

The background of the entire cover is a collage of playing cards. The top half has a dark purple background with cards like the 4 of diamonds, 6 of clubs, 10 of hearts, and 8 of spades. A solid teal band separates this from the bottom half, which has a dark purple background with cards like the 7 of spades, 10 of diamonds, 8 of clubs, and the Ace of spades.

AN HONORS eBook FROM MASTER POINT PRESS

Jan Eric Larsson

# Good, Better, Best

A Comparison of Bridge Bidding Systems and  
Conventions by Computer Simulation

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Anu Uus and I at the Swedish Bridge Festival in the city of Örebro, Sweden in August 2013. We have played there since 2010. I became a gold-level tournament director in 2011, an elite director (one of ten in Sweden) in 2018, and the head of the Swedish Law Commission in 2019. Photo by Matilda Wik.



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## Foreword by Roy Hughes

When Jan Eric wrote to tell me of his plans for a book about the computer evaluation of bridge bidding systems, by having programs using the systems play against each other, I was intrigued. Was such a project feasible? If so, what could it tell us about bidding?

Bidding systems in bridge have been around as long as the game itself. Some have been highly regarded by the bridge-playing public, some less so; in either case a bidding system's reputation has been very much dependent on the opinions of experts. Now I think it is fair to say that experts, as a group, are not inclined to unanimity of opinion. One might prefer the weak notrump, citing its beneficial preemptive effect, and how it makes bidding after an opening suit bid more effective by taking care of the balanced minimum hands. Another would say the weak notrump is too risky, too exposed to a penalty double. Who is to say which factors are more important? I suspect that most, if not all human bridge experts have biases that prevent them from being able to say with certainty what the best bidding methods are.

Computer simulation techniques have been used for years now to study various aspects of our game, noteworthy examples being the evaluation of an opening lead or line of play. *Good, Better, Best* breaks new ground by having robotic teams play a vast number of matches against each other using, for the bidding portion, a machine-readable description of the methods employed. The results of the simulation provide an objective evaluation of the efficacy of the methods.

This approach to bidding system evaluation raises numerous, subtle issues, and these Professor Larsson deals with clearly and carefully. The reader who wants to understand the mathematical underpinnings of the evaluation method has all the pertinent material required; the reader who prefers to cut straight to the bridge, say to see how modern Precision fares against two-over-one, is free to do so.

Computer analysis has led to remarkable insights in another deep game, chess. While many aspects of chess have been solved for centuries, the endgame of king and two bishops versus king and knight defied human understanding until in the 1980's exhaustive computer analysis demonstrated that it was a win for the bishops. It will be interesting to

see what insights about contract bridge can be gained from techniques such as those used in *Good, Better, Best*.

Roy Hughes

Toronto, 2021

## Preface

Which bridge bidding system is best?

Is it a natural system with four-card openings? After all, this type of system ruled the bridge world for a long time. Is it a natural system with five-card major openings and three-card minors, as in *Standard American Yellow Card* or *Two-over-One*? Or is it the 5542 system, now growing in popularity across the world? Maybe the best system is not using the old-fashioned “natural” base with wide-range opening bids in one-of-a-suit and a strong two clubs. Maybe the strong club systems are better. Many good players and teams have definitely believed so over the years. Or could it be that the best system actually is quite different from what is normally played, for example, a highly artificial forcing pass system? This book will give the answers.

Contract bridge is one of the few card games that has been played by very many people over a long period in history and has had its own impact in our language and popular culture (just think about the word “cardboard”). There are active competitions and series systems all over the world, and a large bridge literature. Only a few other games, for example, backgammon, chess, poker, and go, have a similar place in human culture.

Part of this success must be found in the properties of the game itself. Contract bridge is complex because it has two phases, the bidding and the play. Thanks to a balanced amount of randomness, in the long run good players are rewarded for their skills while less good players can be lucky and perform well now and then.

In fact, before the bidding and the play, there is another phase of bridge, which also accounts for some of its popularity – the continuous invention and development of bidding systems and conventions. This is certainly the part of bridge which has attracted the smallest fraction of followers, but the discussion about how to bid and which systems and conventions are the best has been going on since the birth of the game.

The discussion about bidding systems is an integral part of bridge history. When Harold S. Vanderbilt put together his version of a mix between auction bridge and *plafond*, the explicit idea was to enable bidding agreements and conventions. Only the final contract had to be in a playable denomination, while all previous calls could be artificial.

When Culbertson rose to fame, his bidding system had a central role. In essence, it was all about teaching people to play better, based on their using Culbertson's system and (equally important) paying for his books.

When the Italian Blue Team started winning European and World Championships, their bidding systems came into focus. These were not the standard *Culbertson* or *Goren* systems, but artificial club systems with asking bids and many conventional sequences.

The systems' debate has continued ever since. Here is what Greg Matula wrote in the preface to his book on the *Polish Club*, see Matula (1994).

"How can you tell if System A is better than System B and System C is worse than System B? A universally accepted and objective method of measuring the quality of a bidding system does not exist. That can be demonstrated by the simple observation that few of the world's leading pairs use exactly the same system. What is more, almost none of these pairs will claim that their system is the best, regardless of how strong their feelings towards their own bidding methods are."

This has been the situation in the bidding systems discussion from Vanderbilt to present day. There are lots of ideas, opinions, and preferences, but no accepted method to actually measure the quality of bidding systems.

There are two reasons why there are no such methods. First, the game is too complicated to allow for a manual, statistical calculation of optimal bidding. In other games, for example, blackjack, the optimal strategy is known. If we have the specific house rules and the played cards, there is a *known optimal decision* for every hand and dealer card. Books describe the common game rules and computer software is available to calculate the optimal strategies. But this is not the case in bridge, which is a much more advanced game.

Secondly, if we try to test the quality by playing two systems against each other, there are too many other factors that will affect the result. Player skills in hand evaluation, using the bidding system, leading, declaring, signaling, and defending will obscure the effects of the bidding system itself.

*However, there is a method of comparing systems in a way that is independent of player skills.* Assume that we implement the bidding systems in a program and play them against each other on a computer. If

all software functions are the same, except for the bidding system definitions, we will get an evaluation of bidding system quality, which is independent of the human factors. Of course, this demands that the general quality of the computer bidding is good enough to utilize and evaluate the properties of the systems.

I have been considering this idea for many years, and in the autumn of 2018, I started to work on the software system, which is the basis of this book. It is indeed possible to implement bidding system definitions efficiently, and good bidding algorithms based on these definitions.

Once this effort is done, it is a relatively simple matter of playing different systems against each other and see which one is better, and also *how much better*, for example, by simulating team matches. I decided to measure a system's quality in relation to another by the average imp gain in a 24-deal match. This is a simple measure and also gives the reader a good feeling for how much a system or convention will contribute to practical results.

My aim is that this book will prove Greg Matula, and all others who state that there are no objective answers, wrong. The computer simulations will find out the relative qualities of the bidding systems that I have had the strength to implement. But it will also answer several long-standing discussion questions. For example, which is better, four- or five-card majors, natural or strong club systems, weak or strong notrump, solid or wild weak two openings? We will test Stayman and transfers against double Stayman, and delayed Stayman against XY-notrump and XYZ-notrump. We will find out whether Gazzilli is better than no Gazzilli, and whether the strong pass systems of the seventies and eighties were superior or earned their results mainly by confusing the opponents. We will even find out whether the systems of the Blue Team actually were better than the American ones, or vice versa.

Finally, this is the work of a single programmer and author, with good but humanly limited skills in both programming and bridge. All results have been extensively tested, but my experience as a programmer means that I *know* that there are remaining errors in the system definitions and bugs in the program code. These errors should have relatively small effects on the results, but it is possible that the results could be improved and made more reliable. However, now the genie is out of the bottle, and I am looking forward to others presenting competing results.

## About the Author

I learned to play bridge in the early seventies and started to play competitive bridge as a junior in Sweden in the late seventies, participating in regional junior championships and playing regularly at local bridge clubs. Together with Sören Romare, I developed a strong club system, called the *Tangerine Club*, where the one level openings showed 10-14 hcp and one club 15+ followed by control-showing responses and asking bids in *Blue Club* and *Super Precision* fashion. After a year, we changed this into a *Swedish Club* where one club was 8-9 or 15+. This was at the same time as Max Ödlund was developing the idea, and we corresponded about how to design a good response system after a *Swedish Club* opening. Together with Håkan Wolgé, I started playing *Major*, one of the Polish strong pass systems. The *Major* system is special in that it describes the holding in both majors in every single opening bid, except pass and one diamond.

After a break of almost ten years, I came back to bridge again. Together with my bridge and life partner Anu Uus, I developed a strong club system, called the *Cottontail Club*, with the old base of 10-14, but now the responses to one club were suit-showing transfers, the notrump was variable, and the one level openings used canapé. With another partner, Anders Freij, I play a Precision-style strong club, with a natural four-card diamond opening. My best achievement so far is place 70 in the Swedish open pairs 2019, largely thanks to Mr. Freij.

In addition to playing bridge, I am one of the ten elite tournament directors in Sweden. I translated the new laws of contract bridge 2017 to Swedish, and since 2019 I am the chairman of the Swedish Bridge Laws Commission.

In civilian life, I am professor of artificial intelligence at Lund University, Lund, Sweden, and CEO and co-founder of the spin-off company GoalArt, which makes AI-based systems for monitoring and diagnosis of complex technical systems. I am familiar with many programming languages, but as Richard Stallman said when he once visited Lund University, “What’s wrong with C and Lisp?”

## Acknowledgments

Most of the work in this project has been performed by the author in isolation. In fact, I told only a few individuals about the project while it was going on. Nonetheless, I have had valuable help from several people.

My bridge partner Anders Freij has helped in discussions during the project and also checked many of the results. His skill and judgements have been invaluable.

Anders' other partner and wife, Karin Brundell-Freij, also read the manuscript and has provided a large amount of deep and relevant questions and comments. They have improved the book enormously.

Håkan Wolgé was my partner in the eighties and we played several wild, artificial systems. He is a great software expert and a good friend. He has given me lots of good comments.

Roy Hughes has written the most interesting bridge book I have read. Thus, he was a great inspiration for my writing. I just took a chance and asked whether he would like to help me with the book and became very happy over how open-minded and helpful he has been.

Lars-Åke Larsson at the bridge club of Lund gave me access to the data from all their competitions since 2003. These are the deals that have been used for the team matches and the pair competition simulations, and they have been essential for the project.

I would also like to thank Richard Pavlicek for his collection of test deals available on his excellent web site.

I have received help and inspiration from many people on the Internet. For example, Richard Willey, Larry Lowell, and others have provided information about *Moscito* and the “Swatting the Moscos” event on Bridge Base Online.

This work rests on the shoulders of all those bridge writers who have described bidding systems in books, articles, and system notes. I will mention them when we reach the system or convention in question, but they all deserve great thanks.

Since this is one of the few official opportunities to thank people in general, I would like to give my thanks to all the bridge players I have come across, partners, teammates, opponents, friends, local club

members, international contacts, organizers, and tournament directors. Bridge is a wonderful game, and apart from the bidding systems, it is the people in it that make it great.

I would also like to thank Ray Lee and Sally Sparrow at Master Point Press. They run the world's leading bridge publishing company but are totally personal, relaxed, positive, and helpful at the same time.

Martin Cantor has been the proofreader and made great contributions both linguistically and to the bridge contents. Talk about helpful advice. I could simply steal his suggestions and improve my text a lot.

Finally, my partner in bridge, life and love, Anu Uus, has worked with me in developing and playing our system and given me invaluable mental support during the entire project. She has not only inspired me both in programming and writing and been an excellent reader of the book, but also provided us with a great life outside of this bridge project.

Thank you all very much!

Now only the details remain.

## 1. Introduction

Until now, almost all of the testing of bidding systems has been done by human players in live play across the table. But this is not a reliable way of testing systems against each other. First of all, a prolific human player may play a few hundred deals a month, and most play considerably fewer than that. As we will see that amount is far from enough to draw any conclusions. Also, most of these deals are not analyzed afterwards in order to find out specifically whether the bidding system played any positive or negative role in the result.

Secondly, results at the table depend on many different factors, and the bidding system is only one small part. The players' skills in hand evaluation, using the system and its conventions, bidding situation analysis, leading, declaring, defending, table presence, and luck all affect the results, and it is quite difficult to dissect the advantages specifically gained by the bidding system from these other factors.

In bridge history, there have been many attempts to arrange matches with the intent of testing if one bidding system was better than another one. However, they were all inconclusive, mainly because it was impossible to separate the effects of the bidding system from the other factors mentioned above.

In this book, I will present another way of comparing bidding systems, by having computer implementations of different systems playing each other. The systems will be described in a way that allows a computer program to read the definitions and let the systems meet. We will use a large amount of previously played deals and set up the simulations in the exact same way as standard matches between human teams. Each bidding system will have its own team in the bidding, and the play will be decided by double-dummy analysis. The system that ends up with moreimps than its opponents is the better one.

The advantage of this method is that we will actually be testing the properties of the bidding system itself, and not the other factors. Since the same algorithms are used for all systems and play, the only differences will come from the bidding systems' internal properties and give a truer evaluation of their intrinsic strength.

If we want this to be a useful comparison, the level of hand evaluation and bidding action must be reasonably high, preferably as high as that of

the best human players. Later on, we will discuss the effect of missing evaluation and bidding skills in the software, but for now, it is enough to note that a certain lack in, say, hand evaluation, especially when compared to a world grandmaster, affects both sides in our experiment (and thereby both competing systems) equally. It will always be possible to criticize this kind of experiment because it was not performed with the best human players. However, the negative effects will tend to even out.

Once we have well-tested implementations of several different systems and conventions, we will be able to answer questions that bridge society has debated for many years. For example, from Culbertson's days to today, there has been a slow but firm development among the naturalists to move from four-card to five-card major openings. Which system is actually better, four-card or five-card majors? Has the change been driven by observations of true improvement, or is it mainly a question of unfounded popularity? The answer can be found in this book.

Another long-term debate is between sound and aggressive bidding. Some players focus on finding their own contracts and can be driven to a preemptive bid only at the point of a sword. Others never worry about their own contract but are mortally afraid of letting their opponents have the bidding to themselves. These differences become obvious, for example, in choosing the "school" of weak two openings.

All bridge teachers seem to argue that a good weak two opening should have a narrow point range, a good six-card suit with inner strength, and not contain another good suit, especially not four cards in a side major. At the same time, there are lots of "hotheads" out there, who open any five-card suit with all sorts of side distributions, and they seem to get away with it. Which school is actually better? This book has the answer.

The notations used should be fairly obvious. A distribution of 4441 means any Marmic hand, while 4=4=1=4 means four spades, four hearts, one diamond, and four clubs, in that order.

Natural systems are those systems that have wide range one level suit openings (typically something like 12-20 hcp) and a strong two club opening (or all two-level openings may be strong). They can be characterized by the minimum lengths of different openings. So, 4444 means the classical approach where all four suit openings promise four cards in the suit. If we use a prepared one club (for example, for 18-19

and  $4=3=3=3$ ), the more correct notation would be 4443. *Standard American* is 5533, while if one diamond promises four cards, we are playing 5542. Finally, concerning four-card systems, we will use acronyms like *HCSD* and *CDHS*, to describe the order of priority when choosing between two four-card suits. The first means that hearts have priority over clubs, then spades, and finally diamonds. The second means choosing between four-card suits up the line.

All system names are written in *italic* script.

### Structure of the Book

I guess this book will have three kinds of readers – the majority that want to know as quickly as possible whether their favorite choices of system and conventions are in fact among the best, or if they should pass this book on to someone else, the “deep” readers, eager to read all about the background and experimental setup, so that they can find the weak points that make the results less reliable, and a small, confused set of people interested in both.

The book begins with a general discussion on what makes a bidding system good and continues with a brief history of bidding systems and systems test matches. You will probably get that feeling of being back in school, with a lecturer taking an awful lot of time going through preliminaries.

Then comes a long part that digs into the software solution and its consequences for the quality of the bridge. There will even be statistics – mainly disguised complaints about how difficult it is to get reliable results and how long the test series have to be – the “back at university” feeling gets stronger.

Then the book suddenly changes character. Systems and conventions are presented, briefly, and then compared to other systems and conventions. If you are not a deep reader, you can skip to this part immediately (all readers can actually skip to there – if you are a deep reader, just promise yourself to go back and read the boring parts afterwards). In fact, if you are really considering skipping to somewhere, go to the reader quiz first (Chapter 5).

In the end, we will summarize the results and see which systems and conventions are better, which are worse, and which ones are equally good. However, the advice will not be that you should scrap the system

you are playing now and change to the theoretically best one. No, your choice of system is mainly dictated by what you can learn, what you can master, what you like, and, maybe most importantly, what your partners like. For example, if all the other five in your team play *Culbertson Neanderthal*, you should probably play that too. It makes life much easier for everyone when you need a replacement player and when you discuss today's match in the bar afterwards.

Having said all that, it is now time to jump into the (quite long and theoretical) preliminaries.

If you want to take up *Culbertson Neanderthal*, see "The Notrump Zone" by Danny Kleinman (2004). You find it in the "Staying with the Field" chapter on Page 70.

## 2. What is a Good Bidding System?

If we are going to investigate which bidding systems are good and which ones are worse, let us first analyze what we mean when we say that one bidding system is better than another.

It is straight-forward to list different advantages of bidding systems. There will be two kinds of factors – those that concern the system’s internal or more theoretical properties, and those that concern the human side of learning, using, and explaining the system. The former will be called *intrinsic factors* or properties and the latter *human factors*.

Some of the intrinsic system properties are as follows:

- Constructive precision
- Aggressiveness
- Communicating information effectively
- Giving away as little unnecessary information as possible
- Right-siding the contracts, play-wise and information-wise
- Non-symmetry of information value

These factors depend primarily on the system itself and are not decided completely by the human players using it.

*Constructive precision* means the system’s ability to find the best contracts. A good bidding system should enable the players to find the right part scores, games, and slams. This is often seen as the single most important or maybe even the *only* factor in assessing how good a system is. However, the bidding system should also help us to find good sacrifices and to make law-based decisions of whether to bid one level higher in competition on the two and three levels. Finally, good constructive bidding also means that the system allows us to stop in time and to land in the best contract when we have weak hands. Natural systems often have some deficiencies here. For example, a strong two notrump on 20-21 hcp is sometimes too high, and whatever follows, the system lands us in a bad place, while those who open a strong club are making a lower contract.

