such registers were too often conspicuous and individual and produced a thick, pervading sound which lacked brilliance. He felt American organ builders had taken up the English idea of several eight-foot diapasons and carried it to an extreme. Jamison cited the American approach of providing power through the addition of more and more

¹⁹E. M. Skinner, "E. M. Skinner on the Modern Organ and Modern Advances," The Diapason (November, 1932), p. 8.

²⁰Ibid.

²¹J. B. Jamison, "Diapason Tone and Leathering," The Diapason (December, 1932), p. 31.

eight-foot registers and stated that the voicing of these stops had also been marked by increasingly more powerful sounds. The solution lay in the more even distribution of the weight of tone. Jamison's answer to this problem was the Cornet as used by Silbermann. Instead of supplying eight-foot power through individual registers at that pitch, Jamison favored the supplementing of the pitch by the harmonics present in the Cornet. This would relieve the eight-foot stops of having to support the upper work as well as providing both solidity and brilliance. The unison diapasons could then be voiced with a soft, rich tone, which would facilitate their assimilation into the total ensemble. Above these stops Jamison would place several mixtures of varying power. His proposed Great organ appeared as follows:²²

16'	Diapason	3 1/5'	Tenth
8'	Diapason	2 2/3'	Twelfth
8'	Diapason 2	2'	Fifteenth
	(16')	IV	Harmonics
8'	Diapason 3	III	Cymbal
8'	Diapason 4	III-IV	Cymbal
5 1/3'	Quint	VIII	Synthetic
4'	Octave		Mixture
4'	Principal	V	Cornet
	(Diapason 4)		

The Synthetic Mixture possessed no independent pipes but instead was drawn from various other existing

²²J. B. Jamison, "The Next Step Forward in Organ Design," The American Organist, XVI (September, 1933), 451-453.

stops. He dismissed the criticism that mutation pitches drawn from unison stops would be out of tune by stating that no one would be able to tell whether they were in tune or not. A lengthy list of possible combinations were given by Jamison in order to demonstrate the wide variety of chorus sounds available from his specification. To this basically English-German type of flue chorus he would add reeds of the British variety.

Although this approach represented a step forward in the sense of a more balanced chorus, Jamison's proposals did not entirely purify tonal design. The presence of numerous eight-foot diapasons, used in conjunction with a Cornet and Mixtures, did not yet accomplish the idea of a purified ensemble. It is appropriate to list the composition of the manual divisions of the organ built by the Austin Organ Company, for whom Jamison served as tonal director. The organ was installed in St. Paul's Episcopal Church, Oakland, California, in 1934:²³

Great

16' Diapason	8' Harmonic
8' Diapason	Flute
8' Diapason 2	8' Gemshorn
4' Octave	4' Flute
2 2/3' Twelfth	Ouverte

²³The American Organist, XVII (July, 1934), 315.

2' Fifteenth
 V Cornet
 III Mixture

Swell

8' Salicional	16' Gedeckt	16' Fagotto
8' Voix	8' Rohrflute	8' Trumpet
Celeste	4' Chimney	8' Oboe
	Flute	8' Vox Humana
8' Geigen	2 2/3' Nasard	4' Clarion
4' Octave	2' Gemshorn	
III Mixture		

Choir

8' Dulciana	8' Concert	8' Clarinet
8' Unda Maris	Flute	4' English
8' Viola	4' Traverse	horn
	Flute	
8' Diapason		
2 2/3' Twelfth		
2' Fifteenth		
1 3/5' Seventeenth		

Although the specification given above is smaller than that of Jamison's proposed organ, it shows he carried out the basic premise of his approach in this instrument. Not only is the Cornet present on the Great, but also in the Swell, since the Mixture contains the seventeenth, nineteenth, and twenty-second. Jamison intended for the Cornet to function in the same manner in both the Great and Swell divisions. The rather liberal inclusion of mutation stops was an advance over instruments of previous years, but the idea of a chorus built on stops of ascending pitches was not achieved in the Choir division.

European organs continued to interest American organists. What had been in past years mere items of curiosity now became the subject for serious study by

Americans. Some claimed that European instruments held certain secrets revelant to current organ building. Others were skeptical about what the classic organs could reveal to contemporary ears. Howard McKinney, reflecting upon his travels in Europe, saw the basic question as whether the organ was to be solely for church accompaniment or as a concert instrument. The question was crucial in his mind, and it was necessary for American organists to resolve the question. He rejected the romantic, orchestral instrument of the previous decade and asserted that the trend was toward a more classic organ. McKinney indicated that the Germans had already resolved the matter and assumed a new direction. He supplied a brief description of the old organ in Groningen Castle mentioned by Praetorius. McKinney called for the adoption of certain principles inherent in that organ: essential differentiation of manuals, labials confined to principals and bourdons,²⁴ and the general quality of sound present in that organ which was attained by the use of low wind pressures, slider chests, scales which broaden as they ascend, and pure tin pipes. McKinney's main point was that the technical advances of the day were only useful insofar as they helped organ builders to realize the

²⁴McKinney was not completely accurate, since the German Baroque organs often included other varieties of flute stops, e.g., the Spitzflöte and Koppelflöte.

great ideals of the past.²⁵ In this aim he was to be in the company of an increasing number of organists and builders.

At the same time other American organists saw Europe's old organs in a different light. William H. Barnes journeyed throughout Europe and recorded his views about the historical instruments which he saw and played. He was particularly disdainful of the old Italian organs and called them unimpressive. He advised other Americans not to waste their time going to see such small organs. Barnes criticized the fact that many Italian instruments had no stops sounding below eight-foot pitch and gave a sound which he felt was too weak and lacking in power. The German organs did not fare much better at his hands. He found much fault with their lack of mechanical appointments; he had observed that one large new German instrument was equipped with only two pistons. Although he admitted the brilliance of the mixture stops, he nevertheless criticized the reeds as being primitive and too nasal. His major complaint, however, concerned the volume of the organs, which he judged to be inadequate. Barnes asserted that sixty sets of pipes in a German organ would equal the

²⁵Howard McKinney, "Organs of Germany and Their Influence on the Present Day," The Diapason (April, 1933), pp. 10-11.

power of an American or English organ of thirty registers. He suggested that a division of Baroque stops might be included in a new organ, but that the remainder of the instrument should be as modern as possible.²⁶

F. Lewis Eldridge spoke very highly of the old Christian Muller organ in the St. Bavo Kerk in Haarlem, Holland. After describing the beautiful case of the organ, he listed the stops and gave the following description:

The general effect of the tone of the full organ can be described as being round and cohesive in the extreme. In the ensemble the roughness of the reeds is not apparent, and the mixture work is not obtrusive. The mixture stops when tried alone are sweet, and not shrill. Although none of the departments are under expression from the swell, the build-up through mutations and reeds, together with the superlative acoustics, give a crescendo which seems to live and breathe.

Apart from the acoustics of the building, the main secret of success is the sure touch in the tonal design of the instrument considered as a whole. The flutes of the organ have a broad tone without being dull. The prestant stops take their place as diapasons and incline toward flutiness, but their tone is gentle and tends to blend well. The scales and metal are good; the cut-up is fairly high and the winding and soundboard room is generous.²⁷

Eldridge surely touched on the central point, the wholeness of the design. His description of the sound

²⁶William H. Barnes, "Odyssey of an Organ Enthusiast," The American Organist, XIV (April, 1932), 219-220.

²⁷F. Lewis Eldridge, "Haarlem Organ, Most Famous of its Period, Has 200th Birthday," The Diapason (September, 1938), p. 15.

of the mixture stops must have aroused some curiosity about these registers which were appearing more frequently in some American organs.

The revelations concerning the European organs by Emerson Richards and others did not fall on deaf ears. Others were aware of deficiencies in the American organ and attempted throughout the decade to correct them. Of all those involved, two men stand out as having contributed most substantially to this new direction: G. Donald Harrison and Walter Holtkamp.

Harrison, an Englishman by birth, did his early work with the Henry Willis firm before migrating to the United States in 1927. In this country he worked first with the Skinner Organ Company and then with the Aeolian-Skinner Organ Company. He was made technical director of the Aeolian-Skinner firm in 1933, an event which placed him in a position to bring about the tonal reforms characteristic of his later instruments. Harrison proceeded to set forth his ideas concerning the tonal design of the organ. He pointed out that the decay of the American organ had come about through exaggerated tendencies, e.g., more and more eight-foot tone, higher wind pressures, and loud voicing. The low wind pressure diapasons of Edmund Schulze and the reeds of Henry

Willis were praised by Harrison, who observed that these builders had rarely, if ever, found it necessary to employ more than one such unison register to support the ensemble. He rejected the assertion by some that organ design in 1932 should be a copy of the instrument of Silbermann's day, but nevertheless made it clear that he believed the new directions were basically sound. Harrison declared that it would be best to absorb into his system the basic tonal ideals of earlier instruments without sacrificing the best of the new voicing techniques which had been developed in recent years. He was in hearty agreement with the return to certain classic principles such as providing a characteristic ensemble on each manual, lower wind pressures, clarity, and a transparent tone. At the same time he did not rule out the use of orchestral solo stops and other soft work.²⁸

One of the weakest divisions of the American organ at that time was the pedal division. In the early part of the twentieth century this division had been reduced to a handful of stops, generally of sixteen-foot pitch, whose purpose was more to shake pews and rattle windows than to provide any independent musical line.²⁹

²⁸G. Donald Harrison, "Present Organ Trend Sound in Principle and Not an Imitation," The Diapason (September, 1933), pp. 22-23.

²⁹Ibid.

Emerson Richards advocated a completely independent pedal and the doing away with the practice of augmentation (unification). He showed how the use of augmentation produced scales which were unsuitable and attacked the idea that the cost of providing more pipes for the pedal would greatly increase the expense of an instrument. What was often overlooked, Richards observed, was the fact that while money was indeed saved in the leaving out of many pipes, the unit chests required for augmentation cost a great deal more than the straight variety. It was his contention, which he supported by citing financial figures of several organ builders, that cost of providing independent pedal stops was very little more than the expenses involved in unit chests.³⁰

Many organists were satisfied with the pedal as it was, among them William H. Barnes. He disagreed with Richards, saying the pedal did not need many independent registers since its function was merely to provide a solid bass for the manuals. Barnes attributed the call for independent pedal divisions to " . . . the severely classically-minded enthusiasts." He felt it was more important to provide the colorful stops on the manuals

³⁰Emerson Richards, "Pedal Organ Discoveries," The American Organist, XVI (October, 1933), 499-504.

than to worry about making the pedal independent.³¹

William King Covell asserted that no great music could be played on organs which did not possess independent pedal divisions. He laid the blame for the augmented pedal on electric action which had freed the builder from having to provide all independent registers and declared that it was not only possible but necessary to design straight pedal divisions which were in keeping with the manuals. Covell suggested several possible designs and stated that the increased cost of such designs would be almost negligible:³²

Pedal

16' Diapason	16' Bourdon
8' Principal	
4' Octave	
IV Mixture	

Great

8' Diapason	16' Quintaton
4' Principal	
II Rauschquinte	
V Mixture	

Except for the lower pitches of the mixtures, Covell's specification could have served as the model for a small Arp Schnitger organ of the late seventeenth century. Many organists of Covell's time must have been

³¹William H. Barnes, "Pedal Organs," The American Organist, XVI (October, 1933), 515.