*Aggressiveness* means to bid on low values in order to disturb the opponents. Constructive precision is *not* the only property needed in a good system and may not even be the most important one. The system should also allow us to disturb the opponents’ constructive bidding. The

classical way of doing this is with preemptive openings and weak two openings, but other candidates are multi opening bids with weak meanings, weak notrumps, aggressive one openings and, of course, destructive overcalls over strong opening bids by the opponents. It is pretty obvious that it is not enough to bid our own good contracts. We must also try to stop the opponents from succeeding in that same task.

*Communicating information effectively* is a bit more theoretical, but important. Essentially, it means starting lower and devoting more bidding space to hands that are stronger, and to those where the final contract needs more investigation. In this respect, five-card majors may be better than four-card majors, because they start with one of a minor more often. Strong club systems may be even better and forcing pass systems take this approach as far as possible. For a deeper explanation, see Hughes (2005).

The majors are more important than the minors, and spades, the “boss suit,” is the most important suit, simply because it is the highest on each level. However, when it comes to giving informing about suits, natural systems have it backwards. The lowest opening bid shows clubs, not spades.

*Giving away as little unnecessary information as possible* is also an important property of a system. The opponents are listening to our bidding, and we do not want to tell them about the weak suit in our notrump contract or which suit lacks control in a tight slam. This may sound obvious, but the implications reach further than that. Ideally, the stronger hand should ask, and the weaker hand should tell, because the stronger hand needs to know less to make a good decision about our contract. Again, natural systems often have this backwards. For example, in Stayman sequences, the weaker hand often asks the strong one.

*Right-siding* of contracts also seems obvious, but again, many systems have it backwards. For example, Stayman and transfers make the strong hand be the declarer more often, which is right-siding the contract. But if the strong hand is the one that has been described, it is wrong-siding *according to the information given*. Ideally, our bidding system should arrange it so that the stronger hand asks for information *and* becomes declarer, while the weaker hand describes itself and ends up as dummy, as often as possible

Again, natural systems often have this backwards. For example, the natural one-over-one sometimes makes the hand with five hcp declarer, while the hand with 20 hcp becomes dummy. Some strong club and forcing pass systems are designed to let the weak hand describe itself and the strong hand to become declarer.

*Non-symmetry of information value* is maybe the least appreciated factor of a bidding system. Still, it is very obvious once you are aware of its existence. A simple example is that of a limited notrump opening. Let us say that your partner opens one notrump showing 15-17 hcp in a balanced hand. It is easy to think that this information is equally useful for all three remaining players, *but it is not*.

You know almost immediately whether your side belongs in part score, game, or slam. However, your opponents do not. If one of them holds ten hcp in a balanced hand, it is not possible for that player to know whether their side has a part score or a game. This has to do with the fact that it is not very important how the strengths are divided between the hands in a partnership. Most of the time, the sum decides which contracts that can be made.

This non-symmetry of information value is one reason why it is an advantage to open often. The other main reason is to find a trump suit and bidding it to the limit as soon as possible, which will often leave the opponents with a difficult guess whether to pass, bid higher, or double.

In fact, the non-symmetry of information value goes further. Consider the choice of opening suit length. Classical bidding systems advocate that an opening suit should be at least four or five cards. But consider a system where you can open one of major promising three to four cards. This puts the opponents in a more difficult situation, compared to the classical approach. Now they can no longer rule out that the opening suit is *their* best suit. You may have succeeded in “stealing” their trump suit. Given that your system allows you to find out whether the opening suit is a good trump for your side, you will have an advantage over the opponents. No commonly played system today uses this possibility in the majors, but older canapé-based systems did, and so did some of the Polish forcing pass systems of the eighties.

So far, we have talked about intrinsic properties, factors which do not depend completely on the players using the system. However, the

success of a bidding system is greatly determined by how well it works in practical use by its players.

These factors are as follows:

- Easy to learn and understand
- Easy to remember
- Easy to execute
- Easy to explain
- Socially accepted
- Legal in your part of the world
- Puts the opponents in difficult situations
- Puts the opponents in unusual situations

*Easy to learn and understand* is probably one of the most important factors overall. If you cannot learn a system, you should never play it. It is as simple as that. In fact, it is even simpler. If your partners cannot learn the system, you will never get to play it, even if you are able to learn it yourself. This aspect is more important when we speak of beginners and average club players, while elite players typically are willing to spend more effort learning complex systems and conventions.

*Easy to remember* is a similar factor, but also different. You may be willing to spend a lot of time learning a complex system. But unless the system is easy to remember once learned, you will forget situations and make mistakes. And as we will see, bridge statistics allow very little room for errors. A system may be better, but if the player using it makes a few mistakes every now and then, the advantages of the system are quickly lost.

*Easy to execute* is the most important factor in practical play. You may have to spend a lot of time learning and rehearsing the system, but once you are playing, you must be able to use it with ease and precision. Your mental energy must be available for evaluation of your own hand, your side's bidding, and the opponents' bidding, and then for declarer play or defense. If you want to play at your best, there is no room for having to spend mental energy on remembering the system.

*Easy to explain* is a different property. It means that your system must be reasonably easy to describe on a convention card or when you are asked

questions about it. If it is not, you will be bogged down in discussions and protests, accused of lacking disclosure, or even of cheating.

*Socially accepted and legal in your part of the world* are two more sides of the above. If you play unusual methods, or methods that your fellow opponents do not understand, it may be unpleasant to use them at your club, and it may be that your local jurisdiction forbids them.

*Putting the opponents in difficult situations* means that your system allows you to bid high on low values and that it gives away little information useful to the opponents. Typical examples are weak two openings, preemptive openings, and simple sequences like 1N – 3N. A good bidding system must allow for as many preemptive and uninformative sequences as possible.

*Putting the opponents in unusual situations* is a similar aspect, but there is a difference. If you open a natural three spades preempt, your opponents may be in a difficult situation, but they will know what your bid means, they will have previous experience in that type of situation, and they have most probably discussed what their calls will mean. Some other opening bids are different, and chances are that your opponents have less experience of being in the situation or have not agreed on their further bidding. This is probably true if you open one diamond meaning 0-7 hcp and any distribution, but it may also be true for more common cases such as the short club in 5542, the prepared diamond in *Precision*, or 2♦ Multi.

Maybe the most important factor of all is whether you like the system and have confidence in it. If you are going to play a system for several years, it is important that you feel good about it. If you do, you will perform better when using it.

These are some of the main intrinsic and human factors that make different bidding systems better or worse. In the following, we are going to try and compare systems. As far as the intrinsic factors are concerned, this can be achieved, while with regard to the human factors, the system itself will be less important and the skills of the players determine the results.

## Testing Intrinsic Bidding System Properties

One obvious way of testing two different bidding systems against each other is to arrange a competition between pairs or teams using the systems. As we will see, this has been done several times in bridge history. But doing so, we are not *only* comparing bidding systems, or maybe not even comparing them at all, since all the human factors come into play. If the players on one side know their system better, are more familiar with their partner's bidding style, are better at hand evaluation or bidding evaluation, or are better at playing the cards, these factors will often drown out the effects of the bidding system.

In the historical chapter, we will look at several system matches, where the motivation was to see which systems were better. I will state that in all these cases, the skill and experience of the players were the determining factors, and the systems had little to do with the outcome.

However, in our modern day and age, it is possible to perform reliable bidding system tests, which are independent of all human factors, including the skills of the players, and only test the intrinsic properties of the systems involved. The way to do this is by computer simulation. Before we come to this topic, we will have a brief look at the history of bridge and its system test matches.

## The Relative Importance of Bidding and Play

I guess you know that bridge players are divided into two groups, bidders and players. The former view the bidding as being more important, inspiring, and fun, while the latter think similarly about the play of the cards. Maybe there should be a third group, the system developers, who think that the most fun you can have is to invent new systems and conventions (and the stranger the more fun).

But can we in some way make a serious estimation of the relative importance of bidding and play?

In his book about the *Fantunes* system, Bill Jacobs provides some statistics on the performance of the Italian world champions Fulvio Fantoni and Cladio Nunes playing *Fantunes* on Bridge Base Online (BBO). By 2010 they had played 2,723 deals where they opened the bidding. The average imp swing was 98.4 imps per 24 deals. Fantoni and Nunes played 1,676 deals where the final contracts were identical at both

tables. On these, the average imp swing was 42.24 imps per 24 deals, see Jacobs (2012).

If we assume that these are typical numbers, it would be safe to say that bidding swings  $98.40 - 42.24 = 56.16$  imps per 24 deals. In other words, bidding and play each account for about half of the results in matches (around 56 versus 42 imps over 24 deals).

If these numbers are near the truth, it is a major explanation for the success of bridge as a game. Both bidding and play are complex, interesting in themselves, and *equally important* for the total success.

When it comes to bidding, modern statistics tend to show that the bidding sequences are competitive (both sides bidding) in some 70 % of all deals, while only 30 % sees one side having the bidding to themselves. It is obvious that any successful bidding system must be good in *competitive bidding*. Undisturbed performance is not enough as a measure of how good a system is.

### 3. A Brief History of Bidding Systems

The history of contract bridge is the history of high-level championships, famous players and teams, strong bridge countries, and famous deals, events, and scandals. But it is also a history of its bidding systems.

Bidding became an integral part of bridge with the advent of *contract bridge*. The immediate ancestor, *auction bridge*, had almost all of the components of the most complex card game in place, except for one thing – you did not have to bid games and slams to receive the bonuses for them. This final piece of the creation of contract bridge was borrowed from the French version of the game called *plafond*, and we should credit Harold S. Vanderbilt for putting it all together.

#### Early Contract Bridge

Few modern bridge players may realize it, but *auction bridge* provided interesting and exciting bidding on competitive deals, but not on deals where one side was clearly stronger. In the latter cases, it was enough to open one of a suit. Since the opponents had nothing more to say, the bidding ended there, and it was up to declarer to try and make a part score, game, or slam *in the play*. With contract bridge, that changed dramatically. If you had the bidding all to yourself, you could still fail to find a game or slam and hand over points to the grateful opponents.

When contract bridge suddenly became popular in 1925, bidding skill and bidding systems came into focus for the first time.

Early bridge saw a multitude of bidding system ideas and conventions appear, mainly in America, while Britain remained more conservative, not adopting new ideas willingly. Many historical authors describe the situation in the late twenties as chaotic and unregulated, while usually also looking down on and ridiculing the invented systems.

#### Ely Culbertson and Approach-Forcing Systems

It took a few years of development, and then Ely Culbertson entered the stage. He quickly became a more successful bidding theorist than anyone before him, and he made his fame and fortune mainly via the sale of books describing his system, see Culbertson (1931). Culbertson established a system basis which would rule the world for the next twenty to fifty years, if not longer. The basic ideas were four-card openings, one-over-one and two-over-one unlimited and forcing (the

approach-forcing method), strong notrump, and game-forcing two openings. Except for the strong two openings, this kind of system is still alive and kicking today.

Culbertson became famous for three system matches. The first was played against Colonel Buller's team in London 1930. The second was played against Sidney Lenz's team in New York, during New Year 1931-1932. The third was played against P. Hal Sim's team in New York, 1935. Culbertson's team won all three matches, and Culbertson claimed that the successes were due to the superiority of his system. In 1935, Culbertson's *Blue Book of Contract Bridge* was the best-selling book of any kind in the world. However, when Culbertson was challenged by the new Four Aces team in 1936, he did not accept the challenge, see Laderman (2014).

Although Culbertson claimed that it was his system that won the matches, it is obvious that the bidding systems had very little to do with the results. In fact, all reporters seemed to agree that the quality of play often was mediocre and that the matches were decided mostly by concentration, stamina, and pure fighting spirit. In addition, all the bidding systems that were tested against each other were very similar to Culbertson's own system.

From 1935 onwards, four-card openings, approach forcing, strong notrump, and strong two openings became the standard all over the world. In most countries, the common system was named either *Culbertson* or *Goren*, while in Great Britain the most played system was *Acol*, a bit less strict in its bidding rules and with a weak notrump when not vulnerable.

## **The Blue Team**

The next set of matches that influenced the world of bidding systems were not explicitly planned to pit bidding systems against each other. Nonetheless, this is exactly what happened.

In 1956 the Italian Blue Team won the European Championships in Stockholm and qualified for the world team championships. They won the Bermuda Bowl in 1957 (New York) and continued to win for a total of 13 times (last time in Bermuda 1975). This is indeed impressive, since some of the players, such as Pietro Forquet, Giorgio Belladonna, and Benito Garozzo participated in a majority of those championships.

One of the shocking new things with the ascendance of the Blue Team was their bidding systems. When the other teams were playing some version of natural, approach forcing system (“complicated” *Culbertson*, essentially), Walter Avarelli, Pietro Forquet, and Giorgio Belladonna had invented a system where one club showed most of the balanced hands, and the other one openings used canapé, the *Roman Club*, while Eugenio Chiaradia, Guglielmo Siniscalco, and Benito Garozzo introduced a strong club system with artificial control-showing responses and canapé, the *Neapolitan Club*, which was later remade into the *Blue Club*.

The Italian success was a major blow to the natural systems’ reputation and hegemony. From now on, artificial and strong club systems became accepted at the elite level around the world. In the seventies, Belladonna and Garozzo made a comeback, playing their own version of the *Precision Club*.

The non-playing captain of the Blue Team, Carl’Alberto Perroux, is famous for his quote on bidding systems, saying, “A standard Ford, however much jazzed up, won’t beat a Ferrari,” see Perroux, Di Sacco, and Horton (2018).

When Italy won the Bermuda Bowl 1958 in Como, Italy, they were accused of cheating, and these accusations have followed the Blue Team until today. Because of this, the superiority of the Italian systems has always been questioned.

Were the Blue Team systems good or not? Were the Italian Ferraris better than the Standard American Fords? The answer is found later in this book.

### **Roth-Stone, Kaplan-Sheinwold, and Precision**

While the rest of the world started to look at the artificial Italian systems, there was a slower and more silent revolution going on in America. Alvin Roth and Tobias Stone developed new bidding methods where major openings promised five cards and minor openings could be made on three, *Roth-Stone*. They also introduced the negative double (called “Sputnik” after the first Soviet satellite in 1957) and opened the door for modern doubles, where doubles almost never are purely for penalty, see Roth and Stone (1958). Edgar Kaplan and Alfred Sheinwold developed another modern system, the main difference being that *Kaplan-Sheinwold* used a weak notrump combined with five-card majors, see

Kaplan and Sheinwold (1958). These developments were the first steps of a process that would lead the world from four-card to five-card majors.

The late sixties saw the arrival of another revolutionary system, the *Precision Club*. It was developed by C. C. Wei (with the help of Alan Truscott) and when Taiwan finished second in the 1969 Bermuda Bowl, a weaker strong club (16+) combined with five-card majors became an overnight success, see Wei (1973).

## Systems Proliferation

Once Pandora had opened the proverbial can of worms, there was no stopping. In the late seventies and early eighties, bidding system experimentation exploded.

In Poland, Łukasz Sławiński and Stanisław Rumiński developed artificial systems based on a forcing pass with 13+ hcp and a weak one diamond opening on 0-7 hcp. This base was used in several systems, while the rest of the opening bids showed 8-12 hcp and were either natural or artificial, see Sławiński and Rumiński (1974).

The theoretically most interesting Polish pass system was called *Delta*. In this system, the 8-12 hcp openings showed a singleton or void (and one club took care of all hands without shortness). This allowed the weaker hand (8-12) to show, and often avoid becoming declarer, since it named short suits.

The most well-known system was probably *Regres*, which was played successfully in several European and World championships.

The Polish developments inspired players in other countries. In Australia and New Zealand, forcing pass systems became popular, and sometimes used one heart or even one spade as the weak 0-7 bid. Roy Kerr and Paul Marston developed a relay system called symmetric relays, which matched very well with forcing pass systems. Again, the weak hand described its complete distribution and the number and location of controls, while the stronger hand just asked, and often became declarer.

In Sweden, Einar Berg and Pontus Svinhufvud invented the *Super Spade*, where pass showed 8+ and at least four spades, one club showed 8+ and at least four hearts, and one diamond was the 0-7 weak bid. All higher opening bids were devoted to balanced hands and special distributions,

often minors, making the system aggressive. It spread to other European countries and was played at several European championships.

These new artificial and obstructive systems caused a lot of strife in systems regulation, and in the late nineties, most regions had put rules in place that made it more or less impossible to play them.

Right or wrong, the forcing pass systems died out. Were they just a fluke, or were they the best bidding systems developed so far? In this book, we will see how some of these systems perform versus the standard systems of today.

When the forcing pass systems vanished, Polish players revived another system, which quickly became a national standard, the *Polish Club*. The system base is a multi-meaning one club opening, which shows a balanced hand, a club suit hand, a Marmic shape, or any distribution from 18 hcp and upwards. Because this opening bid can be relatively weak, the opening side is protected against wild obstructionism.

In New Zealand, Paul Marston revamped symmetric relay into an aggressive strong club system with one-level transfer openings, *Moscito*, (supposedly an acronym for “major-oriented strong club with a bite”).

With the aim to counter obstructive overcalls over a strong club, Max Ödlund in Sweden created a one club opening, which combined a weak balanced hand with the strong hands. This idea was adapted by the so-called Carrot Team, which won two European championships in the seventies and eighties, and the *Swedish Club* was born.

### **Tighter Regulations and Five-Card Majors**

In modern times, the very artificial systems have died out, not because they were losing against natural systems, but because of regulations. The last few years have seen a trend where players abandon both four-card majors and strong club, and move towards five-card majors, either 5533 or the quite popular 5542.

But systems development has not stopped. Instead of changing the opening bids, lots of today’s work goes into developments and conventions used in later rounds of the bidding, for example, checkback Stayman and Gazzilli. The natural systems are becoming more and more complex. In the 5542 system, it is common that one club is followed by transfer responses of one diamond (hearts) and one heart (spades). This

can be combined with a strong, artificial one spade or one notrump, which may be followed by relay sequences.

What about this new trend back towards natural systems? Is it driven by the fact that *Standard American Yellow Card* (SAYC) has become the common bidding language around the world, the modern-day *Culbertson* if you like, or is it because five-card majors are intrinsically superior to four-card majors, and because a natural system base, which immediately shows a suit, is superior to strong club? We will investigate this in the book.

### Swatting the Moscos

In 2003, a test match was played on Bridge Base Online (BBO), with the explicit intent of comparing a standard sound 5533 system with an aggressive and more artificial strong club system. The “natural team” consisted of Ben Dickens, Fred Gitelman, Michael Lucy, and Steve Smolen, and they played a modern 5533 system. The “artificial team” consisted of Ana Alonso, Luis Argerich, Paul Marston, and Sartaj Hans, playing the famous *Mosquito* system, with transfer openings on the one level and symmetric relays. The idea was to try and see how these two systems would fare against each other, and the event was called “Swatting the Moscos.”

The match consisted of 24 deals and ended with a win of 62 – 19 for the *Mosquito* team. However, the analysis of the event was inconclusive. One of the deciding factors seemed to be that the *Mosquito* team had more experience in playing with each other.

As we will see later, 24 deals are no way near the amount needed to get reliable statistics for comparing bidding systems.

## 4. A Computer Bidding Experiment

In the fifties, Charles Goren popularized our now standard hcp count, the Milton Work scale. In order to investigate how many points were needed for a successful game, Goren dealt a large number of hands, counted the points, analyzed how many tricks there were, and came up with the fact that at around 25 hcp, we can make a three notrump game more often than not. This result was reached by hard manual work with hundreds of deals being tested.

As we will learn later on, to investigate complete bidding systems, and compare them to each other, we need to look at thousands of deals, and we need to do our analysis so that we can neutralize all human factors in the results. To do this manually would be a very large undertaking and, unavoidably, error prone. In the end, if the results were close, we might not be sure that the mistakes made were few enough not to matter.

One solution is to use computer simulation. The idea is simple. Implement a program that can read bidding system definitions and bid deals with them. Then let it play the deals and compare the results. If we implemented the complete bidding rules for four-card majors and five-card majors, we could create two pairs of software players (in computer bridge slang they are called “bots” – short for robots) and play a team match. If we use the same algorithms for all the tasks except the bidding, we will eliminate the effects of play and all the human factors from the comparison. What will remain is the difference between the systems’ intrinsic factors.

Inspired by this idea, I started implementing bidding definitions and bidding algorithms using these descriptions, and the results are described in this book.

Today, bridge software has come a long way. There are algorithms that will perform a complete and correct double-dummy analysis in sub-second time, and there are bridge programs that can both bid and play, against each other and against humans. The bidding and play are not yet comparable to the top human level, but there are regular computer bridge championships, and the skill level is increasing. Sooner or later (probably sooner than you think) computers will pass humans in bridge skills, as they have already done in many other games like chess, checkers, othello, and go.

However, the bidding systems of the best bridge computers of today are either hard-wired in code or described by complex scripts. In either case, it is a large effort to add a new bidding system, and most of the champion programs only use one or a few systems.

The main challenges for this project were to create a language for bidding systems and a parser for this language, and then all the rest of the software infrastructure, to keep track of deals, matches, teams, and points.

## **Test System Architecture**

Before we look at the results, I will describe some of the properties of the implemented software system. It may be useful for the readers who want to understand the validity of the results.

Defining a bidding system for a computer is not easy. For two human players, it is easy to agree on what to play. In fact, we may exchange a couple of sentences and then we are ready.

The reason why this is possible is that we have spent years learning and refining our bidding, so we have a large amount of *default knowledge* to fall back on. We can agree on a few conventions, and then decide that the rest of the situations are “natural” or “standard.”

When we implement bidding in a program, there are several possible ways of coding the systems and conventions. The simplest way is to write an algorithm that keeps track of the bidding level and what player has shown what lengths and strength, and which encodes bidding decisions in the form of rules, often directly implemented as program code. This seems to be the most common way that the current leading bridge programs have been built. Such a bidding algorithm will be large and complex, typically comprising anything from 10,000 to 100,000 lines of code. It is a major programming effort to create it.

In order to reduce the complexity, such an approach is often limited to one system, almost always close to “beginner natural” – that system we all know. For example, the current world champion, Wbridge5, plays *French modern standard*. For each new bidding system, there is a major implementation task, so testing a number of systems against each other building a separate algorithm for each would indeed be a major effort.

Another possibility is for the programmer to invent a bidding system definition language, which defines the bidding system. Such languages are often called script languages in programming. Then we will have to implement a parser for this language and an algorithm that matches the actual bidding sequences and properties of the hand to bid with the script, to choose the next bid.

The good part with the script solution is that, to implement a new system, we only have to write new definition scripts, but we can use the same algorithm for all systems. The bad part, which becomes painfully obvious as soon as we start to define even a simple system, is that the scripts must cover a large number of sequences. Even if we limit ourselves to the ten lowest bids in each situation, assume that the opponents pass throughout, and just want to define the first two bids from each player, we have a potential  $10 * 10 * 10 * 10 = 10,000$  sequences to handle, and then we are nowhere near a complete system definition.

In order to tackle these problems, I decided to use a combination of the two methods described above. The implemented bidding algorithm combines a script-based solution with a general, rule-based bidder.

## The System Bidder

The first few bids in the program are made by a script-based algorithm called the *system bidder*. It has a database of textual definitions that describe the bidding system used. It matches these definitions to the actual bidding sequence so far and to the strength and distribution of the hand next in turn.

For example, a simple version of the script for the Stayman convention after a one notrump opening looks like this:

```
1N 15-17 bal prio                ; strong notrump
    pass any any
        2C 8+ 4+H/4+S            ; stayman
            pass any any
                2D 15-17 3-H&3-S
                    pass any any
                        3H 10+ 5+S ; smolen
                        3S 10+ 5+H ; smolen
                2H 15-17 4+H
                2S 15-17 3-H&4+S
```

This description is fairly readable for a human, but more importantly, it can be read by the system bidder algorithm and used to decide what to bid next.

Each call is described with three or four text fields. The first defines the call itself, the second defines the point interval, the third defines the distribution, and the fourth can be used to convey special conditions. If a call is indented (with a tab), it means that it follows after the call one step left somewhere above.

In the example, the bid 1N occurs to the left, so it is an opening bid. The bid is named 1N, its point range is 15-17, and its distribution is **bal**, which, of course, means balanced. When the system bidder sees the point interval 15-17, it will use hcp, because the bid is in notrump and there is no agreed trump suit. When it sees the keyword **bal**, it will check to see if the distribution of the hand is one of 4333, 4432, or 5332.

The keyword **prio** means that if the system bidder finds several alternative bids matching the current sequence and hand, this bid should be chosen over any bid that is not indicated as having priority. In this way, we can tell the system bidder to open one notrump and not one of a suit when we hold 15-17 balanced.

The semicolon indicates that the rest of the line is a comment.

On the next line, we see a pass with any point range and any distribution. This must match the call of the next player.

On the third line, we see the Stayman two clubs asking bid. The point range is given as **8+** which means eight hcp and up, and the distribution is **4+H/4+S** meaning at least four hearts *or* at least four spades (or both).

The bids 2D, 2H, and 2S all begin at the same tab indent. This means that, according to this system, they are all candidates when the bidding has proceeded 1N – pass – 2♣ – pass. Depending on which distribution that matches the actual hand, the system bidder will choose one of them.

If there are several candidate calls where the bidding sequence, point range, and distribution match the actual hand, there is a sorting algorithm that will choose among them. This sorting first looks at any **prio** keyword, but then it has a lot of additional decisions rules. For example, it prefers majors to notrump to minors, longer suits to shorter ones, and

lower bids to higher ones. This part of the algorithm removes some of the demands of defining explicitly which call to choose.

We will soon see more examples, but first we will see what happens when the system bidder runs out of system, that is, when the bidding sequences in the script ends. For example, if the bidding sequence goes 1N – pass – 2♣ – pass – 2♠, we reach the end of the script above. This is when the second part of the algorithm takes over.

## The Natural Bidder

The second algorithm chooses its bids based on the bidding sequence so far, the collected knowledge of who has shown what point ranges and distributions, and a set of *pre-programmed rules* of what to bid. This algorithm knows about the points needed to make part scores, games, small slams, and grand slams. It knows about trump suits, notrump, and stoppers, and it prefers a major contract to a notrump contract to a minor contract. In a sense, it encompasses a human player's simple, standard bidding knowledge.

When the system bidder cannot suggest any call, it hands over to the natural bidder, which will look at the knowledge gathered and use its general rules to select a call.

For example, after the bidding sequence, 1N – pass – 2♣ – pass – 2♠ – pass, it knows that partner has 15-17 hcp, and a balanced hand with at least four spades but no more than three hearts. It also knows how many points are needed to bid a suit or notrump at a certain trick level. So now it uses its rules to look for a call.

If the hand to bid has at least four spades, we have identified a trump suit, and with 8-9 points, the natural bidder knows how to make an invitation by bidding three spades or to bid game with 10-15 and to move on to a slam investigation with closer to 16+ points. If the hand does not have four spades, the natural bidder will bid two or three notrump depending on points, a five-card heart, or a long and strong minor.

The general strategy is that the system bidder will handle the first few rounds of bidding according to a specific system. However, its knowledge of the system does not have to be described all the way to the final call but is allowed to end early. If so, the natural bid takes over,

uses the information from the system bidding part, and finishes the bidding on general principles, which are the same for all systems.

This allows us to describe several different bidding systems with a manageable effort.

## The System Bidder Revisited

The script language of the system bidder has to fulfill several demands. It must be brief and possible for a human to read. At the same time, it must be able to capture all the concepts needed to implement a system sufficiently well.

The script language has grown during the project and now consists of hundreds of constructs. There is no room here to describe them all but let us look at some important examples.

One way of shortening a definition is to use variables. It can look like this:

```
1x 12-19 4+x=M HCSD                ; four-card majors
    pass any any
      2x 6-10 4+x                    ; single raise
      3x 11-12 4+x                  ; limit raise
      2N 13+ 4+x                    ; jacoby 2N
        pass any any
          3C 12-14 4+x              ; minimum
          3D 15+ bal                 ; extras, balanced
          3H 15+ 1-C                 ; short clubs
          3S 15+ 1-D                 ; short diamonds
          3N 15+ 1-O                 ; short other major
```

This example outlines a popular Swedish version of the Jacoby two notrump. The main idea is that the bids three hearts, three spades, and three notrump show extra strength and shortness in clubs, diamonds, and the other major, respectively.

Actually, this is simplified. When opener shows a minimum with three clubs, responder may show extras with the same three bids, and similarly when opener shows extras without shortness with three diamonds, and when opener shows a minimum and responder shows extras without shortness with three diamonds. However, in the code example above, these cases have not been included.

The bid **1x** will match any actual one of a suit bid, but the distribution **x=M** demands it to be a major (**x=m** would mean a minor). The system

bidder will expand this to match both one heart and one spade, and the keyword **HCSD** indicates that if the actual hand holds several four-card suits, they should be chosen in the priority order hearts, clubs, spades, and diamonds.

The third line contains a bid of **2x** which simply means that it will match two tricks in the suit that partner opened (the **1x** bid).

```
2D 6-10/6-10/20-21 6+H/6+S/bal multi ; multi
    pass any any
        2H 0-15 any ; pass or correct
            pass any any
                2S 6-10 6+S
                2N 20-21 bal
        2N 16+ any ; strong responder
```

Here are the bare bones of the infamous multicolored two diamonds, as loved in Europe as it is feared in America.

The keyword **multi** in the first line indicates that each point range, separated by the slashes, matches the corresponding distribution, also separated by slashes. If any pair of point range and distribution matches the actual hand, the bid is valid. Thus, the keyword **multi** is actually used to define the Multi convention.

```
1x any 4+x
    1y 10-15 5+y ; standard overcall
    2y 10-15 5+y&njp ; standard overcall
    2y 6-9 6+y&jmp ; weak jump overcall
```

Finally, here is a small example from a defensive system definition. Distribution keywords such as **jmp** (jump) and **njp** (non-jump) allow us to describe the difference between a standard two-level overcall and a weak jump overcall.

I hope you get the idea of how the bidding systems and conventions can be described. The use of variables and smart keywords allows reasonably brief descriptions of systems. As soon as the sequence has narrowed down the point range and distributions, the natural bidder can take over, which means that it is possible to describe bidding systems with a manageable effort.

However, it is still no walk in the park. The simplified examples above are just that, simplified examples. In reality, most scripts have to describe at least two rounds of bidding, and often more. The standard module for

one notrump, with Stayman and transfers, is over 80 lines, and includes things like the continuations after transfers and the bidding after the opponents' overcalls.

Here are some implemented systems and the number of lines in their definition files.

|                                         |            |
|-----------------------------------------|------------|
| <code>blue-club-sys.txt</code>          | 1345 lines |
| <code>classic-precision-sys.txt</code>  | 1552 lines |
| <code>cottontail-club-sys.txt</code>    | 1553 lines |
| <code>culbertson-sys.txt</code>         | 694 lines  |
| <code>defensive-standard-def.txt</code> | 1559 lines |
| <code>ehaa-sys.txt</code>               | 663 lines  |
| <code>fantunes-sys.txt</code>           | 1089 lines |
| <code>magic-diamond-sys.txt</code>      | 1423 lines |
| <code>modern-precision-sys.txt</code>   | 1569 lines |
| <code>modern-standard-sys.txt</code>    | 779 lines  |
| <code>moscito-2005-sys.txt</code>       | 2460 lines |
| <code>polish-club-sys.txt</code>        | 1106 lines |
| <code>regres-sys.txt</code>             | 1039 lines |
| <code>roman-club-sys.txt</code>         | 785 lines  |
| <code>scanian-simple-sys.txt</code>     | 1273 lines |
| <code>standard-american-sys.txt</code>  | 1197 lines |
| <code>super-spade-sys.txt</code>        | 703 lines  |
| <code>two-over-one-sys.txt</code>       | 1188 lines |

Some of the natural systems are shorter because several of the opening bids can be described with the same code using variables. For example, *EHAA* and *Culbertson* use the same rules for all four one-of-a-suit openings, while *Standard American* has different parts for one of a minor and one of a major. The *Moscito 2005* script is the longest, because it contains a lot of explicit relay sequences that describe the distribution.

## The Natural Bidder Revisited

When the bidding has lasted a few rounds and the system bidder has limited the lengths and strengths of the hands, the implemented system definitions typically end. At that point, the difference in bidding between different systems also ends. The natural bidder takes over when the main chunks of information have been transmitted. Now it is only to “conclude” the bidding.

There are still a lot of things that the natural bidder must be able to handle. First of all, it has a general knowledge of how high it can bid with different point totals and distributions, in suit and notrump contracts. Once it is known that we will play in a trump suit or notrump,

this knowledge is used to either set the final contract, to make an invitation, or to explore slam possibilities.

For example, if the system bidding goes 1N – 2♣; 2♠, the natural bidder can now take over responder's hand. If there is a spade fit, it will invite, bid game, or make a slam try, depending on strength. If there is no spade fit, it will try similar actions in notrump.

The natural bidder is also able to reason about partner's minimum and maximum point limits, given what level partner could bid on. This enables logical conclusions in different situations. For example, if the previous bidding went 1♠ – 2♠ and the natural bidder decides that opener can afford to bid 3♠, this indicates a strength of some 16-18 hcp. This in turn, may enable the natural bidder to let responder continue to game. The natural bidder can draw conclusions from partner's bids in much the same way as a human player.

However, these general methods are not enough to produce reasonable-level bidding. The natural bidder has to know a lot more. Here is a list of the bridge-related knowledge in the natural bidder algorithm. In principle, it goes through a list of tests to see which one is the next bid candidate.

- It counts points, controls, key cards, and trump queen to bid slams.
- It uses Italian cue bids (bid a lower control before a higher one, ignoring the rank of the controls) to indicate slam interest and controls.
- It uses Roman Key Card Blackwood 1430 in the majors and kickback in the minors, including an additional trump queen ask. Continuing with 5N (or repeating the kickback suit) asks for the lowest side suit king.
- If the point strength is enough, but the level is too high to check for key cards, bid a slam anyway.
- If there is a known major trump suit, bid to the point limit.
- If there is an unshown major suit, bid it. A new, second suit shows at least five cards in the first suit and four in the second.
- Rebid a major suit with at least six cards.
- With stoppers in all suits, bid notrump to the point limit (if partner has shown a suit, assume it has a stopper, and if partner

has shown 15+ hcp, assume that stoppers in unknown suits are not a problem).

- If there is a known minor trump suit, bid to the point limit.
- Bid a new unshown minor suit.
- Rebid a minor suit with at least six cards.
- If partner is unlimited, continue to bid on the lowest level.
- If we are in a known short suit, correct to a longer suit or continue looking for a longer suit or notrump.
- If we are in notrump with a known major trump fit, correct to the major.
- Make a takeout double.
- Make a reopening double.
- Respond to a takeout or reopening double (including a penalty pass).
- Make an overcall or a weak jump overcall.
- Raise or overcall based on the law of total tricks.
- Bid one over based on the law of total tricks.
- Double, pass, or sacrifice in high level competition.
- Make a penalty double.
- Give preference.

If none of the alternatives above are available, the natural bidder will pass.

The combination of system bidder and natural bidder makes for reasonably easy definitions of several bidding systems. Each system must be described in the script format, defining its opening bids, responses, and so on, for a few bidding rounds. Typically, most of the systems in this project are described for two to three rounds of undisturbed bidding, while some sequences can be much longer (up to ten rounds or more).

But once the script definition reaches to its end, the natural bidder takes over and concludes the bidding. This part of the bidding is similar for all implemented systems.

## A Bidding Example

Here is the bidding on the Pavlicek test set “Beginner Review,” Deal 22, with West dealer and East-West vulnerable.

|                                              |                                                                                                                                                |                                             |              |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------|
| ♠ A Q 9 7 6<br>♥ Q 8 2<br>♦ A J 8 4 2<br>♣ — | <div style="border: 1px solid black; padding: 10px; display: inline-block;"><div style="text-align: center;">N<br/>W       E<br/>S</div></div> | ♠ K J 10 8<br>♥ A K 9 3<br>♦ 5 3<br>♣ K 9 2 |              |
| <b>West</b>                                  | <b>North</b>                                                                                                                                   | <b>East</b>                                 | <b>South</b> |
| 1♠                                           | pass                                                                                                                                           | 2N                                          | pass         |
| 3♦                                           | pass                                                                                                                                           | 4♣                                          | pass         |
| 4♦                                           | pass                                                                                                                                           | 4N                                          | pass         |
| 5♠                                           | pass                                                                                                                                           | 6♠                                          | all pass     |

The system used is *Standard American* with a simplistic version of Jacoby 2N. West’s 1♠ is a system bid and shows 12-19 hcp and at least five spades. East’s 2N is also a system bid, showing 13+ and at least three-card support. West’s 3♦ is the third system bid and shows 15-19 and an at least four-card diamond suit (no fancy conventions in this simple example system).