³²William King Covell, "Straight Pedal Organs," The American Organist, XVII (June, 1934), 269-270.

shocked by such radical proposals. For the Swell division of his organ he proposed a full diapason chorus supplemented by a Viola d'gamba 8' and Celeste, and two reeds--Fagotto 16' and Trumpet 8'.³³

G. Donald Harrison gave one organ builder's view on the question, stating that there was no question as to the great superiority of the independent pedal. He had observed the unbalanced effect of eight-foot registers when derived from their respective sixteen-foot stops and revealed that the attempts to overcome this deficiency by experimenting with various curious scales had failed. The stop list of the pedal division in the organ for All Saints Church, Worchester, Massachusetts, was cited by Harrison as representative of his approach.³⁴ It is revealing to compare the aforementioned specification with that for the Wicks organ in St. Alphonsus Church, St. Louis, Missouri.³⁵

Aeolian-Skinner, 1933 Wicks, 1935

Pedal

Pedal

32' Soubasse
16' Principal
16' Contrebasse

32' Resultant
16' Diapason
16' Diapason (Gt.)

³³Ibid.

³⁴G. Donald Harrison, "A Straight Pedal Organ," The American Organist, XVI (November, 1933), 549.

³⁵The American Organist, XVII (April, 1935), 157.

16'	Soubasse (32')	16'	Subbass
16'	Diapason (Gt.)	16'	Violone
16'	Violone (Ch.)	16'	Bourdon (Sw.)
16'	Flûte	10 2/3'	Bourdon (Sw.)
	Conique (Sw.)	8'	Diapason (16')
10 2/3'	Grosse Quinte	8'	Subbass (16')
8'	Octave	8'	Bourdon (Sw.)
8'	Flûte Ouverte	8'	Violone (16')
8'	Viola (Ch.)	5 1/3'	Bourdon (Sw.)
8'	Flûte	16'	Tuba (Gt.)
	Conique (Sw.)		
6 2/5'	Grosse Tierce		
5 1/3'	Quint		
4'	Super Octave		
4'	Flûte		
III	Sesquialtera		
32'	Contre Bombarde		
16'	Bombarde (32')		
8'	Trumpet		
4'	Clarion		

Although there are two borrows and duplexes of manual stops to the pedal in the instrument designed by Harrison, the division as a whole contains an unusually large number of independent registers. The Wicks organ shows a completely different concept, one which was more widespread than that advocated by Harrison and others. Emphasis is on sixteen-foot tone, as had been recommended by William H. Barnes. There is no stop sounding four-foot pitch or above and no independent register above sixteen-foot. The Resultant 32' was typical of many organs.³⁶

A long series of large instruments were influenced by Harrison, and each organ represented in its own way

³⁶The thirty-two-foot pitch was a combination tone resulting from the Bourdon 16' and Bourdon 10 2/3'.

his ideas concerning a clarified ensemble. Among those early organs were the instruments in the Memorial Chapel, Harvard University (1932), St. Mary the Virgin Episcopal Church, New York City (1933), All Saints Church, Worcester, Massachusetts (1934), Grace Episcopal Cathedral, San Francisco, California (1934), Groton School Chapel (1935), and Church of the Advent, Boston, Massachusetts (1936). The organ built for the Church of the Advent was planned and carried out along the lines of the somewhat earlier Groton Chapel instrument. The disposition is given here:³⁷

Pedal

16'	Contrabass	32'	Subbass	16'	Bombarde
16'	Principal	16'	Bourdon	8'	Trompette
8'	Principal	(32')		4'	Clarion
5 1/3'	Quint	16'	Lieblich		
4'	Principal		Gedeckt (Sw.)		
III	Mixture	8'	Flûte Ouverte		
II	Fourniture	8'	Gedeckt (Sw.)		
		4'	Harmonic Flute		

Great

16'	Sub-Principal	8'	Harmonic Flute
8'	Principal		
8'	Diapason		
5 1/3'	Gross Quinte		
4'	Octave		
4'	Principal		
2 2/3'	Quint		
2'	Super Octave		
V	Sesquialtera		
IV	Fourniture		
III	Cymbel		

³⁷The American Organist, XIX (September, 1936), 305.

Swell

8' Viola da	16' Lieblich	16' Bombarde
Gamba	Gedeckt	8' Trompette 1
8' Viole Celeste	8' Stopped	8' Trompette 2
8' Echo	Flute	8' Vox Humana
Salicional	4' Flauto	4' Clarion
4' Fugara	Traverso	
8' Geigen		
4' Geigen		
2' Fifteenth		
III Grave Mixture		
III Plein Jeu		

Positive

4' Principal	8' Rohrfloete
IV Scharf	4' Koppelfloete
	2 2/3' Nasard
	2' Blockfloete
	1 3/5' Tierce
	1' Siffloete

Choir

8' Dolcan	4' Zauber-	8' Clarinet
8' Dolcan Celeste	floete	8' Trumpet
8' Viola		

The harmonic fullness of the Great and Pedal are most striking. The presence of five compound stops in these two divisions is noteworthy, especially when we recall the mixtureless organs of twenty years prior. One remaining element of the earlier years is seen in the presence of two diapason stops of eight-foot pitch, although these stops were voiced to give different tone qualities. The Swell also displays a complete ensemble capped with two mixtures, one for flue and the other for reed ensemble. When employed with the reeds these mixtures give a very brilliant

sound, thus making unnecessary the very high pressure stops of the early part of the century.

The Church of the Advent organ also contained one division which was a direct example of the study of old European organs--the Positive. This division was placed in the open and consisted of principals and flutes voiced with a very clear and assertive tone. It was considered a necessity by Harrison for the correct playing of the music of J. S. Bach and other Baroque composers. The departure from the usual Baroque practice lay in the fact that no reeds were included and that the Sesquialtera was divided into two separate registers. The incorporation of such a division was nevertheless a giant step forward in granting to the organ tonal design which was well integrated in its general scheme.

If Harrison's organs seem somewhat conservative to observers of today, it must be pointed out that his proposals stood in stark contrast to those of many of his contemporaries. A perusal of representative stop-lists by other builders reveals how wide the gulf was. The specification of the Pilcher organ built in 1938 for the Reid Memorial United Presbyterian Church, Richmond, Indiana, is illustrative.³⁸

Pedal

16' Violone	16' Lieblich Gedeckt (Sw.)
16' Dulciana	

³⁸The American Organist, XXI (April, 1938), 2.

8' Cello (16')

16' Diapason

8' Octave (16')

Great

8' Gamba

8' Melodia

8' Trumpet

16' Diapason

4' Flute

d'amour

8' First

Diapason

8' Second

Diapason

4' Octave

2' Fifteenth

III Mixture

Swell

8' Viol d'
orchestre

16' Lieblich

8' Cornopean

Gedeckt

8' Oboe

8' Viol

8' Gedeckt

Celeste

4' Flute

4' Fugara

Harmonique

2' Flautino

8' Violin

Diapason

8' Diapason

4' Octave

Choir

8' Dulciana

8' Concert

8' Clarinet

8' Unda Maris

Flute

4' Flauto

8' Diapason

Traverso

2' Piccolo

Echo

8' Viola

8' Hohlflöte

8' Vox Humana

8' Viola

4' Waldflöte

Celeste

V Harmonic

Aetheria

The tonal design of the Richmond, Indiana, organ could not have been farther from Harrison's approach.

The ideas of the early part of the century are firmly expressed in this organ, and very little progress is evident. Although the Great organ has a semblance of ensemble, the remainder of the divisions are an assortment of various tone qualities with little relationship to each other. The Pedal division was particularly deficient because it contained only three independent stops, all of which were of sixteen-foot pitch.

Other builders showed the same reluctance to accept the ideas of the reformers. It is clear that organ builders had to work then, as well as now, with organists in drawing up specifications for new organs. Some dispositions indicate that many organists were satisfied with most of the old ways. Typical of M. P. Möller's work during the period was the organ built in 1941 for James Memorial Chapel, Union Theological Seminary, New York City:³⁹

Pedal

16' Violone	16' Bourdon	16' Posaune
16' Contra	16' Gedeckt	16' Fagotto
Dulciana	(Sw.)	(Sw.)
(Ch.)	8' Bourdon	8' Posaune
	(16')	(16')
16' First	8' Gedeckt	4' Clarion
Diapason	(Sw.)	(16')
16' Second	4' Hohlflute	
Diapason	(Sw.)	
8' Octave (16')		
8' Principal (16')		

³⁹The Diapason (November, 1941), p. 1.

Great

16'	Violone	8'	Clarabella	8'	Tuba (Solo)
8'	Viola d'amour	4'	Harmonic Flute	8'	Trumpet (Solo)
8'	First Diapason			4'	Clarion (Solo)
8'	Second Diapason				
4'	Octave				
2'	Super Octave				
III-IV	Plein Jeu				

Swell

8'	Viola	16'	Bourdon	16'	Fagotto
8'	Viola Celeste	8'	Hohlflute	8'	Trumpet (16')
8'	Echo	4'	Flauto Traverso	8'	Oboe
	Salicional	2'	Flautino	8'	Vox Humana
4'	Salicet (8')			4'	Clarion (16')
8'	Geigen Principal				
4'	Octave				
III-IV	Cymbel				

Choir

16'	Contra Dulciana	8'	Concert Flute	8'	Clarinet
8'	Dulciana (16')	4'	Flute d'amour		
8'	Unda Maris	2 2/3'	Nazard		
		2'	Spitzflute		
8'	Diapason	1 3/5'	Tierce		

Solo

8'	Viola da Gamba	8'	Orchestral Flute	8'	Tuba
8'	Viola Celeste	4'	Harmonic Gedeckt	8'	Trumpet
				8'	Orchestral Oboe
				8'	French horn
				8'	English horn
				4'	Clarion (8')

The design of the instrument is strongly tied to the orchestral tradition with the Choir and Solo divisions packed with imitative stops, both strings and reeds. Although the Choir does contain two mutations, the remainder of stops in that division are orchestral strings and reeds. The Swell is allotted an abundance of eight- and four-foot stops, although there is a diminutive chorus of principal stops present including a mixture. Typically, the greatest weakness lies in the Pedal, which has only five independent stops. The remainder of the stops are either borrows from the manual divisions or extensions of other Pedal registers. The tonal design of the instrument illustrates the fact that many organists were not willing to sacrifice a wide assortment of orchestral stops in order to have an independent and balanced Pedal division.

In 1937 the Aeolian-Skinner Organ Company built an instrument for the Germanic Museum at Harvard University which gave impetus to the reform movement. The organ was completely unenclosed and had the following resources:⁴⁰

Pedal

8' Principal	16' Bourdon	16' Posaune
IV Fourniture	8' Gedecktbass	8' Trumpet (16')

⁴⁰The American Organist, XX (May, 1937), 166.

4' Nachthorn 4' Krummhorn
2' Blockfloete (Pos.)