Now the system definition script ends, and the natural bidder takes over. East has 14 hcp and knows that West has 15-19, and both East and West know that spades is a good trump suit. The natural bidder selects the control bid 4♣ for East, and then, after a similar computation, the control bid 4♦ for West. Now East can see that all suits are controlled and asks for key cards with 4N. West responds 5♠ which means two keycards and the trump queen (the implemented responses do not show voids). Now, the natural bidder makes calculations that are very similar to what a human player would do, concludes that the total points and controls are enough for a small slam, and bids 6♠.

## The Play of the Cards

Using the algorithms described above, it is possible to implement functions that read a deal and let two different systems bid it. It is straight-forward to have two teams meet with the deals rotated, exactly in the same way as a team match is played between human players.

However, so far, we have only talked about bidding, which is what distinguishes bidding systems from each other. But how do we evaluate the contracts reached?

There are three different possibilities to do this:

- Use *double-dummy analysis* to calculate the result of the contract. This is readily available, but it will mean that we assume that both declarer play and defense are perfect.
- Use a *bridge program to play out the deals single dummy*. This may give a more realistic play situation, but on the other hand, it demands a program which provides both good and human style playing abilities.
- Use *deals from previous human competitions* (on a high level) and calculate the value of the contract based on those deals. However, values for the contract must exist, and we will need many deals, which may be difficult to find. Finally, all the human errors made in the play will affect our results in an unpredictable way.

In the end, I decided to use the first method and simply assume that both declarer and defenders play perfectly. Today, most saved deals from competitions come with double-dummy analysis and if the program wants to generate its own random deals, there are efficient double-dummy solvers available to integrate. Double-dummy analysis has been used with great success when it comes to investigating opening leads, see Bird and Anthias (2011, 2012).

However, using double-dummy scoring has one negative effect. It loses the ability to evaluate how much unnecessary information a bidding system gives away to the opponents. We all know that if three notrump is the final contract, it is better if we bid it 1N – 3N than to use a complex Stayman or transfer sequence that reveals our distributions, and then end up in three notrump anyway. All we did was to help the opponents in their defense. This aspect is lost when we use double-dummy to provide the results of play, because everyone plays perfectly anyway.

## The Sanity Checker

In the so-called contract sketch in the movie “A Night at the Opera,” Chico Marx says “You can’t fool me. There ain’t no Sanity Clause.”

However, in the implemented bidding algorithms, there is a *sanity checker*.

When it comes to bidding system descriptions for humans, there are literally thousands of books. They are all written to explain the new and different aspects of a system or a convention, and gladly skip a lot of information that the reader is assumed to know or figure out.

System definitions for computers are a totally different thing. They must cover a lot more bidding sequences, since the computer does not know how to fill in the blanks by itself. I have seen only a few computer code notes, and those were riddled with errors. Other bridge programmers say the same thing. Thus, producing system definitions is a difficult task, and a large effort must go into checking them for errors. If there are errors, the validity of the test results quickly evaporates.

One important algorithm in the experiment is the *sanity checker*. It is called after each bidding sequence is finished and looks at the sequence, the final contract, and the hands involved. It checks for several different mistakes, and if it finds something, it flags the bidding sequence as being in error.

Some of the problems discovered by the sanity checker are:

- Too low final contract compared to combined hand strength.
- Too high final contract compared to combined hand strength.
- Too short trump suit.
- Playing in notrump with a good major trump suit.
- Not playing in the longest trump suit.

The sanity checker also compares the accumulated “shown information” from the bidding sequence and compares it to the hand strength and suit lengths.

The sanity checker is called after every bidding sequence, even when the system is running the longest series comprising thousands of deals. In this way, most errors in the system definitions will sooner or later be detected, and in the end, the system definitions will be tested and validated on thousands of deals.

The sanity checker is in itself a complex algorithm. For example, it will tolerate that one side is not playing in their best trump suit if there was

preemptive bidding in the sequence. It is also possible to enter exceptions manually, in order to handle cases where the distribution or the opponents' bidding actually makes a bidding system go wrong and end up in a bad contract. After all, it happens to humans so it could also happen to computers.

Here is a typical example of how the sanity checker works.

|                                             |                                                                                                                                                |                                             |                      |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------|
| ♠ A Q 10 9<br>♥ A K 9 8<br>♦ 9<br>♣ A K Q 3 | <div style="border: 1px solid black; padding: 10px; display: inline-block;"><div style="text-align: center;">N<br/>W       E<br/>S</div></div> | ♠ 7 6<br>♥ Q 10 4 3<br>♦ K 6 4 2<br>♣ 5 4 2 |                      |
| <b>West</b><br>1♣<br>pass                   | <b>North</b><br>pass<br>pass                                                                                                                   | <b>East</b><br>1♦<br>pass                   | <b>South</b><br>pass |

This could happen while testing a new system script for a strong club system. The auction is not that impressive, and the sanity checker will flag this deal with three warnings:

- East-West have 27 hcp together but ended in a part score.
- East-West have an eight-card heart suit but are not playing in it.
- East-West have only five cards in the diamond trump suit.

Seeing these warnings, we could investigate the script, which looks like this (with the opponents' passes and lots of continuations removed for clarity):

```

1C 16+ any
  1D 0-7 any
    1M 16-21 5+M
    1N 16-18 bal
    2m 16-12 5+m
    2M 22+ 5+M
    2N 22-24 bal
    3m 22+ 5+m

```

The problem is that there is no bid for a 22-24 points 4441. The system bidder will not find a bid. However, it saves all checked bids and sends them on to the natural bidder, so that the natural bidder is not allowed to make a bid that already has been tested by the system bidder. The natural

bidder would want to bid 2N, but this has already been discarded by the system bidder, since it shows a balanced hand but not a 4441.

In this example, I had written **bal** (for balanced, that is, 4333, 4432, or 5332) instead of **bam** (for balanced or Marmic, that is, 4333, 4432, 5332, or 4441). After changing **bal** to **bam**, the bidding might go:

| West | North | East | South |
|------|-------|------|-------|
| 1♣   | pass  | 1♦   | pass  |
| 2N   | pass  | 3♣   | pass  |
| 3♦   | pass  | 3♠   | pass  |
| 4♥   | pass  | pass | pass  |

Now West can bid 2N, and a Puppet Stayman sequence leads to the correct game. The 3♦ response shows a four-card major and 3♠ shows hearts but not spades.

In this way, the system will discover a large fraction of all script errors. This is important. On average, I would say that I had made and found 5-10 script errors for each new system I typed in.

## The Software Design

This is how the bidding software was set up and the tests performed.

First, I wrote the basic functions for the system bidder, the script parser, and the bidding algorithm. Then I implemented parts of the playing functions, such as a deal reader, the bidding loop for a single deal, the match play facility, and the score collector. I then added the natural bidder and started developing and testing simple systems, for example, basic four-card and five-card majors.

Then followed a long period when I worked simultaneously on increasing the bidding system definitions, implementing the script language elements needed to describe the systems and conventions, testing the bidding results, and adding skills to the natural bidder.

After about one and a half years, I had a collection of implemented bidding systems and bidding algorithms that produced a reasonable level of bidding, according to my judgement, according to the scores awarded by the Pavliceck tests, and compared to the results achieved by actual play (see below).

When the bidding algorithms and script language had matured, and fewer and fewer changes were needed, I embarked on the task of re-implementing all bidding systems from scratch. This time, I wrote the system scripts in a smart order, implementing modules in one system that could later be used in other systems, and testing each module extensively. For example, once I had written the strong one notrump module, with Stayman and transfers, and tested it, the same definitions could be used in all systems with the same strong notrump continuations.

Finally, I started systematic test competitions between different systems, to investigate the different bidding system questions described later in this book.

For this experiment, I collected several large sets of deals from different sources. Today, this is a relatively easy task. The results of most competitions are saved and can be downloaded from the Internet.

The deal collections used for the experiment are:

- *Richard Pavlicek* has a number of deals collections available on his web site. The sets are made for training and testing, and the bidding receives a score for how good the contract is. These deals have been used extensively for initial, manual testing of each system.
- *Lunds Bridgeklubb*, the bridge club in my hometown, gave me access to all their competitions from the last fifteen years. This was very useful, because in order to get reliable results, a large number of deals must be played. Since these were all live competitions, each deal has a number of human results (often from pairs competitions).

All these deal collections are saved in a format called Portable Bridge Notation (PBN), and this is what the program reads when it plays the deals.

For initial testing and tuning, I typically used some of the Pavlicek test sets, and went through all the generated bidding sequences, evaluating them by looking at them. I often had to tune or correct the system definitions, and quite often also add or change the specifics of the natural bidder algorithm.

Then I selected a test set of ten pair competitions played in Lund in January and February 2012. Each competition had 24 deals, so this test set comprised 240 deals for each system to bid against every other system.

At first, I hoped that this test set would be large enough to give reasonable and repeatable results, but it was not so. However, this test set proved useful anyway. Whenever a new system definition had passed the Pavlicek tests with acceptable performance, it was pitted against one or two other systems, which were already well tested (typically I used standard four-card and five-card majors). This would give a thorough test of the new system, especially in competitive auctions.

Finally, I started using three test sets of 100 competitions with 24 deals each, giving a total of  $3 * 100 * 24 = 7,200$  deals. These competitions were from the bridge club of Lund in the years 2010, 2011, and 2013. It turned out that with this number of deals, the results of a match between two bidding systems ended with the same result most of the times. My judgement is that this amount of play was enough to draw reliable conclusions.

## **What Results Can We Expect?**

We are getting closer to looking at the contesting systems and the results from playing them against each other. Before that, however, let us look at the problem and try to make some smart guesses about the results we could hope to achieve.

In the experiments, systems will bid against each other. Then points for the final contracts will be awarded according to perfect play, based on a double-dummy analysis. The systems will bid both sides of the deal and the result is scored as in a standard team match. All matches will comprise 24 deals, so a typical result will look like “System A wins by 2.5 imps over System B, on average, in a 24-deal match.”

This will tell us that System A is better than System B, but how much better? How much of an imp difference will matter in practice? What kind of imp differences can we expect? The most interesting question is what a significant win is, measured in imps.

We all know that a 24-deal team match can end with a very tight win for one side, or it can be a large win, where the difference may be over 50

imps. But more often than not, a match is decided by one or two game swings, resulting in a win with some ten to twenty imps or so.

The new 20-point WBF victory point scale assumes that a tie occurs when the victory points are from 7 to 13, that is  $\pm 3$  victory points, which corresponds to  $\pm 13$  imps difference. So, the smallest victory point win happens when there is a 13 imps difference.

When one team beats another in real life, of course these 13 imps cannot all be attributed to the bidding systems. They will also be contributed to by the players' skills in card evaluation, bidding skills, opening leads, declarer play, defense, and other factors. Knowing that the bidding systems typically contribute to a part of those 13 imps, I would estimate that in a typical match, the intrinsic properties of the bidding systems would account for some 0 to 5 imps, at the most.

Another way of reasoning is a thought experiment. What would happen if we had a bidding system that was ten imps intrinsically better than that of our opponents? We would start every match with a ten-imp advantage, and we would win a large fraction of all matches against all but much better teams. If there were systems that gave an advantage of ten or more imps per match, players would have observed that a long time ago, and we would all be playing those systems.

Maybe that is what has happened? Maybe all the really bad systems died out a long time ago, and we are only playing the best systems now?

In the *Fantunes* book, Bill Jacobs provides statistics on the performance of Fulvio Fantoni and Cladio Nunes playing *Fantunes* on BBO. By 2010 they had played 2,723 deals where they opened the bidding. In these they won on average 16.08 imps per 24 deals, against mixed opposition, see Jacobs (2012). This is, of course, based on superior bidding *and* play.

They played 1,676 deals where the final contracts were identical at both tables. On these, they won by 9.12 imps per 24 deals on average. If we assume that the latter is a good estimation of their average superiority in *play*, the remaining advantage should be due to better bidding. Thus, Fantoni and Nunes won around 6.96 imps per 24 deals in the bidding. Attribute half of that to the better bidding skills of the players and half to the bidding system, and we again arrive at three imps, that is, approximately the same importance as we previously guessed.

It will be interesting to see whether the *Fantunes* system actually lives up to this result when used by the software algorithm, or if the success rate on BBO may also have other explanations.

In any case, based on the above, I will propose that a significant edge for a bidding system in itself is somewhere around *threeimps*. When we run our tests and see one system beat another by at least 3 imps, the first system is clearly better. If a system wins by 1-2 imps, it is better, but the difference is not that large. If the difference is less than 0.5 imp, it is no longer possible to rank the systems in a reliable way. The small differences are drowned out by the uncertainties in the random selection of deals and the risk of remaining bugs and errors.

If we find a bidding system which is better than all the other by as much as ten imps or more per 24-deal match, it is time for me to write a new “Blue Book.”

## Bridge is a Game of Statistics

When we want to compare bidding systems with each other, it is important to realize the statistical nature of bridge.

First, this means that a bidding system will not do better than others just because it has a better general structure or a better mix of conventions. It will do better if it has better structure and conventions for *the most common bidding situations*.

For example, the *Blue Club* system introduced a two-diamonds opening showing any 4441 distribution and 17-24 hcp, see Garozzo and Yallouze (1969). The continuations described in the book show how much information can be efficiently packed into a relatively small set of artificial sequences. This definitely was a great inspiration for a lot of today’s intricate bidding conventions.

However, perfect bidding after a 17-24 hcp 4441 hand probably means very little for the *Blue Club*’s overall performance. The 4441 hands are only three percent of all hands, and 4441 hands of 17-24 hcp are rare indeed. So even if the continuations after two diamonds in the *Blue Club* are intellectually elegant, it is probably better to use the two diamonds opening bid for something else.

To score well in practical play, a bidding system must handle the most common bidding situations well. If this means that uncommon situations are less well handled, very little damage is done.

Secondly, the rules of bridge give the game a great deal of pure randomness. As bridge players, we have all experienced this. A very tight and well-played match may be decided by a single game swing, where one declarer found the trump queen while the other one did not. The better team may bid a good slam (with the odds) only to see an unlikely 4-0 trump lose the match, and so on. In the long run, this kind of randomness or bad luck will even out, but the long run is considerably longer than 24 deals.

### Reliability of the Results

Trying to estimate the randomness of deals results (the variance, as it is called in statistics), is difficult, partly because it is decided by a large number of factors, and partly because those factors themselves depend on complex things, like different bidding systems and conventions.

The only reasonable way forward is experimental. Write a program and play a number of deals. Then play as many other, randomly selected deals, and check if the results are more or less the same. If they differ, select more deals, and do the same thing again.

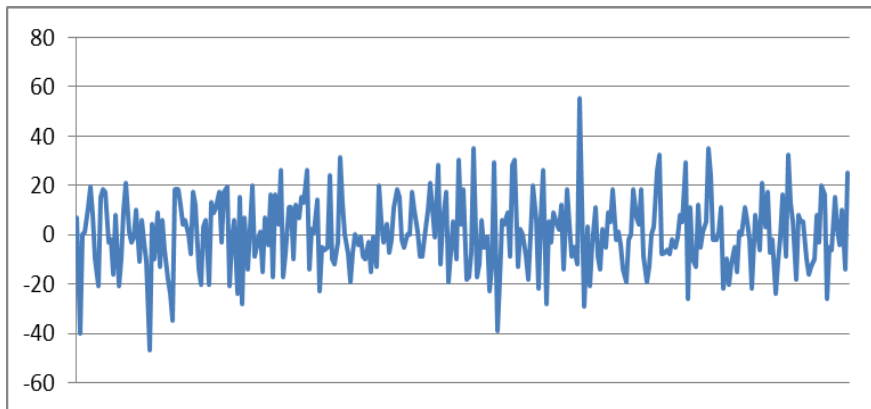


Figure 1. Net imps for System A against System B in 300 24-board matches.

As previously described, I did precisely this. It was obvious from scratch that 24 deals were too few to say anything meaningful. I hoped for a test set of 240 deals, which is ten matches, or ten pair competitions.

However, the variance between different test sets was still large (random variations of more than tenimps per match). I finally worked my way up to three sets of 100 matches each, that is, a total of 7,200 deals, from the years 2010, 2011, and 2013. Here I could see that the results between the test sets started to become stable. There could still be small imp differences, but if System A scored twoimps more than System B on one set, it usually also scored around twoimps more on the other test sets.

The random variation in net imp wins in each match is still large compared to the average net imp win, see Figure 1. Here, two systems have played 300 24-board matches and, in the end, System A won by 0.8imps over System B. However, in a single match, System A or System B often wins easily by 20imps or more.

In order to test the results even further, I tried another 7,200 deals, based on 100 competitions for each of the years 2014, 2015, and 2016. The results were similar to the first 7,200 deals. They would typically differ by around 0.2imps but sometimes by up to 0.5imps.

Because of this, I decided to be satisfied with 7,200 deals and three years with 100 competitions each. My main reason for this decision was that if two systems need more than three years of play, in order for us to even discover the difference, that difference will never be important in practice. Rather, a human player should consider these two systems as equal and select between them based on the human factors.

Another thing that affects the trustworthiness of the results is the amount of remaining bugs. In order to get reliable statistics, we must play thousands of deals, and then it is no longer humanly possible to double-check all played deals for correctness.

If you do not believe me, try it yourself. Download the latest competition from your club and go through all the deals you and your partner played. Check whether you bid correctly and landed in a reasonable contract. If not, find out why. Now do this for all deals and all pairs in that competition, and then continue with all the competitions for three years back in time. I promise that you will lose your concentration long before you have finished.

The way I decided to handle the large amount of deals needed was as follows:

- Run through the Pavlicek test suites. They have 24 deals each and I used between four and eight test sets, which was doable.
- Use the ten-match test set from 2012, work through all 240 deals, and look more closely at all “big” swings.
- Implement the *sanity checker* and let it look at all 7,200 deals played. Then look at those deals that were flagged by the algorithm.

In this way, it was possible to add a new bidding system in around three to five days. First, I needed to learn the system and enter it in the script language format. Then came the three steps of testing described above.

By the way, there has not been a single instance yet, where I did not discover new errors in all these phases. This leads me to believe that, unless an implementation is very well tested with a large number of deals, it will contain errors. This is true not only for the current project, but for any bridge bidding or playing software out there.