Great

8' Principal 16' Quintade
4' Principal 8' Spitzfloete
2 2/3' Quint 4' Rohrfloete
2' Super
Octave
IV Fourniture

Positiv

III Cymbel 8' Koppel- 8' Krummhorn
floete
4' Nacht-
horn
2 2/3' Nasat
2' Block-
floete
1 3/5' Terz
1' Siffloete

This was an example of Harrison's so-called Baroque organ. He built it to try to recapture the fundamental character of the organ which, he felt, had been lost in the Romantic era. The instrument resembled the organ of the German Baroque era, except for the fact that it contained no principal stop on the Positiv division. The organ earned both the praise and scorn of organists for years and has taken its place as one of the most significant instruments of the early years of the reform movement.⁴¹

E. Power Biggs utilized the instrument for a lengthy series of J. S. Bach recitals, events which

⁴¹Harrison's organ was replaced by a three-manual and pedal organ by D. A. Flentrop in 1958.

would hardly have proved worthwhile twenty years earlier. Although many musicians were interested in this new instrument, numerous organists stayed away from the series, obviously displeased with the design of the instrument and what it implied.⁴² One who did go, however, was William H. Barnes, who said of the organ:

One of the most interesting things about this organ, which I particularly observed in hearing Mr. Biggs play a Handel Concerto, some Bach choral preludes, and some of the precursors of Bach upon it, was the fact that it was possible not only to get the necessary clarity for playing contrapuntal music, but that some of the soft effects with the mutations and Siffloete were positively ear tickling. Actually quite as much so as some of our much vaunted modern solo effects, such as French horns, Flute Celestes and other orchestral voices. This was something of a revelation to me, and no doubt will be to many another organist who may be misled by thinking that the term "classic" organ is synonymous with such words as severe, austere and cold. It need not necessarily be so.⁴³

Barnes hastened to add, however, that in his opinion the organ could serve as Great and Choir divisions of a three-manual organ, with the addition of a modern Swell organ.⁴⁴

Harrison had built the Harvard organ to recapture a lost spirit, not to set a fixed direction.

⁴²"Power Biggs Makes History at Harvard's New Baroque Organ," The Diapason (January, 1938), p. 4.

⁴³William H. Barnes, The Contemporary American Organ (3rd ed.; New York: J. Fischer and Bro., 1937), p. 166.

⁴⁴Ibid., pp. 165-166.

Actually he was impressed with and interested in Cavaillé-Coll organs and the brilliant French reeds. Blend was his principal consideration, and he insisted that the most important achievement in an organ was the fusing of the various elements. In this respect he was critical of the high pressure reeds used by some builders. Harrison's reeds were characterized by a brilliant, fiery tone and voiced in such a manner so as to blend with other stops. He rarely included them in the Great organs he designed, but placed several such chorus and solo stops in the Swell instead.⁴⁵

Harrison's instruments gradually began to take shape in the form of a Great, an enclosed Swell, an unenclosed Positiv, and Pedal. If the instrument had greater resources, an enclosed Choir might be added. This general scheme was later to be adopted by many American organ builders and served as a basic approach for organ building for over two decades.

Emerson Richards was in full accord with Harrison's efforts. The two men were good friends, and both were concerned with the American organ and its trends in tonal design. Richards' numerous articles served to articulate the new ideas and acquaint other organists with the proposals for reform. In trying to arrive at an expression with which to describe the new approach, Richards

⁴⁵G. Donald Harrison, "Chorus Reeds are Ensemble, not Solo," The American Organist, XXIV (June, 1941), pp. 172-174.

praised Harrison and Walter Holtkamp for carrying out the new ideas so successfully. He summed up his views on what constituted the new "American-Classic" in a description of the rebuilding of the Aeolian-Skinner organ in the Church of St. Mary the Virgin, New York City, designed by G. Donald Harrison and Ernest White, organist of the church. An analysis of each division of the organ as originally built and in its rebuilt form is illustrative.⁴⁶

Great, 1932

16'	Principal	8'	Flute	16'	Double
8'	Principal		Harmonique	8'	Trumpet
8'	Diapason	8'	Gemshorn	4'	Clarion
5 1/3'	Quint	4'	Flûte		
4'	Octave				
4'	Principal				
3 1/5'	Grosse Tierce				
2 2/3'	Twelfth				
2'	Fifteenth				
V	Harmonics				

Great, 1943

16'	Principal	16'	Quintaton
8'	Montre	8'	Bourdon
5 1/3'	Quint	8'	Quintaton (16')
4'	Prestant	4'	Flûte Couverte
3 1/5'	Grosse Tierce		
2 2/3'	Octave Quint		
2'	Doublette		
V	Harmonics		
III-V	Fourniture		
III	Cymbale		

⁴⁶ Emerson Richards, "An American-classic Organ Arrives," The American Organist, XXVI (May, 1943), 106-108.

The pitch differentiation of manuals was carried out by placing the Great at sixteen-foot pitch, the Swell at eight-foot, and the Positif⁴⁷ at four-foot. The new scheme called for a change of the structure of the Great from a reliance on reeds to a full flue chorus, which was accomplished by removing the three trumpets under high wind pressure and placing two new chorus mixtures in the division. The use of two or more unison diapasons was rejected; Harrison considered one such stop sufficient to support the chorus.⁴⁸

Swell, 1932

8' Salicional	16' Flûte	16' Bombarde
8' Voix Celeste	Conique	8' Trompette
8' Viole	8' Rohrfloete	8' Oboe
Sourdine	4' Flûte	8' Vox Humana
8' Voix Aeolienne	Triangul-	4' Clarion
4' Salicet	aire	
2' Salicetina		
8' Principal		
4' Octave		
IV Sesquialtera		
V Plein Jeu		

Swell, 1943

8' Salicional	16' Flûte	16' Bombarde
8' Voix Celeste	Conique	8' Trompette
8' Viole	8' Bourdon	8' Oboe
Sourdine	à Chéminée	8' Vox Humana
8' Voix Aeolienne	4' Flûte	4' Clarion
	Couverte	

⁴⁷The use of French terminology in the organ was at the insistence of Mr. White, organist of the church.

⁴⁸Richards, "An American-classic Organ Arrives," pp. 106-108.

4' Salicet 2 2/3' Nazard
2' Salicetina

III Cornet
V Flein Jeu

The Swell division was changed less than the other manuals. The eight- and four-foot principals which had been in the Swell were melted down to provide metal for the Gambas on the Positif, leaving the Swell without principal stops at any pitch.⁴⁹ The chief requirement for a Swell in Harrison's concept was a battery of chorus reeds capped by a mixture. The presence of principal stops in the Swell was not considered a necessity, although he provided them whenever funds allowed their inclusion.⁵⁰

Choir, 1932

16' Contra	8' Concert	16' Bassoon
Dulciana	Flute	8' Trumpet
8' Viole	8' Spitz-	8' Clarinet
8' Viole	flute	4' Clarion
Celeste	4' Flute	
	d'amour	
8' Geigen	4' Gemshorn	
Principal	2 2/3' Nazard	
V Sesquial-	2' Piccolo	
tera	1 3/5' Tierce	
	1 1/3' Larigot	

Positif, 1943

16' Salicional	8' Flûte	16' Musette
8' Viole	Traversière	8' Cromorne

⁴⁹Restrictions on tin and other metals during the war precluded the making of new metal pipes.

⁵⁰Richards, "An American-classic Organ Arrives," pp. 129-131.

8' Virole	4' Flute	8' Clarinet
Celeste	d'amour	4' Chalumeau
8' Gambe	2 2/3' Nazard	
8' Gambe	2' Piccolo	
Celeste	1 3/5' Tierce	
	1 1/3' Larigot	
4' Principal		
IV Cymbale		

The Positif, transformed from an old Choir, remained enclosed in a swell box. This, together with the presence of the strings, was not satisfactory in Richards' opinion. Both he and Harrison favored an unenclosed Positiv containing flutes, principals, mixtures, and short resonator reeds. In spite of these few qualifications, Richards nevertheless considered the St. Mary Positif as basically sound in design. The eight-foot flute, Principal and Cymbale formed the ensemble of the division and were supplemented by three mutations and four ranks of strings, the latter at the insistence of Mr. White. The most significant change was the inclusion of the short resonator reeds, which increased the effectiveness of the division as a Baroque unit. Richards was very complimentary about the sound of the reeds, saying they produced a light, hollow and penetrating sound.⁵¹ The new design also allowed for a Bombarde division of ten stops. Due to the restriction on new metals, however, the stops were not available at the time of rebuilding.

⁵¹Ibid.

Pedal, 1932

16'	Dulciana	16'	Flûte	32'	Contre
16'	Contre		Ouyerte		Bombarde
	Basse	16'	Flûte	16'	Bombarde
8'	Violon-		Conique		(32')
	cello		(Sw.)	16'	Double
	(16')	10 2/3'	Quint		Trumpet
		8'	Flute		(Gt.)
16'	Principal		(16')	16'	Bassoon
16'	Diapason	4'	Octave		(Ch.)
	(Gt.)		Flute	8'	Trumpet
8'	Octave		(16')		(Gt.)
	(16')	2'	Kleine	8'	Trompette
6 2/5'	Gross		Flute		(16')
	Tierce		(16')	8'	Bassoon
5 1/3'	Quint				(Ch.)
	(16')			4'	Clarion
4'	Principal				(16')
	(16')			4'	Clarion
IV	Harmonics				(Gt.)
				4'	Bassoon
					(Ch.)

Pedal, 1943

16'	Contre	16'	Quintaton	32'	Contre
	Basse	16'	Flûte		Bombarde
16'	Salicional		Conique	16'	Bombarde
	(Ch.)		(Sw.)		(32')
8'	Contre	8'	Quintaton	16'	Musette
	Basse (16')		(16')		(Ch.)
8'	Salicional	8'	Flûte	8'	Trompette
	(Ch.)		Conique		(16')
4'	Contre		(Sw.)	8'	Musette
	Basse (16')	4'	Quintaton		(Pos.)
4'	Salicional		(16')	4'	Clarion
	(Ch.)	4'	Flûte		(16')
			Conique	4'	Musette
16'	Principal		(Sw.)		(Pos.)
	(Gt.)	2'	Quintaton		
5 1/3'	Quint		(16')		
4'	Doublette				
IV	Grand Cornet				
IV	Fourniture				
II	Carillon				

Almost all the voices in the Pedal division
were new or reworked. Since there was a need for new

ranks, the old Diapason 16' was melted and a new wood Contre Basse 16' was provided. Richards observed that the use of unification resulted from the lack of new pipes. This made the Pedal somewhat less than satisfactory. The design, however, was to provide the Pedal with as many independent stops as possible and especially to provide an independent principal chorus. If the materials had been readily available Harrison would have included more Pedal registers.⁵²

The basic design of this "American-classic" instrument provided the fundamental approach evident in Harrison's later instruments. Additional refinements were made, but the basic approach remained the same. The contributions of Harrison to the American organ reform were of great importance because they were made at a time when many other organists and organ builders were content to have instruments whose main quality seemed to be the ability to make a tremendous amount of noise and imitate the orchestra. Harrison's whole attitude toward organ design is succinctly stated in his own words:

It seems to me that the only way to build artistic and successful instruments is to have knowledge of what has gone before, and to thoroughly understand the underlying principles upon which the great works of the past have been based. The works produced are then originals, and while they

⁵²Ibid., pp. 153-154.

can possess all the advantages of other good work, they have their⁵³ own personality and reflect their own time.

Walter Holtkamp

Another builder who worked diligently to solve the problems of tonal design was Walter Holtkamp, who had assumed direction of his father's firm in 1931. Holtkamp referred frequently to Schweitzer's Out of My Life and Thought.⁵⁴ He started at the same point as had Harrison--dissatisfaction with the American organ. One of his principal complaints was the placing of organs in chambers, a process which he thought bottled up the tone. The location of the old European Ruckpositiv must have exerted a strong influence on Holtkamp, for in 1933 he built an unenclosed Positiv division to be added to the existing E. M. Skinner organ in the Cleveland Museum of Art. This addition had come about as a result of discussions between Paul Quimby, Melville Smith, and Holtkamp concerning the playing of the works of J. S. Bach. Their conclusions were that the organ needed freedom from enclosure and a broadening of the tone so that clarity could be achieved.

⁵³T. Scott Buhrman, "Clarity and Its Development," The American Organist, XX (February, 1937), 47-50.

⁵⁴F. R. Weber, "A Holtkamp Story," The Diapason (April, 1962), p. 28.

The Cleveland Positiv, which was widely publicized, was a significant step toward that goal. It stood on the balcony rail directly above the main floor and was located behind the organist. The pipes stood entirely in the open and were free to speak without any hindrance. Holtkamp asserted that only in that way would a pipe adapt itself to its neighbors, using the ceiling and walls of the building as case work to blend and project the sounds.⁵⁵

It is interesting to note that many of the ideas expressed by Holtkamp in describing the building of the Cleveland Positiv guided his approach to organ building for many succeeding years. He opposed the forced voicing of pipes which, he felt, made them rebellious. The matter of wind pressure was of central importance and involved the whole nature of the organ. Holtkamp observed that high wind pressure tended to rob pipes of their individuality and caused them not to complement each other in a natural manner. On the other hand, he believed that low wind pressure allowed pipes to speak easily and with a free tone, to develop their own harmonics, and also to be a contributing member of the ensemble. The pipes of the Cleveland Posi-

⁵⁵Walter Holtkamp, "Building the Ruckpositiv," The American Organist, XVII (March, 1934), 122-124.

tiv were voiced to produce a percussive attack, which Holtkamp considered necessary to impart the much needed elements of gaiety and joy to the tone.⁵⁶

One of his early instruments was the organ built in 1934 for St. John's Church, Covington, Kentucky. The result was an organ of modest but straightforward character. In a description of the instrument, Holtkamp wrote of the manner in which they placed the organ in a free-standing position to achieve a free and relaxed speech from the pipes. The disposition is given below:⁵⁷

Pedal

16' Contre	16' Quintaton	8' Posaune
Bass	(Gt.)	
8' Cello		

Great

8' Salicional	16' Quintaton
	4' Ludwigtone
8' Principal	
4' Prestant	

Swell

8' Viola	8' Harmonic	4' Oboe-
da Gamba	Flute	Clarion
V Mixture	4' Gemshorn	
	2 2/3' Nasard	
	1 3/5' Tierce	

⁵⁶Ibid.

⁵⁷Walter Holtkamp, "An Organ to See and Hear," The American Organist, XVIII (July, 1935), 269-271.

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Several characteristics of the organ are of importance. Although the resources of the instrument were relatively small, Holtkamp included two mutations and one mixture. The allotment of three independent registers to the Pedal also indicates an attempt to discard the idea of using that division only as a support to the manuals. Both of these actions indicate that Holtkamp was trying to impart to the organ a sense of chorus and independence of the various divisions. He arranged the pipes on the chests so as to form a visual composition pleasing to the eye. It is also noteworthy that the instrument did not contain tremulants, celestes, or a Vox Humana.

In 1937 St. Philomena's Church, Cleveland, Ohio, placed the responsibility of building its new organ with Holtkamp. The instrument contained a total of thirty-three registers, all of which were independent. Also significant was the inclusion of a Rückpositiv, which was claimed to be the first instance of such a division in modern America.⁵⁸ The specifications are as follows:⁵⁹

⁵⁸Two earlier examples are known: the Erben organ in Trinity Church, New York City, built in 1846, and the Jardine instrument in the First Presbyterian Church, Newburgh, New York, built ca. 1863.

⁵⁹The American Organist, XXI (February, 1938), 60.

Pedal

16'	Dulciana	16'	Bourdon	8'	Posaune
16'	Violone	16'	Gross- floete		
8'	Octave				
4'	Choral- bass				
IV	Vorsatz				

Great

8'	Salicional	16'	Lieblich Gedeckt
8'	Diapason	8'	Bourdon
4'	Principal	4'	Hohl- floete
II	Tierce		

Swell

8'	Gambe	8'	Flute	8'	Schalmei
8'	Viole	8'	Ludwig- tone	8'	Vox Humana
2'	Fugara	4'	Octave Flute	4'	Oboe Clarion
V	Plein Jeu				

Rückpositiv

4'	Prestant	8'	Quintaton
2'	Doublette	8'	Gemshorn
III	Cymbal	4'	Rohrfloete
		2 2/3'	Nazard
		1 3/5'	Tierce

Each division, including the Pedal, contains its full principal ensemble in addition to supplementary flute and string stops. The Great Tierce is made up of 2' and 1 3/5' pitches. Perhaps the most striking thing about the instrument is that two of the three manual divisions are unenclosed, a fact which must have been startling to many organists in 1937. The Rückpositiv was projected out from the gallery rail and gave

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a free and unencumbered tone. Holtkamp stated that the location of the Rückpositiv enabled it to develop a distinctive individuality quite apart from any difference caused by disposition or voicing. He indicated that the division would possess a different character if it were placed with the remainder of the organ.⁶⁰ The complete Pedal division represented an improvement on earlier organs he had built and was typical of his later instruments.

Holtkamp experimented extensively with the basic components of the organ and how to achieve the best results. One of his most important contributions to organ building was the reintroduction of the slider chest. The organs of the Baroque era had employed the slider or spring chest, but the advent of electric actions of various types had discouraged their use and they eventually disappeared. Holtkamp began to experiment with the slider chest with electro-pneumatic pull-downs and found many things about it advantageous. He declared that pipes needed some type of sympathetic relationship and that it was impossible with the types of chests in use at that time. Holtkamp believed that the musicality of the old European organs was not fully recreated by modern builders and that part of the problem

⁶⁰Ibid.

lay in the wind chest design. The credit for attention to wind chest construction and design must be given to Holtkamp, since he was the first to assert that they had to be a basic part of the tonal concept. The attack of the pipes was more important than their tone to Holtkamp, and he believed that the cleanest and most precise attack was possible only when slider chests were employed. He claimed this gave the player more musical feeling and imparted to the playing better rhythm and generally cleaner results.⁶¹

One of his earliest uses of slider chests was in the small organ built in 1938 for Emmanuel Lutheran Church, Rochester, New York.⁶²

Pedal

8' Choralbass 16' Subbass

Great

8' Principal 4' Nachthorn

Swell

4' Prestant 8' Quintaton
IV Cornet

Holtkamp's opinions concerning the slider chest are stated in his remarks about this organ:

While it is yet too early to make a general statement about the results we have achieved

⁶¹Walter Holtkamp, "Plea for Reviving the Slider Chest," The American Organist, XXII (January, 1939), 13-15.

⁶²T. Scott Buhrman, "A Miniature Sliderchest Organ," The American Organist, XXI (April, 1938), 136.

with the sliderchest, my observations to date convince me that it has possibilities way beyond our present comprehension.

I am now convinced there are many advantages in the sliderchest, or note-chamber chest. It promotes fuller and more ample sonorities; it helps produce clearer and more agreeable results in contrapuntal music; and it encourages legato and even super-legato touch. Some builders abroad even go so far as to state quite positively that the sliderchest is the one and only true chest. In America we may never go to that extreme but I am convinced that eventually the sliderchest will play a much more important part in organ building.⁶³

Few statements about organ building have been more prophetic than Holtkamp's remarks about the possibilities of the sliderchest, for future years were to see its increasing acceptance by other builders. The process was quite slow, however, and many organists did not share his opinions about resurrecting the slider chest. The venerable organ expert, William H. Barnes, had a different opinion. He recalled his years of playing tracker action organs while a young boy and declared he did not like the slider chest at all. He enumerated his objections: noisiness, sticking sliders, robbing of air, and the increased cost of making sliders. Barnes considered sliderchests old-fashioned and to use them would be a step backward.⁶⁴ Holtkamp persisted, however, and used the sliderchest in most of his organs and succeeded

⁶³Ibid.

⁶⁴William H. Barnes, "The Sliderchest," The American Organist, XXII (April, 1939), 131-132.

in achieving what many organists considered to be a very musical result.

The tonal design of the Rochester organ shows the germ of an approach which was to become typical of Holtkamp. There are no duplications of pitch within the divisions, and all the stops are of pure organ tone. There were no orchestral registers. Holtkamp's description of the voicing sheds some light on the quality of sound:

The Great 8' Principal (used in the front pipes of the case) is far from being a bold Diapason of the English variety; the tone is mild and broad; it has that peculiar singing quality produced only by low pressure and wide low-cut mouths. The 4' Nachthorn is an open metal flute⁶⁵ of large scale, precise and positive in speech.

Holtkamp was obviously after a milder sound than that found in the roaring organs of twenty years earlier. The utilization of low wind pressure and wide, low-cut mouths produced a singing and unforced quality which was not unlike the German Baroque instruments. Perhaps the most important element of Holtkamp's design, however, was the insistence on ensemble regardless of the size of the organ. Holtkamp did not preclude the inclusion of orchestral imitations or other organ effects, but he did object strenuously to any attempt to reduce the basic tonal structure for the sake of having a few peripheral effects. The seriousness of Holtkamp's approach

⁶⁵Buhrman, "A Miniature Sliderchest Organ," p. 136.

to tonal design cannot be questioned, and he upheld the obligation on the part of builders to endow their instruments with the resources necessary for the rendering of serious music.⁶⁶

The Holtkamp organ built in 1944 for the First Unitarian Church, Cleveland, Ohio reveals mature thought about tonal design. Although it was rebuilt from an earlier instrument, the larger resources enabled Holtkamp to carry out a more extensive scheme. The disposition is given here:⁶⁷

Pedal

16' Contrabass	16' Subbass	16' Posaune
8' Octave	16' Quintadena (Gt.)	8' Trumpet
5 1/3' Quint	8' Flauto	
4' Choral Bass	Dolce	
2' Octava (4')		
II Terzian		

Great

8' Principal	16' Quintaton	8' Cromorne
4' Octave	8' Quintaton (16')	
2 2/3' Quint	4' Nachthorn	
2' Super Octave		
IV Fourniture		

Swell

8' Viola	8' Gedeckt	8' Fagotto
8' Vox Celeste	4' Bourdon	
8' Aeoline	2' Flute	
4' Geigen		
III Cornet		
IV Plein Jeu		

⁶⁷The Diapason (March, 1944), p. 1.

Positiv

4' Principal	8' Copula
2' Doublette	4' Rohrflöte
III Cymbel	2 2/3' Nazard
	2' Doublette
	1 3/5' Tierce

Every division is given a complete ensemble of principal stops, each of a different character. The specification of the Positiv is noteworthy because it is typical of Holtkamp organs twenty years later. The manual reeds were obviously intended for solo purposes with the possible exception of the Swell Fagotto, while the pedal reeds served as chorus registers. The Pedal division of this organ exhibited a much better tonal balance than those of his earlier instruments. The Great has now assumed a more complete form with eight-, four-, and two-foot principals surmounted by a four-rank mixture. The remaining divisions are logically related to the Great with the principal in the Swell pitched at four-foot level and the Positiv also at four-foot but with a higher mixture. The complete design is very cohesive.

The 1947 instrument built for St. Paul Evangelical Lutheran Church of Cleveland, Ohio, possessed a stop list similar to the organ in the First Unitarian Church. There were, however, several refinements. The new Pedal division contained an independent three-rank mixture. In addition, Holtkamp was able

to locate the Positiv of the St. Paul organ directly behind the organist's back in the manner of the old European Rückpositiv. The pipes were in the open, which agreed with Holtkamp's desire to free the organ from the tyranny of the organ chamber.⁶⁸

Walter Holtkamp's contribution to the organ reform movement in its early years was extremely important. Practically alone he and G. Donald Harrison, with the support of a few organists, extricated the organ from the tonal quagmire in which it had languished so long. The two men had taken two different but parallel paths. Harrison had sought to include the best elements of German, English, and French organ building in his instruments; Holtkamp pursued a path toward an instrument of Germanic character. Organists of succeeding generations owe a considerable debt to Holtkamp for the clear logic which he applied to the problems of tonal design and the results he achieved.