Finally, the software architecture of the system reduces the impact of remaining bugs. The same system bidder and natural bidder algorithms are shared by all bidding systems. If there are smaller bugs in them, most of these will tend to even out. For example, assume that the natural bidder will take a game chance in three notrump a little too often, rather than playing a safer five of a minor. This could be due to, for example, a programming error in the analysis of stoppers. If this was the case, the results would be skewed by the tendency to bid three notrump, but it would affect all the bidding systems in a similar way. If one pair in the match chose the wrong game, the probability is that the opponent pair at the other table would do the same thing. Of course, there are no absolute guarantees here, but the fact that many of the bidding functions are shared means that they tend to even out the effects of smaller bugs.

## The Human Fallacy of Quick Conclusions

The large variance of results has some interesting ramifications for all those who have claimed that a particular system or convention is good or bad. At bridge clubs we hear it all the time. “I tried this convention, but it does not work, because it gave us a bad result already on the first evening.”

There are also many system and convention books, in which the author (no doubt a famous international player with many titles under the belt),

claims that one system or convention is better than another, based on the author's experience of using it.

However, the investigation of how many deals we need to play to get reliable statistics says that at least a couple of thousand deals are needed. The test sets used in the current project consist of all the pair competitions at the bridge club of Lund during 2010, 2011, and 2013. There are three or four games a week, each comprising at least 24 deals, for three entire years.

The Nobel Prize laureate Daniel Kahneman has described the human tendency to draw quick conclusions by association, without a basis in logic, knowledge, or long experience, in his bestselling book "Thinking, Fast and Slow," Kahneman (2011). He proposes that we are hardwired to learn patterns from a few events. This may be useful when a child puts a finger into a fire for the first time. It is good if you do not have to repeat the experience ten times before you learn that fire burns. But this same hardwiring also makes us draw unfounded conclusions and take very bad decisions, often based even on a single experience.

I would contend that in very many cases, the tests of systems and conventions have been based on too few deals.

For example, if we want to test a weak 12-14 notrump instead of 15-17 and see if it helps our game or not, we need to play it several times a week for at least *a couple of years*. After that, if we remember all the results of playing 12-14 and 15-17, we can state which one is better with some basis in experience.

### **What Are Three Imps Worth?**

Now we have spent several pages reasoning about how difficult it is to test systems against each other on a computer, how long test series we need, and how small the differences are that we can expect.

If we can expect the difference between a really good system with well-oiled conventions and treatments, and a simple, rough beginner system, to be less than five imps per match, and it will take two or three years playing two matches a week to beat the randomness of the game, if so, is all this worrying about bidding systems worth it?

Most of the matches we play are decided by a larger difference than five imps. If the system does not matter more than that, why not simply play *Beginner 101* or *SAYC*, and be happy with that?

A more interesting way of putting the same question – in the world of elite players and international bridge stars, there is a lot of talk about systems and conventions. Rodwell and Meckstroth play *RM Precision*, undoubtedly a part of the explanation for their success. Fantoni and Nunes invented their aggressive and natural *Fantunes* system. America has moved from the old, scruffy *4444* to the new, sleek *5533* and then to *2/1*. And if you play a natural system with wide-range opening bids, you just have to try *Gazzilli*. Supposedly, it is a great convention and is taking the bridge world by storm.

Is it really possible that all these great systems, ideas, and gadgets only give a lousy advantage of three to five imps per match, tops?

The answer is – as it always is with good questions – both yes and no.

As the results presented in this book will show, the imp contribution per match from system differences seems to be no more than three to five imps (and often less). This may seem small indeed, and if we think about it, it seems rather logical. If the differences had been larger between good and bad systems, people would already have scrapped the bad systems and left them to history.

So yes, it seems that the differences will not be larger than that. On the other hand, neither will the differences from good hand evaluation, good analysis of the opponents' bidding, good opening leads, declarer play, defense, table feel, and several other things. All these skills matter, and since typical match wins are somewhere in the interval 10-20 imps, no single one of these skills contribute much more than three to five imps. That is, on average, in the long run. Any specific match can be decided by a single decision, a bad lead, brilliant endplay, or a single bad "system board." But Kahneman has taught us not to draw conclusions from single events.

Or look at it from another point of view. Let us say that our team plays a super-duper-artificial-club with bells and whistles, while all the other local teams play *Culbertson Neanderthal*, and our system actually is three imps better on average. Then we have a long-term advantage, which will play a large role. Whenever we sit down to play against the

usual opponents, we have our three-imp bonus, in every match, time after time, year after year. In the long run, it will help us to win much more often than we lose.

This philosophical detour teaches us one more thing about bridge. As you know, a mistake can easily cost us a game swing (or worse). If we miscount our points and fail to bid an obvious three notrump, it will cost us around tenimps. If we squander an entry and go down in a slam, again it will be very expensive.

The conclusion is clear. All the important bidding and playing skills may earn us a fewimps per match on average. This means that we simply cannot afford to make regular mistakes. If we mess up once per evening, all the other advantages will be offset. The single most important thing to do in order to improve our game is to learn to avoid mistakes.

## Mean Opening

For each system presented, I have calculated the mean opening, where pass is 0.0, 1♣ is 1.0, 1♦ is 2.0, etc. This can be done by multiplying the level of each opening bid with its frequency and adding up the values for all openings in the system. I wrote a program to do this in the early nineties. *Standard American* has a mean opening of 1.50, that is, right between 1♣ and 1♦.

The point of calculating the mean opening is to have a measure of how aggressive a system is. The higher the mean opening, the more the opponents will be put under pressure, that is, if the opening bids are weak. The strong opening bids, for example, a 20-21 2N, preempt our own side, so in this case a high mean opening may be bad, not good. It might be argued that one should skip all opening bids with 15 hcp and higher in the mean opening calculation. However, previous literature has used the simpler way of just calculating the mean opening for all opening bids, and it has been used in this book too.

## 5. Reader Quiz

It is a no-brainer to assume that some of the readers will be interested in competitions in general and bridge-related competitions in particular, so why not create a reader quiz? Here are some questions for you. Write down your answers first, and then read the rest of the book, and see how correct you were.

- Which system is better, four-card or five-card majors?
- Is 2/1 better than *Standard American Yellow Card (SAYC)*?
- Which is better, weak or strong notrump?
- Which are better, natural or strong club systems?
- Which are better, constructive six-card weak two openings, or wild and obstructive five-carders?
- Which conventions gain a lot of points for you? How about Bergen raises, checkback Stayman, Cole, and Gazzilli?
- Which is the best notrump defense?
- Which is the best defense against a strong one club?
- Can you disturb a strong club to make the system suffer?
- Are modern systems better than good, old *Culbertson*?
- Were the Italian Blue Team systems good or bad?
- Were the highly artificial systems of the eighties superior, or did they only gain by confusing the opponents?
- Are relay-based systems superior to non-relay systems?
- Which is the world's best bidding system type?
- Which is the world's best bidding system?

To make the quiz a bit more difficult, I will reveal that there are not two alternative answers, but often three. For example, five-card majors may be better than four-card majors, they may be worse, or they may be more or less equal.

As I have pointed out several times already, you should assume that the play will be double-dummy perfect.

Remember, this is the first time you will see the correct answers to these questions. Before this book, no one knew them. Good luck!

## 6. Four-Card and Five-Card Majors

Finally, we are ready to introduce the contenders and witness the results of the matches...

But first, the game rules.

In order to compare two or several bidding systems, we will arrange a software match. Both pairs in each team will use the same system, and the card play will be perfect, according to the double-dummy analysis. The software will score each match in the exact same way as a standard match between human teams is scored, with point differences turned into imps. Each match will consist of 24 deals, and the end result will be given by the imp difference.

The most important difference from a human match is that the algorithms will not be tired after 24 deals. Instead, they will be happy to play 300 matches with 24 deals each. The imps are accumulated, and in the end, we divide the difference by the number of matches played (300) and we will get the final result. This will be the average imp gain over a 24-deal match. So, all the results presented are based on **7,200** deals between each pair of systems.

It is time to meet the first contenders, and we wish good luck to everyone. Let the games begin!

### The First Contender – Four-Card Majors

The honor of being the first to step out into the arena goes to our old friend, the classical four-card majors, or *4444* as we will call it.

This is the “modern” version of the most classical bidding system of all. All one-level opening bids promise a four-card suit and the notrump opening shows 15-17 hcp and a balanced hand.

#### Opening Bids

|    |       |             |    |       |             |
|----|-------|-------------|----|-------|-------------|
| 1♣ | 12-19 | 4+ clubs    | 2♣ | 20+   | any         |
| 1♦ | 12-19 | 4+ diamonds | 2♦ | 6-11  | 6+ diamonds |
| 1♥ | 12-19 | 4+ hearts   | 2♥ | 6-11  | 6+ hearts   |
| 1♠ | 12-19 | 4+ spades   | 2♠ | 6-11  | 6+ spades   |
| 1N | 15-17 | balanced    | 2N | 20-21 | balanced    |

The longest suit is always opened first, the highest of two five-card suits, and when choosing between four-card suits, the order is ♥♣♠♦.

1-over-1 is 6+ hcp and a 4+ suit. 2-over-1 is 11+ hcp and a 4+ suit (but 1♠ – 2♥ shows 5+ hearts, which means that 1♠ – 2♣ may be 3+ clubs only). Negative 1N is 6-10 hcp.

1♣♦♥♠ – 3♣♦♥♠ is invitational, while 2N is a game-forcing raise. Jump shifts are strong, double jumps are singleton splinters, and triple jumps are voids. In this basic version, there is no delayed Stayman or Gazzilli 2♣.

The 1N opening may contain a five-card major. After 1N, 2♣ is invitational Stayman, 2♦♥ are transfers to majors, 2♠ is a transfer to either minor (minor-suit Stayman), 3♣ and 3♦ are natural game invitations, and 3♥ and 3♠ are natural slam invitations.

2♦♥♠ are sound weak two opening bids with 2N as the only forcing response.

### **Background**

In the beginning of contract bridge, four-card systems were by far the most common ones. *Acol* was developed in England, while *Culbertson* and *Goren* were the names in America. My implementation is based mainly on the Swedish version of four-card majors which was initially modernized and described by Mats Nilslund, see Nilslund (1978), and further refined by Magnus Lindkvist and Anders Wirgren in a series of four books. Similar types of basic systems are found in most countries around the world.

### **Strengths and Weaknesses**

The point range 12-19 is quite wide, and the lower limit of 12 is somewhat conservative. Opening four-card majors is aggressive and has the advantage of showing a major as soon as possible. However, it also leads to some shaky bidding sequences, for example, 1♠ – 2♣; 2N, where the bidding is already uncomfortably high.

### **The First Match – Four-Card Majors versus Itself**

Any reasonable reader would now expect the appearance of a second contender, for example, five-card majors. However, as in all mind-sports, there is a need for our contenders to warm up before the real contest. To do this, 4444 will play a set of matches against itself.

In fact, 4444 is not a single system, but an entire gang. It depends on how they prioritize the openings when they have two or three four-card suits

to choose from. We already have three contenders on the stage, and they are ready to play. They are:

- *HCS*D, which means “hearts, clubs, spades, and diamonds,” Nilsland’s recommendation. The motivation is that majors are more important than minors, but with four clubs and four spades, open clubs to gain space for a convenient one-over-one by partner.
- *HSCD* is the preference of the real four-card “majorites,” because the majors are all important, and you rather block partner than give the opponents the chance of a one-level overcall. Preempt at all costs, and if you cannot preempt, at least start as high as possible.
- *CDHS* is the newest system, called *Nordic Standard*. Nowadays, all the beginners in Denmark, Finland, Norway, and Sweden are supposed to learn this. The idea is to keep low and give partner as many one-over-one possibilities as possible. But *how lame!* Surely, this is only for beginners?

Let us start the first scientific computer simulation comparison – the first match.

### Result

Look, the first scores. As with many sports (baseball and cricket come to mind), you need to learn how to read the score board before you can really appreciate the game.

| Board | Match | Imps | Mean | System    |
|-------|-------|------|------|-----------|
| 0.02  | 0.39  | 232  | 1.61 | 4444 HSCD |
| 0.00  | 0.04  | 25   | 1.57 | 4444 HSCD |
| -0.02 | -0.43 | -257 | 1.50 | 4444 CDHS |

Here is how the seasoned audience understands the table. Each system has played 7,200 deals against each opponent. In this case, each team had two opponents, so they have played a total of 14,400 deals. The first column is the net average imp gain per deal. This means that the *HSCD* bidding system will win an average of 0.2 imps per deal when playing the other two. The second column is the average net imp gain over a 24-deal match. The third column is the actual net imp gain over all the deals against the opponents. The fourth column shows the average opening

level of the system. The fifth and final column is the name of the contender. As you have already figured out, I personally prefer to look at the second column, *the net imp gain per match*. This is because it is easy to relate to theimps you will gain in a 24-deal match.

A typical commentator would interpret the results as follows. In the “match” column, there is a difference of 0.82imps between the winner, *HSCD*, and the loser, *CDHS*, while *HSCD* ends up almost exactly in between.

In principle, this is a feather in the hat for the aggressive systems. It is better to show your majors, and *Nordic Standard* is lame, ideal for frightened beginners. That it is the aggressiveness that makes the difference seems to be supported by the mean opening (“Mean”) column. The *HSCD* version has the highest average opening, although the differences are not large.

On the other hand, the imp differences are so small that they almost fall inside the limits of statistical significance. Nilsland thinks that the *HSCD* order is best, and *Nordic Standard* prefers another order, but it really does not matter that much. Choose the order you like best and that you think is easiest to remember.

For the future, I would say as follows. See any difference of less than 0.5imps per match as too small to draw any conclusions, a difference of less than 1.0imps as a weak indication only, and a difference of more than 1.5imps as something really worth thinking about. So *HSCD* seems to be a bit better than *CDHS*. That is the weak conclusion we can draw.

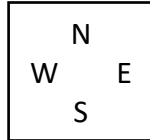
Well, there we have the first results. The reader should now realize that one common outcome of our comparisons may be that – there is no big difference. Maybe bridge teachers and bridge writers have gone on about one wisdom or another, but in fact, it was really not that important.

Let us look at an example from the matches. In this deal, *HSCD* is the home team against *CDHS*, (which simply indicates that *HSCD* is North-South in the open room and East-West in the closed).

Oct 16, 2012  
Deal 23  
South  
All

♠ J 10 7 2  
♥ A Q 5 4  
♦ K 8 6 4  
♣ 7

♠ A 5  
♥ K 9 7 6 3  
♦ 9 2  
♣ 10 8 5 2



♠ K 9 6  
♥ 10 8  
♦ Q 5 3  
♣ A J 9 6 3

♠ Q 8 4 3  
♥ J 2  
♦ A J 10 7  
♣ K Q 4

CDHS  
**West**  
—  
pass  
pass

HSCD  
**North**  
—  
3♠  
pass

CDHS  
**East**  
—  
pass  
pass

HSCD  
**South**  
1♠  
4♠

In the open room, South shows a four-card spade suit with the opening bid, and the *HSCD* team has an auction directly from a beginners' course.

HSCD  
**West**  
—  
2♥  
pass

CDHS  
**North**  
—  
3♦

HSCD  
**East**  
—  
pass

CDHS  
**South**  
1♦  
pass

In the closed room, South opens 1♦ instead. This allows West to make a weak jump overcall on five cards. Because of the competitive situation, North immediately raises the known trump suit, and the *CDHS* team never discovers their spade suit. The *HSCD* team wins 11 imps.

| Deal | Open Room |   |   |     | Closed Room |   |   |     | Diff | HSCD | CDHS |
|------|-----------|---|---|-----|-------------|---|---|-----|------|------|------|
| 23   | 4S        | S | = | 620 | 3D          | S | = | 110 | 510  | 11   | -    |

In this case, *HSCD* gained because it showed the important major immediately.

Of course, North in the closed room should bid 2♠, 3♠, or X instead, but the basic system version of 4444 prefers to raise a known trump suit in a competitive situation.

Quite often, there will be other bidding choices in the examples, some good and some bad. In the current case, showing spades would have been better, but in other cases, raising diamonds is the winning choice. Single examples simply do not prove very much. They just entertain.

If you think that the first match had a boring result, remember that it was only a warm-up session. Now we will see the entrance of the next contender, five-card majors.

## Five-Card Majors 5533

This is currently the most popular of all bidding systems. The major suit openings show five-card suits, while the minor suit openings only promise three cards. The notrump opening shows 15-17 hcp and a balanced hand.

### Opening Bids

|    |       |             |    |       |             |
|----|-------|-------------|----|-------|-------------|
| 1♣ | 12-19 | 3+ clubs    | 2♣ | 20+   | any         |
| 1♦ | 12-19 | 3+ diamonds | 2♦ | 6-11  | 6+ diamonds |
| 1♥ | 12-19 | 5+ hearts   | 2♥ | 6-11  | 6+ hearts   |
| 1♠ | 12-19 | 5+ spades   | 2♠ | 6-11  | 6+ spades   |
| 1N | 15-17 | balanced    | 2N | 20-21 | balanced    |

The longest suit is always opened first, and the highest of two five-card suits. With 44 in the minors, you open 1♦, with 33 1♣. This means that 1♦ is either a natural four-card suit or exactly 4=4=3=2.

1-over-1 is 6+ hcp and a 4+ suit. 2-over-1 is 11+ hcp and a 4+ suit (and 1♠ – 2♥ shows 5+ hearts). Negative 1N is 6-10 hcp.

1♣♦♥♠ – 3♣♦♥♠ is invitational, while 2N is a game-forcing raise. Jump shifts are strong, double jumps are singleton splinters, and triple jumps are voids. In this basic version, there is no delayed Stayman or Cole 2♣.

The 1N opening may contain a five-card major. After 1N, 2♣ is invitational Stayman, 2♦♥ are transfers to majors, 2♠ is a transfer to either minor (minor-suit Stayman), 3♣ and 3♦ are natural game invitations, and 3♥ and 3♠ are natural slam invitations.

2♦♥♠ are sound weak two openings with 2N as the only forcing response.

### Background

Over time, a majority of players in America and all over the world have moved from four-card to five-card majors. This should indicate that the system is better, but who knows? One advantage is that it is easier to learn, because you have no complicated choices between four-card suits. I have based my implementation on a large number of SAYC documents on the web, and several books.

### Strengths and Weaknesses

The point range 12-19 is quite wide, and the lower limit of 12 is conservative. Five-card majors often keep the bidding a level lower, but are also less aggressive, delay the showing of four-card majors, and allow the opponents to overcall on the one level more often.

### The Second Match – Five-Card Majors Warm-Up

Dear reader, you thought that finally we get to see whether five-card majors really are better than four-card majors, or if millions of Americans will sue their bridge teachers for teaching them a sub-standard system.

But no, to be fair, we must also give the five-card majors a chance to warm up and test the battleground. It so happens that there are three contenders on this side too.