Other Organ Builders

Other men were actively engaged in the problems of tonal design in the forties; among them was Charles McManis of Kansas City, Kansas. McManis was

⁶⁸"Organ by Holtkamp for Cleveland Fane,"
The Diapason (September, 1947), p. 1.

concerned with various aspects of organ building including mechanical action and had built a two-manual, mechanical action instrument as early as 1941. One of his organs was built in 1940 for Grace Lutheran Church, Kansas City, Kansas:⁶⁹

Pedal

16' Subbass
8' Subbass (16')

Great

8' Dulciana 8' Melodia
4' Principal
2' Doublette

Swell

8' Salicional 8' Bourdon
4' Flute
II Mixture

The pipework was from an old Johnson organ, which McManis rearranged and revoiced to meet his own requirements. Even though the resources were severely limited, the builder provided ensembles for both manuals. McManis was aware of the need for clarity and brilliance rather than a wider variety of unison registers.

Not all builders plunged wholeheartedly into the new ideas of the reform movement. Many were reluctant to change the procedures in organ building which had guided them for years. The organ built in 1947 by the Schantz Organ Company for the Evangelical and Reformed

⁶⁹The American Organist, XXIII (September, 1940), 281.

Congregation, New Knoxville, Ohio, was considerably more conservative in design.⁷⁰

Pedal

16' Violone (Ch.)	16' Bourdon
8' Cello (Ch.)	16' Lieblich Gedeckt (Sw.)
16' Open Diapason	8' Major Flute (16')
8' Octave (16')	8' Dolce Flute (Sw.)
4' Super Octave (16')	

Great

8' Gambe	16' Quintaton	8' Trumpet
8' Open Diapason	8' Doppel Flute	
4' Octave	8' Gross Flute	
2 2/3' Twelfth	4' Flute Harmonic	
2' Fifteenth		

Swell

8' Salicional	8' Stopped	8' Cornopean
8' Voix Celeste	Diapason	8' Oboe
4' Violina	4' Flauto Traverso	8' Vox Humana
8' Geigen Diapason	2' Flautino	

III Mixture

Choir

8' Dulciana	8' Melodia	8' Clarinet
8' Unda Maris	4' Flute d'amour	8' French Horn
8' Violin Diapason		

If Holtkamp's instruments represented change, this instrument epitomized the lack of change. The Great con-

⁷⁰"Strong Rural Church Orders Three-Manual Organ," The Diapason (December, 1947), p. 4.

tains a diminutive chorus but lacks a mixture and the Swell exhibits weight centered at the eight-foot pitch which is supported by three reeds of that pitch. There is the usual eight-foot diapason, but no stop of that type at a higher pitch, other than the three rank mixture. Instead of a balanced ensemble there is more emphasis on eight-foot pitch. The Choir is little more than a collection of orchestral stops principally at eight-foot pitch. Only two independent stops were placed in the Pedal which made that division almost completely dependent upon couplers for adequate ensemble support. The design of the instrument presents sharp contrast to the Holtkamp organ of the same year for St. Paul Church, Cleveland, Ohio, with its full choruses and assertive Rückpositiv. At best the Schantz instrument represented a very cautious approach to the new ideas, for only a few elements of the concepts advocated by Harrison and Holtkamp were included.

CHAPTER V

REFINEMENTS IN TONAL DESIGN: 1950-1969

General Observations

Tonal design of the American organ had changed considerably between 1925 and 1950. The two decades following 1950 produced numerous changes in thought about organ design and witnessed the advent of ideas which represented both refinements of past ideals and new departures. The "American-classic" approach, articulated by Emerson Richards and executed by men like G. Donald Harrison, was increasingly accepted by organ builders. Matters such as wind pressure, nicking of pipes, scaling methods, and organ placement gradually occupied a more important position in the minds of many builders and organists.

At the same time, some builders were of the opinion that the organ reform had only begun and needed far more changes in order to perfect the tonal structure of the instrument. These craftsmen were advocating what were essentially radical departures from past methods. Through their efforts even more facets of classic organ building were to assume new forms and expressions. One of the most

significant influences upon American organ building in the 1950's was the appearance in America of organs built in Europe. A few churches and educational institutions entrusted the responsibility of building new organs to European firms and a type of instrument appeared which was new in many ways to the American public.

The argument between those of romantic persuasion and those of a more classic inclination continued through the decade with a gradual shift of opinion toward the latter. Many organists sympathized with a more conservative approach, but the number of classically oriented instruments increased each year. An examination of representative specifications shows that most builders eventually moved in that direction.¹

G. Donald Harrison died in 1956 and the leadership of the Aeolian-Skinner firm passed into the hands of Joseph Whiteford. Whiteford made it clear that he did not consider the growing "back-to-Bach movement," as he put it, the solution to tonal design. He preferred a blend of the important elements of all past organ building in the American instrument. He felt this was necessary

¹Allen Hughes, "The New American Organ," Musical America LXXI, No. 3 (1951), pp. 24, 158-159.

in order to produce an organ which could do justice to all styles and periods of organ literature. The organ built in 1965 for the Caruth Auditorium of the Owens Fine Arts Center at Southern Methodist University, Dallas, Texas, is representative of his concept:²

Pedal

16'	Contre	32'	Grand Bourdon ³	32'	Contre Bombarde
8'	Viola da Gambe (16')	16'	Subbass	16'	Bombarde (32')
16'	Principal	16'	Quintaton	16'	Posaune
10 2/3'	Gross-quinte	8'	Gedeckt	8'	Trompete
8'	Octave	8'	Quintaton (16')	4'	Rohr-schalmei
4'	Choral-bass	4'	Koppel-flöte		
IV	Mixture	2'	Blöck-flöte		

Great

8'	Principal	16'	Quintaton	8'	Trompete
4'	Octave	8'	Gedeckt		
IV-VI	Mixture	8'	Gemshorn		
		4'	Rohrflöte		
		2'	Flachflöte		

Swell

16'	Contre	8'	Rohrflöte	16'	Bombarde
	Viola	8'	Flute	8'	Trompette
8'	Viola da Gambe		Celeste II	8'	Hautbois
		4'	Nachthorn	4'	Clarion
		1 1/3'	Larigot		
4'	Principal				
2'	Octavin				
III-IV	Plein Jeu				
III	Cymbale				

²"Open Aeolian-Skinner at Southern Methodist," The Diapason (November, 1965), p. 1.

³This sound is produced by electronic means.

Positiv

8' Principal	8' Holz-	8' Krummhorn
4' Principal	gedeckt	
2' Octave	4' Spillflote	
IV Scharff	2 2/3' Nazard	
	1 3/5' Tierce	
	1' Sifflote	

The design shows no great departure from that of G. Donald Harrison. It conforms to the "American-classic" tradition with unenclosed Great and Positiv and enclosed Swell. The Swell is French in its design with three string stops and bright reeds.

The spelling of stop names by builders is often used to indicate a specific tone quality. As an example, the German spelling of Trompete signifies a different sound from that of the French Trompette. The choice of names and spelling of various stops has always presented a problem to American builders. The observer sees what seems to be an illogical combination of German, English, French, and Italian words in nearly all dispositions. Various proposals have been made in an effort to solve the problem but to no avail. Unfortunately, it is not always possible to have a precise idea of the sound of a stop on the basis of its orthography. In recent years some organ builders have adopted the use of exotic stop nomenclature.⁴

⁴Examples of such are: Schwebend Harf, Dolkanpiffaro, Dunkeltrompete, and Galoubet.

M. P. Möller of Hagerstown, Maryland, the largest organ building firm in the United States, adopted the "American-classic" concept.⁵ Ernest White was a tonal consultant for the firm and exerted considerable influence on the instruments and tonal design made by the company. Two of his suggestions were the creation of a synthetic eight-foot principal pitch with an eight-foot string and flute and the decreasing of scales as pipes ascend.⁶ The typical Möller organ can perhaps be characterized as "American-classic" with strong Romantic inclination. The organ built in 1963 for Trinity Episcopal Church, Tulsa, Oklahoma, is illustrative:⁷

Pedal

16' Violone	32' Sub	32' Contre
16' Erzähler	Bourdon	Bombarde
(Ch.)	16' Bourdon	16' Bombarde
8' Erzähler	(32')	(32')
(Ch.)	16' Spitz-	16' Fagotto
	flöte	(Sw.)
16' Contre-	(Gt.)	8' Bombarde
bass	16' Gedackt	(32')
8' Octave-	Pommer	4' Bombarde
bass	(Sw.)	(32')

⁵Examination of the annual issues of The Diapason for almost any recent year will reveal that Möller is granted a major percentage of organ contracts awarded in the United States.

⁶The author attended a lecture on Tonal Design by Mr. White in 1958. He attempted to substantiate his tonal theories with one of his recent organs. The results were somewhat less than satisfactory, judging from the reaction of other organists who were present at the lecture.

⁷The American Organist, XLVI (June, 1963), 23.

4' Montre	8' Rohr-	4' Schalmey
III Mixture	bordun	(Pos.)
III Harmonics	8' Gedeckt	
	(Sw.)	
	8' Erzähler	
	(Ch.)	
	4' Rohr-	
	bordun (8')	
	2' Blockflöte	

Great

8' Principal	16' Spitzflöte
4' Octave	8' Rohrflöte
2 2/3' Quinte	8' Gemshorn
2' Super	4' Koppelflöte
Octave	
IV Fourniture	
III Scharf	

Swell

8' Viola	16' Gedackt	16' Fagotto
Pomposa	Pommer	8' Trompette
8' Viola	8' Gedackt	8' Fagotto
Celeste	8' Flauto	(16')
	Dolce	8' Vox
4' Principal	8' Flauto	Humana
2' Doublette	Celeste	4' Clarion
IV Plein Jeu	4' Flute	
	Harmonique	

Positiv

4' Spitz-	8' Nasonflöte	4' Schalmey
oktav	4' Spillpfeife	
2' Prinzipal	II Sesquialtera	
III Zimbel		

Choir

16' Erzähler	8' Gedacktflöte	8' Cromorne
8' Erzähler	4' Lochgedackt	8' Trompette
(16')	2' Nachthorn	Fanfare
8' Erzähler	1 1/3' Larigot	(Fanfare)
Celeste		

Fanfare

8' Trompette
Fanfare

Bombarde

III Harmonics	8' Doppel- flöte	8' Bombarde Harmonique
		8' English horn
		4' Clarion Harmonique

Antiphonal

4' Principal	8' Bordun
II Rausch- quinte	2' Spitzflöte

Peripherals such as the Fanfare and Antiphonal divisions are used in church service playing and are not pertinent to a discussion of the basic tonal design. Excluding those divisions, the organ has two enclosed and two unenclosed divisions, three of which possess full ensembles. Unification plays a significant role in the pedal where there are twelve borrowings compared to ten independent stops. The allowance of only three ranks to the pedal mixture seems unnecessarily small when the size of the instrument is considered, especially when there are mixtures on the Great. The Romantic element is well represented in the Swell and Choir; celestes are liberally provided in addition to the usual Swell ensemble of chorus reeds and Plein Jeu. The Choir has no functional relationship to the

other divisions since it serves as a group of solo stops and registers useful only for soft effects. The instrument epitomizes the attempt to combine both Romantic and Baroque elements in one organ, a technique more likely to succeed in a large organ. In the process of blending the two widely different concepts the voicing of each concept was made less characteristic, which compromised to a degree the quality of sound of each style. Baroque was made slightly less Baroque and Romantic slightly less Romantic. The voicing was, however, more articulate and cohesive than that found in the 1942 Möller in James Chapel, Union Theological Seminary, New York City. The whole approach was considered by many to be satisfactory and indeed desirable, since it seemed to make possible a reasonably faithful performance of all the literature.

Other organ building firms have applied the tenets of the "American-classic" in their individual ways. The Reuter Organ Company has been guided for some years by its tonal director, Franklin Mitchell. He has instituted reforms in the tonal design of Reuter's instruments, but he cannot be classified as an adherent of the Baroque revival. Unlike many younger builders, Mitchell would not object per se to the placing of one of his organs in a chamber, if

it were constructed properly. He has stated that a chamber can function in the same manner as a case, i.e., to focus and direct sound. Mitchell has indicated that he holds a flexible position on the tonal design of an instrument and that, in his opinion, the primary consideration is the intended function of the organ. He is not at all adverse to including soft effects in an instrument, as almost all Reuter instruments of recent years will attest. He reveals a slight impatience with other builders of a more strict Baroque inclination with the remark " . . . Of course, we all carry a chaff on our shoulder, just waiting for it to be knocked off." He states that the final judgment on an instrument should be whether or not it can fulfill its particular uses in an artistic manner.⁸ The Reuter organ built in 1968 for the First Baptist Church of Little Rock, Arkansas, serves as a recent example:⁹

Pedal

16' Principal	32' Acoustic	16' Contra
8' Octave (16')	Bourdon ¹⁰	Trumpet
4' Octave (16')	16' Bourdon	16' Hautbois
III Mixture	16' Spitzflöte	(Sw.)

⁸Franklin Mitchell, "A Common-Sense Approach to Two-Manual Design," The Diapason (September, 1966), pp. 48-49.

⁹The American Organist, LI (August, 1968), p. 11.

¹⁰The pitch is produced electronically.

8' Spitzflöte (Sw.)	8' Crown Trum- pet (16')
4' Bourdon (16')	8' Hautbois (Sw.)
	4' Clarion (Sw.)
	4' Hautbois (Sw.)

Great

8' Principal	8' Hohlflöte	16' Contra
4' Octave	4' Nasonflöte	Trumpet
2' Principal		8' Crown
IV Fourniture		Trumpet
		4' Clarion

Swell

4' Geigen	16' Spitzflöte	16' Contre
Principal	8' Spitzflöte (16')	Hautbois
	8' Gedackt	8' Crown
	8' Flute	Trumpet
	Celeste	8' Hautbois (16')
	4' Koppel- flöte	8' Vox Humana
	2 2/3' Nazard	4' Hautbois
	2' Spitzflöte	Clarion
	1 3/5' Tierce	(16')

Chair

8' Viola da Gamba	8' Singend- gedeckt	8' Cromorne
8' Voix Celeste	2' Nachthorn	
	1 1/3' Larigot	
4' Gemshorn	1' Fife	
2' Principal		
III Cymbell		

The organ is laid out in three manual divisions, two of which are enclosed. The design is basically "American-classic" except that the Chair, which resembles a Positiv with string stops, is enclosed in a swell box. The Great is provided with a full principal chorus and

three brilliant reeds. Lack of adequate funds forced the omission of a mixture on the Swell and the extensive use of unification on the Pedal.

The Little Rock organ illustrates a facet of American organ building which is highly questionable-- that of dividing the resources of a two-manual organ in order to achieve a three-manual instrument. In this case the Pedal is unified to the point of practically losing its identity, and the Swell is handicapped by the lack of a mixture. This technique is applied to a great number of organs built in America today not only by Reuter but by other builders as well. It is interesting that Mitchell advised against such a practice in his article and warned against making the organ larger in scope than its resources justified.

Simply put, never go to a three-manual design if by so doing the three divisions are cut too thin, where by staying with two manuals, each can be more complete. Again, there are exceptions to this generalization, but seldom are these exceptions fully justified in the normal church situation.¹¹

In the Little Rock organ, the Chair could have been omitted and its ranks divided between the other divisions. This would permit a more complete scheme than the design adopted. One possible result of such a redesigning could take the following form,

¹¹Mitchell, "Two-Manual Design," p. 48.

which presents a balanced and cohesive instrument:¹²

Pedal

16' Principal	16' Bourdon	16' Contra
8' Octave	16' Spitzflöte	Trumpet
4' Octave	(Sw.)	16' Hautbois
IV Mixture	8' Spitzflöte	(Sw.)
	(Sw.)	8' Trompette
	4' Bourdon	8' Hautbois
	(16')	(Sw.)
		4' Clarion
		4' Hautbois
		(Sw.)

Great

8' Principal	16' Quintaton	16' Contra
4' Octave	8' Hohlflöte	Trumpet
2' Octave	4' Nasonflöte	8' Crown
IV Mixture		Trumpet
		4' Clarion

Swell

8' Viola da	16' Spitzflöte	16' Contre
Gamba	8' Spitzflöte	Hautbois
8' Voix Celeste	(16')	8' Trompette
	8' Gedeckt	8' Hautbois
4' Geigen	4' Koppelflöte	(16')
Principal	2 2/3' Nasard	4' Clarion
2' Octave	1 3/5' Tierce	
III Cymbell	1 1/3' Larigot	

The conception of many builders, including Möller, Reuter, Austin, and others has been to include all elements of past organ building into one instrument. Illustrative of this fact are the specifications which adhere to that basic scheme. In addition, other considerations give further indication: the frequent unification of the pedal division and the enclosed Choir, which resembles in disposition a thin Positiv with

¹²This design is the author's.

string stops. Builders have designed various instruments in differing ways according, in part, to the wishes of organists. Reuters have been built with and without Positivs, and Austins have been designed without any enclosed divisions, but the majority of instruments by these firms do not differ much from the basic outlines of the "American-classic." Voicing techniques have changed, however, as any organist familiar with past and present instruments can verify. In general, lower wind pressures are employed, pipes are often voiced with a more articulate speech, and scales contribute to a more pleasing and less harsh sound, which had been typical of organs built during the early years of the organ reform.

The problems of voicing have long concerned Charles W. McManis, who outlined his views on the subject in The American Organist. The article was entitled "Contemporary versus Classic," and in it McManis dealt in some detail with the intricacies of voicing pipes. He pointed out how excesses had crept into the organ reform in its early years, namely, the preoccupation with articulate pipe speech and shrill, harsh, high-pitched stops. It was his opinion that these practices had come about as the inevitable reaction against the tonal practices of the Romantic

period. McManis was interested in a balanced and clear design, but only to a degree. It was his belief that too many builders, particularly some younger ones, were too inflexible about certain voicing techniques. He disagreed with the idea that pipes should remain completely unnicked and asserted that in many cases moderate nicking was necessary to achieve proper harmonic development in a pipe. In addition, the advocates of the Baroque instrument held that the toe-holes should remain completely open, a theory McManis did not support. He held that certain pipes needed more wind than could be handled with open toes. McManis asserted, therefore, that it was desirable to control the wind by means of adjusting the opening at the toe of the pipe, which would in turn leave the voicer free to work with the flue opening in any way he chose. He advocated the inclusion of the best of each technique such as low wind pressure, large toe-holes that control wind flow, wider openings at the flue, and light nicking.¹³

McManis described the minimum for good tonal design--color, ensemble and contrast. He declared that color was possible by voicing pipes so that maximum

¹³Charles W. McManis, "Contemporary Versus Classic" The American Organist, XLVI (July, 1963), 19-21.

harmonic content was present. Contrast was achieved through pitch levels which differed throughout the instrument. He observed that when flute stops of eight- and four-foot pitch were topped by a two-foot principal the flutes ceased to be heard as such, but rather were absorbed into the chorus which took on the character of a principal ensemble. McManis insisted upon voicing flutes to include maximum color. This is reflected in his statement that stops voiced in such a manner would reduce the need for so many mutations.¹⁴ It must be pointed out that this statement was in regard to the designing of a small instrument in which resources were limited; it did not indicate an inflexible approach on the part of McManis. He built an instrument in 1963 for the Church of the Resurrection, New York City, the disposition for which is given below:¹⁵

Pedal

16' Prestant	32' Acoustic	16' Bombarde
8' Octave	Bass (16'	16' Bass
4' Octave	and 10 2/3')	Clarinet
	16' Subbass	(Sw.)
	16' Quintaton	8' Bombarde
	(Gt.)	8' Clarinet
		(Sw.)

¹⁴Charles W. McManis, "Builder's Two-manual Designs Stress Tone and Mechanism," The Diapason (September, 1959), p. 8.

¹⁵The American Organist, XLVI (July, 1963), 8-9.

16'	Gemshorn (Sw.)	4'	Bombarde (8')
8'	Gemshorn (Sw.)	4'	Clarinet (Sw.)
4'	Gemshorn (Sw.)		

Great

8'	Principal	16'	Quintaton	8'	Bombarde
4'	Octave	8'	Chimney		(Ped.)
2'	Doublette		Flute		
IV	Fourniture				

Swell

8'	Viol Celeste	16'	Gemshorn	16'	Bass
		8'	Gemshorn (16')		Clarinet
4'	Principal			8'	Trompette
2'	Octave	8'	Open	8'	Clarinet (16')
III	Plein Jeu		Flute		
		8'	Flute Celeste II	4'	Clarinet (16')

Positiv

2'	Principal	8'	Bourdon	8'	Clarinet
III	Cymbale	8'	Gemshorn (Sw.)		(Sw.)
		4'	Conical Flute		
		2 2/3'	Nazard		
		1 3/5'	Tierce		

The primary observation concerning this organ involves the question of the adequacy of resources. Although McManis has carried out his requirements of color, ensemble, and contrast, the thinness of the Pedal division is immediately apparent. Pitch differentiation is applied throughout and registers of varying tonal design are used to avoid the same tone quality at any pitch (e.g., Chimney Flute on the Great, Open

Flute on the Swell, and Bourdon on the Positiv). The Pedal is weakened somewhat by unification, and the absence of a mixture would necessitate the use of manual couplers in order to obtain a full ensemble. Many organists and builders still prefer to have thin resources on three manuals rather than a more complete two-manual design. McManis has resorted here to two instances of intermanual borrowing, a questionable practice in the minds of many other builders. Assuming the pipes were voiced in the manner suggested by McManis, the organ would give a vigorous and articulate tone. The Swell is enclosed and is marked by a plentiful supply of eight-foot registers including two celestes. McManis did not oppose the inclusion of enclosed divisions in his organs. On the contrary, he considered them a musical necessity. In his opinion, they were of considerable value to the tonal design, allowed the accumulation of sound, and gave vocal flexibility to solo lines.¹⁶

European Organs in the United States

Americans had been traveling in Europe for years and examining the historic instruments of France, Germany, Italy, and the Netherlands. Interest in these

¹⁶McManis, "Contemporary Versus Classic," p. 21.

old organs had grown significantly in the years since Emerson Richards had first brought them to the attention of American organists and builders. The instruments of German, Dutch, and Danish builders displayed a direct and striking kinship to the historic organs. Dispositions, scalings, casework, key and stop action, wind chests, and voicing techniques were very close in style to those of Schnitger. These new organs occupied the attention of American organists and builders and began to exert some influence over the direction of organ building in this country. This style of building became even better known in the United States when various churches and institutions of higher learning began to award contracts to European builders. The appearance on the American scene of these instruments marked a new phase. Organs that had been available for examination only in Europe now became a part of the American organ scene, even though it was a small part. Most of the early European organs in this country were built by men such as Rudolph von Beckerath of Hamburg, Germany, and Dirk A. Flentrop of Zaandam, Holland, both of whom followed the ideals of the Orgelbewegung movement in their respective countries. Several small American builders had already built a few instruments in the reform style, but the advent of instruments from the hands of leading European craftsmen reinforced the efforts of smaller American organ

builders in a market which was by no means completely receptive to their ideas.¹⁷

One of the first large European organs to be installed in America was the von Beckerath instrument built in 1957 for Trinity Lutheran Church, Cleveland, Ohio. The specification is given below:¹⁸

Pedal

16' Prinzipal	16' Subbass	16' Posaune
8' Octave	2' Nachthorn	8' Posaune
4' Octave		4' Trompet
III Rauschpfeife		
VI Mixtur		

Great

8' Prinzipal	16' Quintadena	8' Trompet
4' Octave	8' Rohrflöte	
2' Octave	4' Spitzflöte	
VI Mixtur	2 2/3' Nasat	

Rückpositiv

4' Prinzipal	8' Gedackt	16' Dulzian
2' Octave	4' Koppel- flöte	8' Barpfeife
1 1/3' Quinte	2' Waldflöte	
II Sesquialtera		
IV Scharff		

Schwellwerk

III Zimbel	8' Quintadena	8' Oboe
	8' Gemshorn	
	8' Gemshorn	
	Celeste	
	4' Blockflöte	
	2' Gemshorn	

¹⁷Otto Hofmann of Austin, Texas, had collaborated with Flentrop in 1956 while building a mechanical action organ for the Matthews Memorial Presbyterian Church, Albany, Texas.