- 5533 is *Standard American Yellow Card*, with at least three clubs, and at least three diamonds, and if so, exactly  $4=4=3=2$ .
- 5542 is the new kid on the block. Here we prefer a good, old, honest four-card diamond, while the club opening pays for this by promising only two clubs.
- 5551 is the much older relative, descended from Vienna and the system *Vienna*, which won the first world team championships for the Austrian team headed by Paul Stern, over the Culbertson team, in Vienna 1936. But modernized, of course.

As a curiosity, in Sweden all juniors seem to be required to play 5542 nowadays, while if you play 5551, it is almost 100 % certain that you are an old geezer pushing 75.

## Result

Here are the results of the five-card majors warm-up matches.

| Board | Match | Imps | Mean | System |
|-------|-------|------|------|--------|
| 0.03  | 0.74  | 443  | 1.50 | 5533   |
| 0.01  | 0.14  | 82   | 1.49 | 5542   |
| -0.04 | -0.88 | -525 | 1.45 | 5551   |

This time the differences after 7,200 deals are a little bit larger, but still not that significant. However, we can all breathe out, because the classic *Standard American* managed to defend its reputation. It wins, and that potential lawsuit against the bridge teachers does not look so good anymore.

The Swedish juniors have reason not to be overly happy. They have all gone for 5542 instead of 5533, and now it comes out that it is the wrong horse. Not by very much, but why give away even half an imp per match if you do not have to.

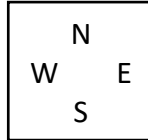
One guy who is smiling is Mats Nilslund. After his 4444 gift to Sweden's bridge players in the late seventies, he made a comeback just the other year, claimed the honor of inventing 5542, and now, in his latest book, states that he will turn the tide back to 5533, see Nilslund (2019). Another notch in the belt for this Scanian systems inventor.

Finally, 5551 is as weak as some of its old-age players. Obviously, showing one more card in diamonds does not offset the drawback of the nebulous one club, which is too frequent (containing most weak balanced hands), does not show even a measly minor suit, and is easily overcalled and disturbed.

In this deal, 5533 is the home team against 5542.

Feb 28, 2011      ♠ J 10 4 2  
 Deal 5            ♥ J 5  
 North            ♦ A K 10  
 NS                ♣ A 10 9 5

♠ K Q 5 3  
 ♥ 10 7 3  
 ♦ 7 6 3  
 ♣ K 8 7



♠ 9 7  
 ♥ A K Q 9 6  
 ♦ Q 9 8 2  
 ♣ 6 3

♠ A 8 6  
 ♥ 8 4 2  
 ♦ J 5 4  
 ♣ Q J 4 2

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5542        | 5533         | 5542        | 5533         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♣           | 1♥          | 2♣           |
| 2♥          | 3♣           | pass        | pass         |
| pass        |              |             |              |

In the open room, North shows three-card clubs, and when East overcalls, South can take a chance of raising.

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5533        | 5542         | 5533        | 5542         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♣           | 1♥          | 1N           |
| 2♥          | pass         | pass        | X            |
| pass        | 2♠           | pass        | pass         |
| pass        |              |             |              |

In the closed room, North only promises two clubs. This means that South cannot raise clubs. When South balances, North does not know about South's clubs, tries a new suit, and the 5542 team ends up in the wrong contract. The 5533 team wins 5 imps.

| Deal | Open Room |   |   |     | Closed Room |   |    |      | Diff | 5533 | 5542 |
|------|-----------|---|---|-----|-------------|---|----|------|------|------|------|
| 5    | 3C        | N | = | 110 | 2S          | N | -1 | -100 | 210  | 5    | -    |

## Four-Card versus Five-Card Majors

Finally, we are ready for the first real match. Let us hope that this is it. The discussion about which is the better system has gone on since the late fifties, when Alvin Roth silently began a new American revolution, while the Italian team was in all the headlines.

If four-card majors win, it must be because they show the majors immediately. As the dual European champion Sven-Olov Flodqvist put it: “When God created four-card majors, he wanted us to open them.” We can show our four-card hearts or spades at once, and partner will raise at the first opportunity. But this aggressiveness comes at the price of some inconvenient two-over-one sequences, where we are too quickly on the two level without a known fit.

If five-card majors take home the match, it will be because they start out lower and can have an easier constructive auction. Their drawback is that they allow the opponents an easier entrance into the bidding.

### Result

Finally, the long-awaited results of the match of the century.

| Board | Match | Imps  | Mean | System    |
|-------|-------|-------|------|-----------|
| 0.03  | 0.67  | 1007  | 1.50 | 5533      |
| 0.01  | 0.25  | 382   | 1.61 | 4444 HSCD |
| 0.01  | 0.18  | 267   | 1.49 | 5542      |
| 0.00  | 0.00  | 0     | 1.57 | 4444 HCSD |
| -0.02 | -0.43 | -638  | 1.50 | 4444 CDHS |
| -0.03 | -0.68 | -1018 | 1.45 | 5551      |

Alvin Roth and a million American players are cheering, applauding, and celebrating with hotdogs, popcorn, and coke. Yes, *Standard American* is the winner. Didn't we know it all the time? Finally, it is also proved by some smart hacker professor in Europe.

But when you look at the score table, and give it some thought, it is actually less than half an imp down to second place, where we find good old aggressive 4444 with the majors first. It is not that big a difference.

But never mind. Now let us celebrate the winner. To really enjoy, let us play the two best candidates again.

| Board | Match | Imps | Mean | System    |
|-------|-------|------|------|-----------|
| 0.01  | 0.35  | 104  | 1.50 | 5533      |
| -0.01 | -0.35 | -104 | 1.61 | 4444 HSCD |

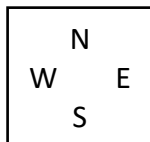
Yes, there we have it. All those years of development from *Culbertson* to *SAYC* have paid off. Not by much, say the critics. But at least development has gone in the right direction.

In the following deal, 5533 is the home team against 4444.

# Four-Card and Five-Card Majors

Jan 16, 2012      ♠ K Q J 9 2  
 Deal 20          ♥ 10  
 West              ♦ J 10 7 6  
 EW                ♣ J 10 5

♠ A 7  
 ♥ A J 9 5 4 3 2  
 ♦ 4 3  
 ♣ 6 4



♠ 6  
 ♥ K Q 7 6  
 ♦ K Q 9 8  
 ♣ K 8 3 2

♠ 10 8 5 4 3  
 ♥ 8  
 ♦ A 5 2  
 ♣ A Q 9 7

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 4444        | 5533         | 4444        | 5533         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | pass         | 1♥          | 1♠           |
| 2N          | 4♠           | pass        | pass         |
| 5♥          | pass         | pass        | pass         |

In the open room, East opens the 4441 hand with one heart. The opponents find their spade suit and compete to the four level, but it is fairly obvious for West to continue to five hearts. Since North and South are vulnerable, they prefer to try the defense, but with East as declarer, the five hearts contract makes.

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5533        | 4444         | 5533        | 4444         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | pass         | 1♦          | 1♠           |
| 4♥          | 4♠           | 5♥          | pass         |
| pass        | pass         |             |              |

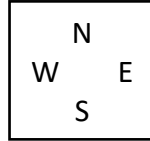
In the closed room, East must open the 4441 hand with one diamond instead. South shows spades and it is West who bids hearts first. East and West reach five hearts here too, but this time, a club lead means a trivial defeat of the contract. This time, the 4444 team wins 11 imps.

| Deal | Open Room |     | Closed Room |         | Diff | 5533 | 4444 |
|------|-----------|-----|-------------|---------|------|------|------|
| 21   | 5H        | E = | -450        | 5H W -1 | 50   | -500 | - 11 |

South dealer, East-West vulnerable

Deal 4  
 South ♠ 7 5  
 EW ♥ A Q 5  
 ♦ Q J 10 8 4  
 ♣ 10 9 4

♠ A 10 4  
 ♥ K J 8 3  
 ♦ A K 6  
 ♣ A 3 2



♠ K 9 3  
 ♥ 10 6 4 2  
 ♦ 7 5  
 ♣ K J 8 6

♠ Q J 8 6 2  
 ♥ 9 7  
 ♦ 9 3 2  
 ♣ Q 7 5

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| J. Meyers   | S. Auken     | R. Montin   | D. von Arnim |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | —            | —           | pass         |
| 1♣          | 2♦           | X           | pass         |
| 3N          | pass         | pass        | pass         |

This example from Venice Cup 2001 in Paris shows how vulnerable three-card minors can be.

Jill Meyers opened 1♣ and Sabine Auken overcalled 2♦. Randi Montin doubled to show strength and one or two majors. But which one? Meyers took her chances with 3N, which went down after a diamond lead, see Auken (2006).

Still, 5533 beats 4444 *HSCD*.

## 7. A Case for the Defense

The reader may have noticed that, so far, we have not mentioned anything about half of each participant, namely the defense. But of course, there are also defensive systems. Since they are as important as offensive systems, they must also be tested and evaluated.

So far, the defensive system used has been a fairly standard one:

- A take-out double is 12+ and 443+ in the unshown suits or any 17+.
- Overcalls are 10-16 and at least five cards.
- Jump overcalls are 4-9 and at least five cards.
- One notrump is 15-17 balanced with a stopper, and system on.
- Two notrumps is 10+ and 55+ in the lowest unshown suits.
- A cue bid is 10+ and 55+ in the two highest unshown suits.
- Higher bids are preemptive.
- Against one notrump, overcalls are 10+ and five-card suits while a double is 15+ and a balanced hand.
- A similar system is used against weak two openings, but a jumping overcall is strong with 16+ and a six-card suit, 2N is 15-18 balanced, and a cuebid asks for stoppers to reach 3N.

I also tested take-out doubles from 10+, four-card overcalls on the one level (only used when the distribution does not match a double), and six-card jump overcalls, but these changes all scored worse than the defensive system shown above.

This defense will be used by all the offensive systems tested unless something else is explicitly mentioned.

Now it is time for the first commercial break, which gives us time to look at a very average deal. In fact, it is actually quite interesting, because it is the most uninteresting deal in the world.

## 8. Low-Level Competition

Let us look at the following deal.

Deal 1

|       |           |  |
|-------|-----------|--|
|       | ♠ A 9 7 5 |  |
| North | ♥ J 6     |  |
| None  | ♦ K 10 5  |  |
|       | ♣ Q 8 7 2 |  |

|            |                                                                                                                   |           |
|------------|-------------------------------------------------------------------------------------------------------------------|-----------|
| ♠ Q 10 4   | <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;">N<br/>W      E<br/>S</div> | ♠ J 6     |
| ♥ A 10 9 8 |                                                                                                                   | ♥ K 7 4 3 |
| ♦ J 9      |                                                                                                                   | ♦ Q 6 4 2 |
| ♣ K 5 4 3  |                                                                                                                   | ♣ A 10 9  |

|  |           |  |
|--|-----------|--|
|  | ♠ K 8 3 2 |  |
|  | ♥ Q 5 2   |  |
|  | ♦ A 8 7 3 |  |
|  | ♣ J 6     |  |

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♠           | X           | 2♠           |
| 3♥          | pass         | pass        | pass         |

North opens, East doubles for takeout, South raises spades and West concludes the bidding with three hearts, one down.

This is the world's most average deal, and you see the likes of it several times in almost every competition.

On this particular deal, each player has ten points and a 4432 distribution. East-West have eight hearts, while North-South have eight spades. You would guess that both two hearts and two spades make, and indeed they do. If you look at the law of total tricks, it works correctly in this case. The two trump suits have eight cards each, and there are eight tricks for each side.

So far, it is a schoolbook example. The optimal contract is three hearts down one, and the law of total tricks says the same thing. With eight trumps against eight in a higher suit, you should *bid over once* at the three level.

But let us see what happens if South is the dealer. Then the bidding could go:

| West | North | East | South |
|------|-------|------|-------|
| —    | —     | —    | 1♠    |
| pass | 2♠    | pass | pass  |
| pass |       |      |       |

West does not have a good distribution for a double, so he passes. East does not know about West's strength or distribution, and North-South are allowed to play two spades, with an advantage.

If North is the dealer but conservative about the opening bid strength, the bidding might go like this:

| West | North | East | South |
|------|-------|------|-------|
| —    | pass  | 1♥   | pass  |
| 2♥   | pass  | pass | pass  |

South does not know anything about North's strength or spades, and this time East-West get to play two hearts, with an advantage for them.

But wait! All hands are balanced with only ten points. In most club competitions, the bidding would go like this:

| West | North | East | South |
|------|-------|------|-------|
| —    | pass  | pass | 1♠    |
| pass | 2♠    | pass | pass  |
| pass |       |      |       |

No one has an opening hand, which means that South opens weak in third hand and wins the contract.

The deal above is a common type, and in pairs (or a tight team match), it is important to get good results on these kinds of hands. The examples show that the side that quickly discovers its fit has better chances of a good contract. If you raise your suit quickly to the two level, the opponents may not have time to find their suit, and you get a good result.

In order to get positive results on these common deals, you need to find and raise your trump suit, and above all, to do this before the opponents have discovered their suit.

## Opening on Weak Balanced Hands

With four conservative players, the result of our example deal could be *all pass*. If both sides open from twelve points and balanced aggressively, they will find one of two hearts making, two spades making, or three hearts down one.

But if one side opened balanced hands from 10 to 11 points, while the other opened from 12, the first side would have an advantage. They would find their trump suit quicker and grab the contract more often.

Nilsland and Wirgren in their compendium on the system *Super Standard*, recommend opening from eleven points with balanced hands, and continue by stating that it is *more important to open weak balanced hands* than unbalanced ones (since you may not get the chance to act later on). The Hackett brothers played a natural system in their youth, *the Science*, where they opened one heart and one spade from ten balanced points.

A tentative conclusion from all this is that there could be reasonable arguments for opening and overcalling weak balanced hands at lower point limits. At the same time, especially in a natural system, the bid point range becomes wider, which makes the subsequent bidding more difficult. We will now take a look at different ways of opening with lower strength.

The commercial break is over, and the play begins again.

## 9. Weak Notrump

It is time to go back to the comparisons and meet new contenders. We have already seen the two classic systems – four-card and five-card majors. We note that all the systems tested so far used a strong notrump (15-17), classically sound two openings (6-11 with six cards) and opened from 12 hcp in a balanced hand.

Our next contender is the weak notrump. This opening bid is popular all over the world, but definitely speaks with a British accent. It has been an integral part of *Acol*, the natural British system, either *variable* according to the vulnerability, or always weak. Of course, Kaplan and Sheinwold also deserve an honorable mention here.

There are two arguments for the weak notrump. First, it is more difficult for the opponents to bid when we have opened one notrump. They have to start on the two level, and there is no forcing cue bid. In addition, they run a greater risk of being doubled for penalties.

Secondly, when we open one notrump, partner immediately can place us in part score, game, or slam, while the opponents do not have the same use of the opening bid information (the non-symmetry of information value). If this is so, why not make the most of it and open a weak notrump, which is statistically more common than a strong one?

However, the weak notrump also has several hidden weaknesses. The risk of being doubled for penalties is larger, but those who have played a weak notrump believe that this does not occur too often, especially with the use of escape mechanisms.

Another drawback is preempting your own side out of better suit contracts, especially two of a major. This problem is sometimes solved by Stayman. However, that happens often with the strong notrump, but more seldom with the weak, since responder needs more strength to ask. There is also a hidden risk of wrong-siding contracts. Where the strong notrump will start 1N – 2♣; 2♠, the bidding sequence with a weak notrump might start 1♣ – 1♠; 2♠, and the weaker hand will be declaring a spade contract.

Well, enough of guessing. It is time to run the comparison.

## Result

First, let us see how a 12-14 weak notrump works with four-card majors. The acronym TR means Stayman and *transfers*, while DS stands for double Stayman (two clubs asks for majors with invitational, two diamonds with game-going strength). Double Stayman will only be used with the weak notrump.

| Board | Match | Imps  | Mean | System        |    |
|-------|-------|-------|------|---------------|----|
| 0.09  | 2.09  | 2509  | 1.57 | 4444 strong   | TR |
| -0.00 | -0.01 | -7    | 1.63 | 4444 variable | TR |
| -0.01 | -0.25 | -295  | 1.63 | 4444 variable | DS |
| -0.03 | -0.72 | -867  | 1.69 | 4444 weak     | TR |
| -0.05 | -1.12 | -1340 | 1.69 | 4444 weak     | DS |

There is no doubt about how to interpret this result. The weak notrump is clearly worse than the strong one, and transfers are superior to double Stayman. The variable notrump (12-14 non-vulnerable, 15-17 vulnerable) is bad but not as bad as the weak one.

Now let us see the same notrump systems combined with five-card majors. In this case, a system with a weak notrump is typically called *Kaplan-Sheinwold*.

| Board | Match | Imps  | Mean | System        |    |
|-------|-------|-------|------|---------------|----|
| 0.06  | 1.43  | 1717  | 1.50 | 5533 strong   | TR |
| 0.01  | 0.16  | 195   | 1.58 | 5533 variable | TR |
| -0.00 | -0.07 | -86   | 1.58 | 5533 variable | DS |
| -0.02 | -0.54 | -653  | 1.66 | 5533 weak     | TR |
| -0.04 | -0.98 | -1173 | 1.66 | 5533 weak     | DS |

Again, the same result. This time the difference is somewhat smaller, because five-card majors are a bit less aggressive, so the weak notrump gains more than when combined with the already more aggressive four-card majors.

If we mix 4444 and 5533, it looks like this:

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.07  | 1.67  | 2506  | 1.50 | 5533 strong      |
| 0.04  | 0.97  | 1455  | 1.57 | 4444 strong      |
| 0.02  | 0.44  | 660   | 1.58 | 5533 variable TR |
| -0.01 | -0.22 | -335  | 1.66 | 5533 weak TR     |
| -0.04 | -1.08 | -1613 | 1.63 | 4444 variable TR |
| -0.07 | -1.78 | -2673 | 1.69 | 4444 weak TR     |

Finally, here are the results for double Stayman:

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.08  | 1.85  | 2776  | 1.50 | 5533 strong      |
| 0.05  | 1.14  | 1717  | 1.57 | 4444 strong      |
| 0.02  | 0.45  | 677   | 1.58 | 5533 variable DS |
| -0.02 | -0.40 | -600  | 1.66 | 5533 weak DS     |
| -0.05 | -1.09 | -1632 | 1.63 | 4444 variable DS |
| -0.08 | -1.96 | -2938 | 1.69 | 4444 weak DS     |

This is not a good day for the weak notrump. The results are plain to see. It may be more aggressive, but the drawbacks clearly outweigh the advantages. You simply miss major suit contracts too often.