¹⁸Joseph Blanton, The Organ in Church Design (Albany, Texas: Venture Press, 1957), p. 474.

Kronpositiv

4' Prinzipal	8' Holzge-	8' Krummhorn
2' Prinzipal	dackt	
II Terzian	4' Rohrflöte	
III Scharf	1' Sifflöte	

The instrument was built with a case enclosing each division on all sides except the front, where the facade pipes were placed. The disposition reveals four manual divisions; each is differentiated by pitch emphasis in accordance with the tonal ideals of the Orgelbewegung. Only one division is placed within a swell box and it represents a timid concession to the requirements for Romantic music. The Schwellwerk is, in reality, a Brustwerk with two stops resembling a string celeste and an oboe. All other divisions consist of principals, flutes, and reeds. The organ nevertheless represents a different direction in American tonal design in returning to the concepts of the Baroque masters as an ideal. Von Beckerath regarded this as necessary for the purifying of the organ. He represented the views of an ever increasing number of European and American organists when he asserted that the employment of these techniques was of the utmost importance. Mechanical action occupied an important position in his conception. It was so important that he declared that, without the utilization of it, further consideration concerning the tonal result would suffer a decisive loss in value.

Von Beckerath outlined the necessary elements of a good organ as the pitching of stops according to the harmonic series and the grouping of stops into four choruses: Principals, flutes, reeds, and solo voices.¹⁹

The majority of Beckerath's instruments conform to this type of tonal design. An enclosed division is rare in his designs although he has on occasion provided one. According to von Beckerath, the fundamentals of design are the most important consideration in an organ. If an organ is built in accordance with the principles listed above it should be possible to play all organ literature on it. He stated that the more clearly and purely an organ represented its own style, the more it was capable of interpreting the music of various epochs.²⁰

Another of Europe's builders who began to install organs in this country as early as 1954 was Dirk A. Flentrop of Zaandam, Holland. E. Power Biggs was particularly fond of Flentrop's work and was instrumental in the awarding of a contract to Flentrop for building a new organ for the Germanic Museum (now the Busch-Reisinger Museum) at Harvard University. The new instrument was to replace the earlier two-

¹⁹Rudolph von Beckerath and Arthur Carkeek, "Designing a Two-manual Organ," The Diapason (September, 1963), pp. 30-31.

²⁰Ibid.

manual unenclosed organ which G. Donald Harrison had built in collaboration with Biggs. Flentrop completed the organ and installed it in 1958. It was described as a modern instrument constructed according to the tonal and mechanical principles of the classic organs of Europe. The specification was as follows:²¹

Pedaal

8' Prestant	16' Bourdon	16' Fagot
III Mixtuur	8' Gedekt	8' Trompet
	4' Fluit	

Hoofdwerk

8' Prestant	8' Roerfluit
4' Octaaf	4' Speelfluit
IV Mixtuur	2 2/3' Nasard
	2' Vlakfluit
	1 3/5' Terts

Rugpositief

4' Prestant	8' Holpijp	8' Kromhoorn
1 1/3' Quint	4' Roerfluit	
II Mixtuur	2' Gemshoorn	

Borstwerk

2' Prestant	8' Zingend Gedekt	8' Regal
	4' Koppelfluit	
	1' Sifflet	

The organ stood in a handsome case and was located in one of the balconies of the meseum. The disposition reveals a combination of voices from principal, flute, and reed families. Mechanical action, slider chests, and open-toe, unnicked voicing were

²¹John Fesperman, The Organ as Musical Medium (New York: Coleman-Ross Company, Inc., 1962), p. 76.

characteristics of the instrument. Although the resources are somewhat thin, the basic design is typical of Flentrop. He was convinced that the slider chest and mechanical action were necessary to achieve precision of attack, blending of registers, and the best rhythmic control for the performer. Flentrop advocated the adoption of the werk-prinzip, and the Harvard organ follows that type of placement of the divisions with the Borstwerk standing below the Hoofdwark and Rugpositief behind the player's back. Clear differentiation between manuals was achieved by pitching the Hoofdwark at eight-foot, the Rugpositief at four-foot, and the Borstwerk at two-foot. Flentrop pitched the principal choruses of all manual divisions at adjacent octaves.²²

Neo-classicism in American Organ Building

Along with the appearance of European organs in the United States, American organists and builders were carrying their reappraisals of the American instrument even further. Allen Hughes evaluated the art of American organ building as he saw it and pronounced it healthy and flourishing. He observed that the in-

²²In a large Flentrop organ the Hoofdwark chorus would be based on sixteen-foot pitch, the Rugwerk chorus on eight-foot pitch, and the Borstwerk chorus on four-foot pitch.

fluence of the Romanticists was waning and that the direction of movement was toward a more classic organ. He was particularly generous in his praise of Holtkamp and Schlicker.²³

Some American organists and organ builders questioned the validity of the "American-classic" concept. They viewed it as a compromise which was doomed to failure and called for an instrument built exclusively according to the principles inherent in the work of the Baroque builders, notably Arp Schnitger. It is important to realize that they did not advocate a slavish copying of the old organs; rather, they called for a return to the fundamental ideals of the past, from which a new beginning could be made. New materials and techniques could then be applied in appropriate ways to improve the instrument, but not to change its tonal structure radically.

The recitalist E. Power Biggs wrote enthusiastically about historic European organs and described their sounds as ageless. He asserted that the classic design was a unity and that all its facets had to be present to insure the total success of an organ. According to Biggs, the early reformers in the United

²³Hughes, "The New American Organ," pp. 24, 158-159.

States had copied the stops and sounds of the Baroque organ but not the voicing. The open-toe, unnicked voicing was necessary to ensure the type of unforced sound so admired by Biggs. He believed that the voicing had to be consistent throughout the instrument without compromise in order for the design to be cohesive.²⁴

Biggs made a number of recordings on old European organs in an attempt to introduce them to American organists. The record jackets often contained detailed information and photographs of the instruments, all of which was helpful to the reader who had never seen or heard the organs in person. Biggs was especially interested in the Schnitger organs at Uithuizen, Cappel, Ludingworth, Norden, and Alkmaar, and offered them as worthy models for American organ building.²⁵

Others called for further changes in the organ. Lawrence Phelps declared that most organists did not fully understand what constituted musicality in the organ. He described the reforms of the previous two decades as "neo-romantic." In his opinion, builders

²⁴E. Power Biggs, "Basic Principles of Classic Organ Ensemble Defined," The Diapason (March, 1956), pp. 8, 56.

²⁵E. Power Biggs, "The Organs of Arp Schnitger," Journal of Church Music, VII, No. 1 (1965), 2-4.

had drawn their inspiration from Henry Willis, Cavaillé-Coll, and Edmund Schulze, tempered by lessons from Silbermann's organs. Phelps' opinion was that the reform had been misdirected and that organs had become brighter and much louder. Eventually, the instrument became shrill and lacked true balance and cohesion. Phelps' solution lay in the return to Baroque ideas, particularly Schnitger's, since he had been the most tonally conscious builder of the era. Phelps' ideal instrument included slider chests and low wind pressure. He advocated open-toe voicing, which he felt would produce the best sound by achieving a more even pressure between the chest and the foot of the pipe. Light nicking was acceptable and variable scaling could be used under certain circumstances.²⁶

The "American-classic" concept was unacceptable to Phelps. He claimed that it had been born in a period of utter decadence and was founded on superficial knowledge of the Baroque organs of Europe. He was particularly critical of designing two-manual organs in that style. Phelps indicated that the organ lacked any significant literature conceived for such

²⁶Lawrence Phelps, "Perspective," Organ Institute Quarterly, IV, No. 1 (1951), 13-14.

an instrument and questioned whether or not any organ of two manuals could be designed logically in the usual manner, i.e., Great and Swell. Furthermore, he asserted that there was no musical justification in providing organs with anything other than mechanical action.²⁷

Phelps' two-manual organs exhibited the characteristics he described as desirable in small organs. The instrument built in 1965 for the Sanctuaire Marie-Reine-des-Coeurs in Montreal, Quebec, Canada, contained two manuals and pedal with a stop list inspired by Baroque ideals. Mechanical action and slider chests were used throughout, and the instrument stood in two handsome cases, one for the Grand Orgue and the other for the Positif, high in the rear gallery.²⁸

Phelps has served for more than a decade as Tonal Director of the Casavant Frères Limitée, a Canadian firm which has built many instruments for installation in the United States. Like many other organ builders, Casavant often collaborates with an organist in preparing the stop list of a new organ

²⁷Lawrence Phelps, "Designing a Two-manual Organ," The Diapason (September, 1961), pp. 8-9, 40.

²⁸The Diapason (September, 1965), p. 27.

and must therefore follow the wishes of the organist to a certain extent. The firm has built many successful organs containing Swell divisions, but it is obvious that Phelps's main interest lies in the mechanical action organ of classic disposition. Casavant has been able to build more instruments of this type in Canada, but one of Phelps' mechanical action organs was installed in the United Lutheran Church of Grand Forks, North Dakota, in 1963. The disposition is given below:²⁹

Pedal

16' Prinzipal	16' Subbass	16' Posaune
8' Oktave	2' Nachthorn	8' Trompete
4' Choralbass		4' Schalmel
IV Mixtur		

Hauptwerk

8' Prinzipal	16' Quintade	8' Trompete
4' Oktave	8' Rohrflöte	
2 2/3' Quinte	4' Spitzflöte	
2' Oktave		
VI Mixtur		

Positiv

4' Prinzipal	8' Gedackt	8' Krummhorn
II Sesquialtera	4' Gedackt- flöte	
IV Scharff	2' Gemshorn	
	1' Sifflöte	

Brustwerk

2' Prinzipal	8' Holz- gedackt	8' Holzregal
1 1/3' Quinte	4' Rohrflöte	
II Terzian	2' Waldflöte	
III Zimbel		

²⁹The Diapason (July, 1963), p. 9.