I also tried to let the weak notrump use an escape system after a penalty double, while the strong notrump did not. In fact, I tried two systems. The first was to always escape to any five-card suit, which made almost no difference. The second was to also escape to four-card suits. This made a small improvement (some 0.1 - 0.3 points), but it did not change the general conclusion of the previous results.

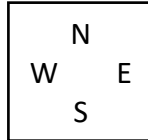
In the following deal, 5533 is the home team against 5533 with a weak notrump.

*Good, Better, Best*

Feb 01, 2010  
Deal 24  
West  
None

♠ J 5 3  
♥ K Q J 8 5  
♦ 3 2  
♣ 7 6 2

♠ K Q 8 7  
♥ 4 2  
♦ 9 7 4  
♣ A 9 8 4



♠ 10 9 6 4  
♥ A 9 7  
♦ A Q J  
♣ K Q 3

♠ A 2  
♥ 10 6 3  
♦ K 10 8 6 5  
♣ J 10 5

weak NT  
**West**  
pass  
1♠  
4♠

strong NT  
**North**  
pass  
pass  
pass

weak NT  
**East**  
1♣  
3♠  
pass

strong NT  
**South**  
pass  
pass  
pass

In the open room, East opens 1♣ and West (the weaker hand) is first to bid spades and become declarer. If North leads diamonds, the strong notrump team will arrange a diamond ruff.

Strong NT  
**West**  
pass  
2♣  
4♠

weak NT  
**North**  
pass  
pass  
pass

strong NT  
**East**  
1N  
2♠  
pass

weak NT  
**South**  
pass  
pass  
pass

In the closed room, East opens a strong notrump and a Stayman sequence makes the stronger hand declarer. The strong notrump team wins 10 imps. Of course, the weak notrump will also right-side contracts with Stayman (and transfers), but the difference is that after a strong notrump, the auction often continues, while after a weak notrump, it more often ends with all pass.

| Deal | Open Room |    | Closed Room |      | Diff | Strong | Weak |
|------|-----------|----|-------------|------|------|--------|------|
| 24   | 4S W -1   | 50 | 4S E =      | -420 | 470  | 10     | -    |

## 10. Weak Two Openings

The next comparison will stand between solid and wild weak two openings. On one side we have a large group of bridge teachers and book writers who tell us that we *must* have six cards in our suit, preferably an honor or two, good inner strength (lots of nines, tens, and jacks), and no good side suit, especially not a four-card major. On the other side we have guys like Marty Bergen.

Let us oppose our teachers and think for ourselves. Why would we need to define our weak two opening like that? The argument is that our side should think about our constructive bidding. What if we miss a good contract in the side major?

But does this really make sense? The whole point of starting at the two level is not to find a contract of our own. We want the opponents to overcall, not find a fit, scramble around, and flounder in the wrong suit at the wrong level. In addition, we want them to go down as badly as possible in their contract or having missed their slam. The less the declarer knows about our hand, the better.

So far, the choice of weak two openings probably has been governed by the player's personality. Do I worry about my own contracts first, or do I feel an unavoidable urge to mess things up for the opponents?

It would also be interesting to know how important preemption is overall, so let us test six-card weak two openings (W6), five-card ones (W5), and let us also compare them against not using weak two at all (NW). They will all be grafted on top of our usual contenders, 4444 and 5533, and the point range is 6-11 hcp. First 4444:

| Board | Match | Imps | Mean | System  |
|-------|-------|------|------|---------|
| 0.07  | 1.58  | 946  | 2.98 | 4444 W5 |
| -0.00 | -0.02 | -12  | 1.57 | 4444 W6 |
| -0.06 | -1.56 | -934 | 1.06 | 4444 NW |

It is a clear win for the wild style. And we also see that weak two openings are big winners overall. Doing without them is no good.

Now let us try 5533:

| Board | Match | Imps | Mean | System  |
|-------|-------|------|------|---------|
| 0.08  | 1.82  | 1094 | 2.91 | 5533 W5 |
| -0.01 | -0.16 | -96  | 1.50 | 5533 W6 |
| -0.07 | -1.66 | -998 | 0.99 | 5533 NW |

We have an even larger difference. Since five-card majors in themselves are less aggressive, the loose style is an even bigger winner.

Now let us put it all together:

| Board | Match | Imps  | Mean | System  |
|-------|-------|-------|------|---------|
| 0.07  | 1.70  | 2548  | 2.91 | 5533 W5 |
| 0.04  | 1.02  | 1532  | 2.98 | 4444 W5 |
| 0.01  | 0.24  | 357   | 1.50 | 5533 W6 |
| -0.02 | -0.38 | -573  | 1.57 | 4444 W6 |
| -0.04 | -0.98 | -1473 | 0.99 | 5533 NW |
| -0.07 | -1.59 | -2391 | 1.06 | 4444 NW |

There is not much to discuss here. You should open your weak two openings as often as possible, with any lousy five-card suit. That is a long-term winning proposition, and it is *more important* than the difference between four-card and five-card majors.

In the implementation of weak two openings, they were defined simply as 6-11 and 6 cards or 5-6 cards, respectively. There was no check on honors in the suit, internal strength, or side suits. However, I decided to be a bit more thorough in my testing, so I implemented one version, which checks that half of the points in the hand are in the opening suit, and that there is no four-card major or five-card minor on the side.

Let us call these solid, well-checked openings “Schoolbook.” Here are the combined results (the mean opening calculator cannot compute hcp in a specific suit):

## Weak Two Openings

| Board | Match | Imps  | Mean | System             |
|-------|-------|-------|------|--------------------|
| ----- |       |       |      |                    |
| 0.05  | 1.25  | 2632  | 2.91 | 5533 W5            |
| 0.04  | 0.93  | 1945  | ---- | 5533 W5 Schoolbook |
| 0.02  | 0.58  | 1226  | 2.98 | 4444 W5            |
| 0.02  | 0.46  | 965   | ---- | 4444 W5 Schoolbook |
| -0.02 | -0.39 | -824  | 1.50 | 5533 W6            |
| -0.02 | -0.52 | -1088 | ---- | 5533 W6 Schoolbook |
| -0.04 | -1.07 | -2242 | 1.57 | 4444 W6            |
| -0.05 | -1.24 | -2614 | ---- | 4444 W6 Schoolbook |
| ----- |       |       |      |                    |

So much for the advice about solid weak two openings. It just is not correct. Opening any five-carder is superior. The explanation for this is simple. If your two openings are too well-defined, you get to use them much less, while the best is to disturb the opponents as often as possible.

In addition, well-defined two openings help the defenders to play their contracts better. But that effect is not seen in our figures, because our bots play perfectly anyway. In real life, the difference between solid and wild two openings is even a bit larger.

Let us also check what happens if you play wild weak two openings non-vulnerable but solid ones vulnerable, called W5/W6. First 4444:

| Board | Match | Imps | Mean | System     |
|-------|-------|------|------|------------|
| ----- |       |      |      |            |
| 0.04  | 0.89  | 535  | 2.98 | 4444 W5    |
| -0.02 | -0.42 | -250 | 1.57 | 4444 W6    |
| -0.02 | -0.47 | -285 | 2.28 | 4444 W5/W6 |
| ----- |       |      |      |            |

Here the zone-dependent system actually scores as badly as the solid one, but the result is within the randomness. Now let us check 5533:

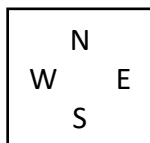
| Board | Match | Imps | Mean | System     |
|-------|-------|------|------|------------|
| ----- |       |      |      |            |
| 0.04  | 0.93  | 557  | 2.91 | 5533 W5    |
| -0.01 | -0.17 | -99  | 1.50 | 5533 W5/W6 |
| -0.03 | -0.76 | -458 | 2.21 | 5533 W6    |
| ----- |       |      |      |            |

Here the zone-dependent system is also clearly worse than the wild, but better than the solid one. It is obvious that the wild openings are superior even in the zone.

In this deal, 5533 with classical weak two openings is the home team versus 5533 with five-card weak two.

|              |             |
|--------------|-------------|
| Jan 02, 2012 | ♠ A J 7 4 2 |
| Deal 5       | ♥ 6         |
| North        | ♦ 10 6 2    |
| NS           | ♣ K J 9 8   |

♠ 9 6  
 ♥ K 7 5 2  
 ♦ K J 9 4  
 ♣ 10 6 2



♠ K 10 5  
♥ A J 10 9 8 4  
♦ 5  
♣ A Q 5

♠ Q 8 3  
♥ Q 3  
♦ A Q 8 7 3  
♣ 7 4 3

five-cards  
**West**  
—  
2♥  
pass

six-cards  
**North**  
pass  
pass  
pass

five-cards  
**East**  
1♥  
4♥

six-cards  
**South**  
2♦  
pass

In the open room, North passes and East-West have a schoolbook auction to reach four hearts.

six-cards  
**West**  
—  
pass

five-cards  
**North**  
2♠  
pass

six-cards  
**East**  
3♥

five-cards  
**South**  
pass

In the closed room, North opens a weak 2♠. East's overcall is quite wide-ranging and can be made on five cards. Of course, many players would raise to game as West, but if East has 13 points and a five-card heart suit only, 3♥ is the best contract, so the careful computer West passes, and the weak five-card team wins 6 imps.

| Deal | Open Room    | Closed Room  | Diff | six | five |
|------|--------------|--------------|------|-----|------|
| 5    | 4H E +1 -450 | 3H E +2 -200 | -250 | -   | 6    |

Weak two openings generate points because the opponents often have to guess. If they guess wrong, they lose big, while if they guess right, it is often an average score. The cases where the weak two openers get caught in a bad contract or miss an own better one are simply less common.

By the way, the defense against weak two openings is standard. X is a takeout double with 12+, overcalls show 11-16 and a five-card suit, 2N is 15-18 balanced with a stopper and “system on,” and jump overcalls show 16+ with a six-card suit.

## **Responses to Five-Card Weak Two Openings**

If you want to try and play wild weak two openings, you should not use a standard system of responses made for constructive openings. The following is what I suggest, and what I implemented for the test.

- New suit – singleton or void in opener’s suit, and your own five-card suit on the two level, and at least six-card suit on the three level. Non-forcing, and opener should *not* correct back to his own suit.
- Two notrump – the only forcing bid, with invitational strength or better. If opener’s interval is 5-11, the strong interval is 9-11, which means that you need 16+ for 2N. Ogust is a simple continuation: 3♣ minimum with a bad suit, 3♦ minimum with a good suit, 3♥ maximum with a bad suit, and 3♠ maximum with a good suit. A good suit has five-cards and two of the three top honors, or six cards and at least one top honor.
- All raises are based on the law of total tricks.
- Jump shifts could be slam invitations with a control, or asking for a control, but are better used as weak preemptive bids with a long suit of your own.

## **Multi and Triple-Multi**

The multicolored two diamonds was invented by Jeremy Flint and Terence Reese in England in the sixties. The idea was to add weak two openings to *Acol*, while being able to keep the strong invitational two openings of that system.

During the last fifteen years, a new style has become increasingly popular, for example, in Sweden. This is a combination of Multi and semi-weak two openings, so that direct two hearts and two spades show

six cards and 10-13 points. The Multi two diamonds takes care of the weaker weak twos.

Another set of two openings that have been popular in Europe is what I call the Triple-Multi.

- 2♦ weak hearts or weak 55+ in spades and a minor
- 2♥ weak spades or weak 55+ in hearts and a minor
- 2♠ weak 55+ in majors or minors

Triple-Multi has been used by, among other, Sabine Auken and Daniela von Arnim. We will test their strong club system later, but for now, let us compare the different weak two opening systems.

Let us equip a standard 5533 with these different two openings, and for each set, we will also test five-card and six-card versions.

| Board | Match | Imps  | Mean | System              |
|-------|-------|-------|------|---------------------|
| 0.10  | 2.30  | 3449  | 2.36 | 5533 Triple-Multi 5 |
| 0.04  | 1.02  | 1529  | 2.21 | 5533 Multi 5        |
| 0.02  | 0.51  | 763   | 2.91 | 5533 Weak 5         |
| -0.05 | -1.08 | -1625 | 1.51 | 5533 Triple-Multi 6 |
| -0.05 | -1.22 | -1834 | 1.37 | 5533 Multi 6        |
| -0.06 | -1.52 | -2282 | 1.50 | 5533 Weak 6         |

The results are clear to see. The Triple-Multi is better than the Multi, which, in turn, is better than using a classical weak 2♦. But that is not the main result. The most important conclusion (again) is that five-card weak two openings are superior to six-carders.

# 11. Defenses against Multi

Let us test some defenses against the standard 2♦ Multi. If it is allowed in your jurisdiction, you should have a good defense against it. So far, our systems have used the standard defense against weak two openings, that is, double for takeout with 12+ and overcall with 11+ and a five-card suit. This is not considered particularly good against Multi, where there is no suit shown.

## Forrester

The Forrester defense was invented by Tony Forrester, England, where Multi is commonplace.

|    |    |       |                          |
|----|----|-------|--------------------------|
| 2♦ | X  | 12+   | takeout of hearts or 18+ |
|    | 2♥ | 12+   | takeout of spades        |
|    | 2♠ | 11-17 | five-card spades         |
|    | 2N | 15-17 | balanced                 |
|    | 3♣ | 12-17 | five-card clubs          |
|    | 3♦ | 12-17 | five-card diamonds       |
|    | 3♥ | 18+   | six-card hearts          |
|    | 3♠ | 18+   | six-card spades          |

In short, double and 2♥ are takeout for hearts and spades, and the rest is natural.

In these tests, we will use 4444 and 5533 with Multi and 10-13 2♥/♠, with our standard defense and with the tested defense.

| Board | Match | Imps | Mean | System         |
|-------|-------|------|------|----------------|
| 0.01  | 0.17  | 156  | 1.44 | 4444 Forrester |
| 0.00  | 0.11  | 100  | 1.37 | 5533 Forrester |
| -0.00 | -0.11 | -100 | 1.44 | 4444           |
| -0.01 | -0.17 | -156 | 1.37 | 5533           |

The Forrester defense is insignificantly better than the standard defense.

## Hughes

The next defense is the one I thought would be the best. The idea is to use a double to show a weak balanced hand, which you cannot risk after a natural weak two opening. The rest is natural.

|    |   |       |                    |
|----|---|-------|--------------------|
| 2♦ | X | 11-14 | balanced or 18+    |
| 2♥ |   | 11-17 | five-card hearts   |
| 2♠ |   | 11-17 | five-card spades   |
| 2N |   | 15-17 | balanced           |
| 3♣ |   | 12-17 | five-card clubs    |
| 3♦ |   | 12-17 | five-card diamonds |
| 3♥ |   | 18+   | six-card hearts    |
| 3♠ |   | 18+   | six-card spades    |

I named the defense in honor of Roy Hughes, see Hughes (2005). Now let us hope that it scores really well.

| Board | Match | Imps | Mean | System      |
|-------|-------|------|------|-------------|
| 0.01  | 0.30  | 272  | 1.44 | 4444 Hughes |
| 0.01  | 0.24  | 216  | 1.37 | 5533 Hughes |
| -0.01 | -0.24 | -216 | 1.44 | 4444        |
| -0.01 | -0.30 | -272 | 1.37 | 5533        |

Another disappointment. The Hughes defense is a little better than standard, but almost inside the margin of uncertainty. By the way, in Sweden, this is often called the Nilsland defense.

## Kleinman

This defense was invented by Danny Kleinman, Los Angeles. Double and 2N are used for takeout of hearts and spades, respectively.

|    |   |       |                          |
|----|---|-------|--------------------------|
| 2♦ | X | 11-17 | takeout of hearts or 18+ |
| 2♥ |   | 11-17 | hearts and a minor       |
| 2♠ |   | 11-17 | spades and a minor       |
| 2N |   | 11-17 | takeout of spades        |
| 3♣ |   | 12-17 | five-card clubs          |
| 3♦ |   | 12-17 | five-card diamonds       |
| 3♥ |   | 12-17 | five-card hearts         |
| 3♠ |   | 12-17 | five-card spades         |

Will this defense score better?

## *Defenses against Multi*

| Board | Match | Imps | Mean | System        |
|-------|-------|------|------|---------------|
| 0.00  | 0.09  | 84   | 1.44 | 4444 Kleinman |
| 0.00  | 0.03  | 28   | 1.37 | 5533 Kleinman |
| -0.00 | -0.03 | -28  | 1.44 | 4444          |
| -0.00 | -0.09 | -84  | 1.37 | 5533          |

Yet another defense which is neither better nor worse than the standard.

### Simplified Dixon

It seems that we need to take out the big hammer in order to get Multi. The following defense was invented by Chris Dixon, England, and further developed by Bertil G. Johnsson, Sweden. They have produced both complex and simplified variants. I chose to test one of the simpler versions.

|    |    |       |                                          |
|----|----|-------|------------------------------------------|
| 2♦ | X  | 15+   | balanced or 18+ any, lebensohl responses |
|    | 2♥ | 11-17 | takeout of spades                        |
|    | 2♠ | 11-17 | takeout of hearts                        |
|    | 2N | 11-15 | a five-card suit, 3♣ is pass or correct  |
|    | 3♣ | 16+   | five-card clubs                          |
|    | 3♦ | 16+   | five-card diamonds                       |
|    | 3♥ | 16+   | five-card hearts                         |
|    | 3♠ | 16+   | five-card spades                         |

Will this defense work better?

| Board | Match | Imps | Mean | System     |
|-------|-------|------|------|------------|
| 0.00  | 0.10  | 92   | 1.44 | 4444 Dixon |
| 0.00  | 0.04  | 36   | 1.37 | 5533 Dixon |
| -0.00 | -0.04 | -36  | 1.44 | 4444       |
| -0.00 | -0.10 | -92  | 1.37 | 5533       |

No, again the more advanced defense differs insignificantly from a simple standard defense.

These tests of defenses against Multi are a sad moment for convention developers. In fact, you can defend well against Multi by simply doubling with balanced and semi-balanced hands and overcall with natural suits. The 11-14 or 18+ double in the Hughes defense improves a little but not that much. I will still use it.

In the American Contract Bridge League (ACBL) jurisdiction, you can only play Multi at more advanced levels, and then you need to bring a written defense for the opponents to use. This is slightly ridiculous, because Multi is not that much better than a natural weak two diamonds, and the best defense is so easy. Treat it as any weak two. Just remember that they have not shown diamonds, so you can double with any balanced hand. In fact, you can double more freely against Multi than against a natural weak two, because the opponents have no easy way of knowing whether they should try to pass out 2♦ doubled.