There is casework for each division, and the instrument is free from enclosure in a swell box. Slider chests and mechanical action are used, and the disposition is reminiscent of Schnitger, with complete choruses on all divisions. Each division has its own pitch emphasis and character. The slider chests allow the use of low wind pressure, and the pipes are voiced with open toes.

The design of the Grand Forks organ is typical of an increasing number of organs being built in the United States in 1969. Many organists are demanding instruments of this type and an examination of September issues of The Diapason since 1960, all of which are devoted to two-manual organs, shows that the number of such organs is growing significantly. Several builders are providing mechanical action, slider-chest instruments upon request. Many of the younger organ builders exhibit a preference for such organs. The question of classic design has been debated, discussed, and argued for years, as the "Letters to the Editor" columns in the professional periodicals such as The Diapason and The American Organist will often reveal.

The Holtkamp firm has built many unenclosed two-manual organs of classic design, but one enclosed division is usually found in their three-manual instruments. Although Walter Holtkamp was the first American

builder to advocate the use of slider chests, he consistently refrained from building any mechanical-action organs. Tonally, however, his instruments have been marked by a purity of design and voicing which is both clear and rugged. Holtkamp stated that the various divisions of an organ should be placed at different levels to give the manuals contrast.³⁰ Most of his organs carry out this principle in a variety of ways. In some instances Rückpositivs have been supplied, either behind the player's back or to one side. Holtkamp's organs have been widely praised for the interesting manner in which the divisions have been placed and in the design of the exposed pipes.

Salem College, Winston-Salem, North Carolina, installed a new Holtkamp organ in 1965. The resources included the following:³¹

Pedal

16' Principal	16' Subbass	16' Posaune
8' Octave	16' Quintadena	16' Fagott
4' Choral-	(Gt.)	(Sw.)
bass	8' Gedackt	8' Trumpet
IV Rausch-		4' Schalmey
bass		

³⁰Walter Holtkamp, "Lecture by Walter Holtkamp," The Diapason (June, 1954), p. 15.

³¹"Salem College Dedicates a Pair of New Instruments," The Diapason (December, 1965), p. 4.

Great

8' Principal	16' Quintadena	8' Trumpet
4' Octave	8' Gedackt	
2' Doublette	4' Spitzflöte	
IV Mixture		
III Scharf		

Swell

8' Gambe	8' Bourdon	16' Fagott
8' Gambe	4' Gemshorn	8' Oboe
Celeste	4' Flute	
2' Principal		
1 1/3' Quinte		
IV Fourniture		

Positiv

4' Principal	8' Copula	8' Cromorne
2' Octave	4' Rohrflöte	
III Cymbal	2 2/3' Nasard	
	2' Blockflöte	
	1 3/5' Tierce	

The design is typical of Holtkamp's organs.

Other instruments by the same builder may exhibit small changes, but there will be nothing of a radical nature. The Salem College organ has full choruses on all manual divisions, each pitched at different octaves to achieve contrasts in character. Although the organ has a Swell division, the stops and voicing are consistent with the remainder of the instrument, which is Germanic in character. Slider chests and low wind pressures are used, and the voicing produces a crisp, clear, and articulate sound.

Walter Holtkamp's tonal ideal has been largely retained by his son, Walter Holtkamp, Jr., who succeeded

his father as head of the firm after the former's death. Minor changes are sometimes evident, but the basic tonal design is maintained. His organ for the Appley Auditorium, Morningside College, Sioux City, Iowa, built in 1967, reveals the same basic design as the Salem College instrument, with only minor changes. The Swell is somewhat larger and is based at four-foot pitch, whereas the Positiv is based at two-foot pitch. Mutations are present but in rear-ranged form--the Nasard and Tierce are placed together to form a Sesquialtera. The Swell contains three reeds at sixteen-, eight-, and four-foot pitches, which gives the division a strong reed quality.³² Other Holtkamp organs such as the instrument at General Theological Seminary, New York City, have the Swell pitched at two-foot pitch with a Cymbel, which gives clear differentiation between the Swell and the other divisions.

Another builder who played a significant role in the American organ reform was Herman Schlicker of Buffalo, New York. Schlicker's organs display a Germanic trend and are often placed in fine oak cases. He rebuilt an early Johnson organ in Grace Episcopal Church, Sandusky, Ohio, in 1950. The mechanical action was retained and renewed, and original pipes

³²The American Organist, L (May, 1967), 15.

were rescaled and rebuilt with new languids and mouths. Several new stops were added to the instrument, and the wind pressure was lowered.³³

Schlicker's instruments display a basic design akin to the "American-classic," but with several changes. Although he frequently includes a Swell division, the pipes are scaled and voiced in accord with the general character of the organ. If the instrument employs slider chests for the Great, Pedal, and Positiv divisions, the same is true of the Swell. In other words, the Swell is provided as an enclosed division for playing Romantic music, but the character of sound remains basically Germanic. One of Schlicker's latest instruments was built in 1969 for Hart Recital Hall, Michigan State University. The disposition is given below:³⁴

Pedal

16' Principal	16' Subbass	16' Fagott
8' Octave (16')	8' Metal Gedeckt	4' Kornett
4' Dolcan	2' Nachthorn	
III Mixture		

³³The Diapason (November, 1950), p. 27.

³⁴The American Organist, LIII (January, 1970),
8.

Great

8' Principal	16' Quintadena	8' Trompete
4' Octave	8' Spillflöte	
2' Octave		
IV Mixture		

Swell

8' Salicional	8' Rohrflöte	16' Dulzian
8' Celeste	4' Koppel- flöte	8' Schalmel 4' Clarion
4' Principal	2' Waldflöte	
III Mixture	1 1/3' Klein Nasat	

Positiv

2' Principal	8' Holz- gedeckt	8' Krummhorn- Regal
II-III Scharf	4' Rohrflöte	
	2 2/3' Nasat	
	2' Blockflöte	
	1 3/5' Terz	

There are two unenclosed and one enclosed manual divisions. Differentiation of pitch is carried out in the instrument, although the pitch of the Swell Mixture is almost identical to that of the Great. The Positiv is at two-foot pitch, with the Swell at the four-foot level. Slider chests and mechanical action are used and the voicing is generally mild and clear. This represents the general tonal plan of most of Schlicker's organs, and variations of any magnitude are rare. He has often grouped the 2 2/3' and 1 3/5' in the Swell and placed the 1 1/3' on the Positiv. In either case, the 2 2/3' and 1 3/5' have a milder quality than that often found in Sesquialteras of some other

builders. Voicing is with open toes and the sound is articulate and assertive.

Schlicker provides his clients with a choice of several types of windchests and key actions and has made several small instruments with mechanical action and slider chests. They are designed to provide small but full choruses on two manuals and pedal and are usually placed in a small case.

Many small organ builders have been at work in the United States, some of whom have made significant contributions to the art. A recitalist of national repute who has engaged in the practice of building organs is Robert Noehren. An intensive study of various European organs, both French and German, enabled Noehren to formulate his own ideas on organ design. His whole approach was from the standpoint of performance of organ literature. He has written that since organs were created for the performance of music, their design should grow out of the desire and feeling for the sound of music. He observed that it was necessary to design organs with the truly idiomatic resources which were necessary for performance. One of his basic premises was that each division of the instrument should be complete in itself and that each should complement the other in order to maintain tonal balance. He was particularly

critical of the design of two-manual organs which included a Great and Swell. Noehren reasoned that in most cases the Swell was merely an extension of the Great and that, in reality, the result was a one-manual instrument. He implored organists to consider the literature when designing an organ and to arrive at decisions concerning the choice of registers on that basis alone.³⁵ One of Noehren's early instruments was a two-manual and pedal organ for All Saints' Chapel, Howe Military School, Howe, Indiana. All divisions are unenclosed and the design consists of principals, flutes, and reeds. The Great is pitched at eight-foot and the Positiv at four-foot; each division contains a full chorus crowned by a mixture. The sound is full and aggressive; speech of the flute registers is articulate, and the principals have a full quality. The divisions are carefully related to each other in pitch, volume, and character.

Noehren's later instruments contain other elements. The organ built in 1966 for St. John's Cathedral,

³⁵Robert Noehren, "Music Dictates Good Two-Manual Organ Design," The Diapason (September, 1960) pp. 12-13.

Milwaukee, Wisconsin, is illustrative:³⁶

Pedal

16' Principal	16' Subbass	32' Contra
8' Octave Bass	8' Gedeckt-bass	Bombarde
4' Octave		16' Bombarde I (32')
2' Octave		16' Bombarde II
VI Harmonics		8' Trompette
VI Mixture		4' Clarion

Great

16' Principal	16' Quinta-	16' Bombarde
8' Principal	dena	8' Trompette
4' Octave	8' Rohrflöte	4' Clarion
2' Octave	4' Spitzflöte	
IV-VI Mixture	2' Waldflöte	
IV-V Scharff		
IV Cornet		

Positiv

4' Principal	8' Gedeckt	8' Cromorne
2' Octave	4' Rohrflöte	
II Sesquialtera		
IV-VI Scharff		

Swell

8' Gambe	8' Bourdon	16' Bassoon
8' Celeste	4' Flûte	8' Trompette
	Octaviant	8' Hautbois
2' Octavin		8' Voix Humaine
IV-VI Plein Jeu		4' Clarion

Choir

8' Gemshorn	8' Bourdon
8' Unda Maris	8' Flûte
	Harmonique
	4' Flûte Conique
	2 2/3' Nazard
	2' Piccolo
	1 3/5' Tierce
	1 1/3' Larigot
	1' Flageolet

³⁶The stop list is by courtesy of Sidney W. Boner, Howe, Indiana.

Bombarde

4' Principal	8' Bourdon	8' Trompette
2' Octave	8' Flûte	4' Clarion
IV-VI Plein Jeu	Harmonique	

The design is comprehensive and includes elements of German and French organ building, Baroque and Romantic. Each division is tonally complete and achieves its character through pitch placement and the tone quality of the stops. The Swell and Bombarde comprise French reeds for the playing of Romantic and Contemporary literature, and the Choir contains mutations and various eight-foot color registers. Noehren's designs are carefully conceived. He has given explicit requirements for the successful designing of organs and has explained the historical and musical justifications for doing so.³⁷

There are many organ builders in the United States who are poor craftsmen. On the other hand, there are many such as Fritz Noack, Otto Hofmann, Robert Sipe, C. B. Fisk, the Andover Organ Company, and Robert Steiner who exhibit great skills in the art of designing and finishing organs. Some have followed the path of the "American-classic" while others have turned to the use of slider chests, mechanical action, and classic dispositions. Many churches and institutions of learning have turned

³⁷Robert Noehren, "The Relation of Organ Design to Organ-Playing," The Diapason (December, 1962), pp. 8, 42-43.

to small builders for instruments and the results often equalled or surpassed those of many larger firms. They have contributed substantially to the organ reform in this country. In many cases they have used materials and techniques in advance of the larger firms. These builders will probably continue to contribute to the art of organ building.

Conclusion

The trends in organ design during the first sixty years of the twentieth century have been traced in this paper. Probably more study and reappraisal of organ tonal design has occurred during this period than during any other century up to this time. Probably no other era has seen so much interest in organ design as that exhibited during the twentieth century. General principles of tonal design have been questioned and meticulously evaluated by scores of organists and builders, and the instrument has seemed to benefit much from the effort. The issue is far from being solved, for there are numerous concepts espoused and adherents to each philosophy. The scope of the instrument is great, however, and it may well be possible for these various philosophies to exist simultaneously, as they have in the past. One fact remains: the instrument can only benefit from the type of close scrutiny and evaluation to which it is submitted today.

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