## 12. Weak Preempts

If wild, five-card weak twos are so much better than conservative six-carders, what about higher preempts?

Standard preempts are usually based on the 1-2-3 or 2-3-4 rules but in the implementation, I have used seven-card suits on the three level and eight-card suits on the four level. What happens if we compare with opening six-carders on the three level and seven-carders on the four level?

The law of total tricks support five-carders on the two level. When we open a five-card suit on the two level, the odds are that we will find an eight-card trump. But if we open a six-card suit on the three level, the odds are actually against a nine-card trump. Let us try standard 5533 with five-card weak two openings with normal, conservative preempts versus shorter preempts (that is, six cards on the three level and seven on the four level).

| Board | Match | Imps | Mean | System              |
|-------|-------|------|------|---------------------|
| 0.05  | 1.20  | 361  | 2.91 | 5533 normal         |
| -0.05 | -1.20 | -361 | 2.91 | 5533 short preempts |

The conservative preempts are clearly better. Or put another way, the law of total tricks is correct again. Be wild with your weak two openings, but do not be too wild with your preempts.

## 13. Weaker Openings in Standard Systems

East dealer, East-West vulnerable

Deal 2

East

EW

♠ Q 8 7 3

♥ J 9

♦ J 4

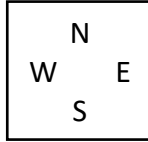
♣ J 10 6 3 2

♠ 6 4 2

♥ A K 2

♦ K 8 6 3

♣ A 7 4



♠ J 9

♥ Q 10 8 6 3

♦ A Q 9 5

♣ 9 8

♠ A K 10 5

♥ 7 5 4

♦ 10 7 2

♣ K Q 5

The bidding goes:

**West**

—

pass

pass

**North**

—

2♠

**East**

pass

pass

**South**

1♠

pass

South opens a four-card spade. West's distribution is not ideal for a take-out double, and partner has passed, so West passes. East is too weak to enter at the three level. West leads the ace of hearts and East-West win two hearts, two diamonds, and the ace of clubs. North-South write +110 in their scorecard, while East-West can make 4♥. The example is from Hughes, (2005).

As we saw previously, lots of points are turned over on boring deals, not because there are high scores in each deal, but because those deals are very common. As you remember, there may be an argument for lowering the limits of opening bids.

Culbertson and Goren recommended 13 hcp for an opening bid ("with an opening bid facing an opening bid, bid game"). The world's most boring deal would recommend opening from 10 hcp. The bridge world has slowly gone from 13 hcp down to 12, and now I would say 11 is probably the standard.

Obviously, aggressiveness and non-symmetry of information value argue for opening often. But on the other hand, a wider opening range means less precise constructive bidding and fewer opportunities for partner to double the opponents. In fact, there is another important drawback – we get fewer chances to use our wild weak two openings.

Let us investigate the opening point limits in our favorite natural systems.

First, I used the 4444 system as a basis, and changed the lower limit to 11 hcp. This also meant that a number of values in the responses had to be increased by a point. One notrump is still 15-17, which means that the weak balanced range becomes one point wider (11-14 instead of 12-14).

I also lowered the opening limit to 10 hcp and increased the responses accordingly. This gives a clearly more aggressive system, but also more difficult bidding. For example, the negative notrump becomes 6-12 instead of 6-10. In this case, I decided to lower one notrump to 14-16, which gives a weak balanced range of 10-13 and a strong one of 17-19.

Finally, I also created a system with stronger opening limits, a modern four-card major system with 13+ openings, where one notrump becomes 16-18 and two notrump 21-22.

In all these cases, I used conservative weak two openings with six cards. Here are the results

| Board | Match | Imps  | Mean | System  |
|-------|-------|-------|------|---------|
| 0.04  | 0.91  | 819   | 1.76 | 4444 11 |
| 0.03  | 0.80  | 724   | 1.57 | 4444 12 |
| -0.01 | -0.24 | -215  | 1.43 | 4444 13 |
| -0.06 | -1.48 | -1328 | 1.98 | 4444 10 |

There is only a small difference between 11+ and 12+ openings, but the world seems to be fine in going to 11 hcp openings. The old 13 hcp are too passive, while lowering to 10 points is too aggressive, and gives a less exact constructive bidding – and the weak openings take away space from the weak two openings, which we know are big winners.

I also changed the 13-hcp system to strong two openings, to emulate the old *Culbertson* system.

| Board | Match | Imps  | Mean | System     |
|-------|-------|-------|------|------------|
| 0.05  | 1.23  | 1471  | 1.57 | 4444 12    |
| 0.04  | 1.06  | 1278  | 1.76 | 4444 11    |
| 0.00  | 0.10  | 118   | 1.43 | 4444 13    |
| -0.04 | -1.01 | -1211 | 0.99 | Culbertson |
| -0.06 | -1.38 | -1656 | 1.98 | 4444 10    |

This time, 12 hcp happens to have a minimal advantage. It really does not matter if you open on 11 or 12 hcp. As can be seen, *Culbertson* clearly suffers from the lack of the weak two, and 10 hcp is simply too weak, at least for a natural system. The subsequent bidding becomes too imprecise.

## 14. Hand Evaluation and Point Count

This is a competition of systems, but as we have already seen, a number of treatments also have met. In any good wrestling show, there are different categories of contestants, to give a wider range of entertainment (in fact, the author has no deeper experience of wrestling than from passing TV commercials, but the statement sounds reasonable). Let us bring in a new kind of contestant.

Have you noticed that we have used the term “points” quite often? When explaining bidding systems, it actually makes a lot of sense to avoid the details of point count and refer to evaluations like weak, invitational, game-forcing, etc. Leave it to the reader to perform the actual hand evaluation.

But in this book, we have already compared different versions of systems with different opening strength and notrump intervals, so we must take a closer look at what points mean.

The two basic assumptions that have already been used are:

- High-card points are counted according to Milton Work: 4-3-2-1.
- If we know that a suit contract is probable, we use distributional points. Both the system bidder’s definitions and the natural bidder make this assumption.

However, the points have actually had their matches already. Here is a flashback.

### High-Card Points

The Milton Work scale is simple to use and works well with balanced hands. Experts recommend that we also use modifications, see, for example, Rubens (2013). However, we no longer have to trust the experts and their suggestions. We can give it to the computer and check out the truth.

For the following tests, we use the classic 4444 with a 15-17 notrump and open four-card suits in the priority order ♠♣♥♦.

The exact definitions tested are as follows:

- *Body* means +1 for two or more tens, or one ten and two or more nines.
- *Joint honors* means two honors (A, K, Q, or J) in the same suit. One or no joint honor suits gives 0, two suits gives +1, and three or four gives +2.
- *Long suits* means +1 for a six-carder, +2 for a seven-carder, and +3 for a longer suit. With two eight-card suits you get as many points as you want.
- *Honor sequences* means what it sounds like. If you have A-K-Q it is scored as two sequences. One or no is 0, two is +1, and more is +2.
- *Short honors* are -1 for each singleton K, Q, and J, and for each doubleton K-Q and Q-J.

Here are the results of comparing these adjustments and comparing them to plain high-card points:

| Board | Match | Imps  | Mean | System            |
|-------|-------|-------|------|-------------------|
| 0.13  | 3.22  | 1015  | 1.57 | body              |
| -0.13 | -3.22 | -1015 | 1.57 | plain             |
| 0.09  | 2.15  | 677   | 1.57 | joint honors      |
| -0.09 | -2.15 | -677  | 1.57 | plain             |
| 0.15  | 3.56  | 1120  | 1.57 | long suits        |
| -0.15 | -3.56 | -1120 | 1.57 | plain             |
| 0.02  | 0.40  | 126   | 1.57 | sequential honors |
| -0.02 | -0.40 | -126  | 1.57 | plain             |
| 0.00  | 0.03  | 10    | 1.57 | plain             |
| -0.00 | -0.03 | -10   | 1.57 | short honors      |

There are two interesting conclusions from the matches. First, a single point adjustment can be as important as the choice of the entire bidding system. For example, you have to give extra points to long suits, even with notrump in mind. If you do not, you are giving away *a lot*.

Secondly, sequential honors are not as important as previously thought. It seems that rewarding honors in the same suit is enough. The fact that they are sequences is not that useful.

I also tried all different combinations of these adjustments, and it comes as no surprise that body + joint honors + long suits + short honors is the best combination. Adding sequences actually lowers the score a bit because the honor effects are over-estimated.

| Board | Match | Imps  | Mean | System      |
|-------|-------|-------|------|-------------|
| 0.23  | 5.49  | 1730  | 1.57 | adjustments |
| -0.23 | -5.49 | -1730 | 1.57 | plain       |

These are the results of the best combination of adjustments. Together they give an improvement of over tenimps per match. The conclusion is obvious – you must use point adjustments, and you must use them carefully.

### Distribution Points

Charles Goren inherited the high-card point scale from Milton Work and successfully used it to replace Culbertson's more complex trick count. However, Goren was also aware that high-card points are good for balanced hands and notrump bidding, but less good for unbalanced hands and the accurate bidding of suit contracts. So he introduced the 3-2-1 distribution point scale (for voids, singletons, and doubletons).

This scale has the advantage of being as simple as the original Milton Work scale, but anyone who uses it will observe that it is not as exact.

In the sixties and seventies, when the *Precision Club* became popular, there was a trend to ignore Goren's distributional points, and instead count plain high-card points in the beginning, and when you found a good trump suit, to use a 5-3-1 point scale for distribution.

This is where we have been until now. Here is the truth about distribution points:

| Board | Match | Imps  | Mean | System            |
|-------|-------|-------|------|-------------------|
| 0.05  | 1.17  | 369   | 1.57 | eight-cards 3-2-1 |
| -0.05 | -1.17 | -369  | 1.57 | plain             |
| 0.13  | 3.23  | 1016  | 1.57 | plain             |
| -0.13 | -3.23 | -1016 | 1.57 | eight-cards 5-3-1 |
| 0.13  | 3.06  | 964   | 1.57 | nine-cards 3-2-1  |
| -0.13 | -3.06 | -964  | 1.57 | plain             |
| 0.14  | 3.27  | 1030  | 1.57 | nine-cards 5-3-1  |
| -0.14 | -3.27 | -1030 | 1.57 | plain             |
| 0.03  | 0.72  | 228   | 1.57 | combo             |
| -0.03 | -0.72 | -228  | 1.57 | plain             |

Again, distribution points are more important than the choice of systems and conventions. Surprisingly, you should not count distribution points until you know that you have a *nine-card trump suit* (proving the value of that "golden" ninth trump), and then you should count 5-3-1.

*Combo* means to count 3-2-1 with an eight-card trump and 5-3-1 with nine cards. But that is actually the least efficient way of counting distributional points, better only than no distribution count at all.

In the experiments in this book, high-card points are always adjusted for body, joint honors, long suits, short honors, and distribution points are counted 3-2-1 when a player sees an eight-card trump and 5-3-1 with a nine-card trump or longer. This is not the best way of evaluating an eight-card trump, but it seems to be the most common. Using the best way above gives similar *relative* results.

### The Value of Shortness

Let us investigate point adjustments when we know that we are facing a shortness, that is, a singleton or void. I have a couple of grandmaster friends who strongly believe in evaluating hands by looking at the type of suit facing a shortness.

The idea is that if you hold K-J-4-3 and partner has A-10-7-6, it is good news, while if partner has a singleton, your suit is a liability. Opposite a singleton, you want to hold something like three small cards.

In the following experiment, we deduct one point for each honor opposite a singleton or void.

| Board | Match | Imps | Mean | System         |
|-------|-------|------|------|----------------|
| 0.00  | 0.03  | 10   | 1.57 | plain          |
| -0.00 | -0.03 | -10  | 1.57 | short honor -1 |

Again an interesting result. This is a hard blow to short-suit game tries. There is really no strong reason to believe in them. Or at least, you must base your analysis not on honors located opposite to shortnesses, but rather on how your suit lengths match with partner's lengths.

### Sorry, Partner, I Counted Wrongly

Since we are investigating point count, let us assume that we have two pairs who are unable to count correctly. More specifically, one pair, *the adrenalin guys*, always add an extra point each, without justification, and the other one, *the old cowards*, always deduct a point each (too many failed contracts?).

| Board | Match  | Imps  | Mean | System   |
|-------|--------|-------|------|----------|
| 0.40  | 9.58   | 3018  | 1.57 | correct  |
| -0.40 | -9.58  | -3018 | 1.57 | +1 point |
| 0.43  | 10.42  | 3283  | 1.57 | correct  |
| -0.43 | -10.42 | -3283 | 1.57 | -1 point |

Look at those numbers. If you tend to be either too optimistic or too pessimistic, you have virtually no chance of reaching anywhere in bridge.

All the experts say that it is important not to be too focused on plain points. That may be correct because you do need to make your *adjustments*. On the other hand, if you take this as a license to count sloppily or to add or deduct a point or two without proper justification from your holdings, you are going down the wrong alley.

Count your points, adjust, and do it very carefully!

Now we have seen matches between some of the more common systems, but so far, they are all natural, meaning that all one level openings are wide range and ostensibly show a natural suit. Before we let the strong clubs in, let us finish off the natural investigations with a look at some common conventions.

## 15. A Tour of the World of Conventions

The term “natural” system is definitely a misnomer. Most natural systems come equipped with a number of conventions to improve the auction. In fact, if you compare a natural system and a strong club, or a forcing pass, for that matter, chances are that the next few rounds in the natural system contain at least as many artificial bids as in the other systems.

Lots of conventions have been invented to improve the so-called natural systems. But do they really help, or are they mostly hype?

### Bergen Raises

In 1967, the French philosophy professor Jean-René Vernes published an article about the so-called *law of total tricks*. The research was based on analysis of some 5,000 deals played in Bermuda Bowl competitions. The article was later published in the *Bridge World*, see Vernes (1969).

When Larry Cohen wrote about the law of total tricks, it became very popular, see Cohen (1992). Cohen’s partner Marty Bergen invented and described a system of major-suit trump raises, now known as “Bergen Raises,” see Bergen (1985). The idea is that if we have a nine-card trump fit, we will always want to bid at least three of the major, based on the law, and therefore it makes sense to raise immediately to the three level with four-card support (the convention is used with five-card majors). Here is a short summary of the convention:

|     |     |       |                             |
|-----|-----|-------|-----------------------------|
| 1♥♠ | 3♥♠ | 0-6   | four-card support           |
|     | 4♥♠ | 0-6   | at least five-card support  |
|     | 2♥♠ | 7-10  | three-card support          |
|     | 3♣  | 7-10  | four-card support           |
|     | 1N  | 11-12 | three-card support          |
|     | 3♦  | 11-12 | four-card support           |
|     | 2N  | 13+   | at least three-card support |

The idea is to use 3♣ and 3♦ to show four-card support with 7-10 and 11-12 respectively. In this way, we give a more detailed picture of our support, and we are already on the three level in case the opponents want to compete.

The law of total tricks has been criticized for being wrong, see Lawrence and Wirgren (2004). It may be one or several tricks off in almost half of

all cases. However, it is still unique in its simplicity, and being within one trick of the correct level in preemptive openings or overcalls is often very advantageous.

In this implementation, three of the other major shows a 13+ splinter raise in that suit.

| Board | Match | Imps | Mean | System             |
|-------|-------|------|------|--------------------|
| 0.01  | 0.35  | 218  | 1.50 | 5533 Bergen Raises |
| 0.01  | 0.22  | 136  | 1.50 | 5533               |
| -0.02 | -0.56 | -354 | 1.57 | 4444 HCSD          |

When comparing with plain 4444 and 5533, 5533 with Bergen Raises is a little bit better, but the difference is within the random fault margin. If you like Bergen Raises, play them, and if you do not, you will not miss them very much.

## Checkback Stayman Systems

Jack Marx from London had the brilliant idea of using the 2♣ bid to ask for four-card majors after a 1N opening (before that, opening one notrump was often a failure). So, we could all be followers of Marx after one notrump (Marxists, hopefully Groucho rather than Karl). George Rapee had the same idea in America, so maybe the most popular of all conventions should have been named Rapier? But since Rapee's partner was the one with the mental strength to write it all down, the convention is known as Stayman.

Thanks to the efficiency and simplicity of the convention, it did not take long before people started using a similar method after 1x – 1y; 1N. There are several versions, usually named checkback Stayman or delayed Stayman. Lately, new methods use both 2♣ (for invitational hands) and 2♦ (game forcing). This two-way checkback is also called XY-notrump, and when the sequence 1x – 1y; 1♠ is included, it is called XYZ-notrump.

I developed a reasonably complex version of checkback Stayman, where 2♣ is used for invitational and game-forcing hands and looks for a five-card opening suit, three-card support for responder's suit, and stoppers in the fourth suit.

The development of XYZ is also fairly complete, and some sequences described for four of five rounds of bidding. Two clubs is a puppet to two diamonds, with either weak diamonds or most invitational hands. Two diamonds is forcing to game with natural continuations. Other responses are weak, and 2N is weak with both minors.

| Board | Match | Imps | Mean | System         |
|-------|-------|------|------|----------------|
| 0.01  | 0.16  | 98   | 1.57 | 4444 plain     |
| 0.01  | 0.12  | 72   | 1.57 | 4444 checkback |
| -0.01 | -0.28 | -170 | 1.57 | 4444 XYZ       |

Believe it or not, but natural bidding works just fine. What a boring result for the inventors. All that creativity for nothing – and all my development work also wasted. Checkback and XYZ really do not give any advantage.

The differences are too small to mean anything, so the conclusion is not that plain is better than checkback systems. The truth is simply that they do not make a significant difference.

However, that is only true when it comes to the intrinsic advantages. I would say that many players will find XYZ much easier to use than a purely natural system. All invitational hands bid 2♣, and all game-forcing 2♦. The rest is natural and non-forcing. Even if this is artificial, it is easier to remember and use than keeping track of which situations in natural are weak, invitational, or forcing. Thus, use the convention you know and like. Theoretically, there is no big difference.

## Cole, Gazzilli, and the Witch

The previous result was no fun for checkback Stayman. However, the next convention has received even more hype in recent times. It must be good indeed, if not for any other reason than having at least three names and over one million versions.

When first invented in America, it was called Cole. The general idea is as follows. One of the main problems with natural systems is the wide point range of the one-level opening bids. So, let us give the bid 2♣ a double meaning (typically used in the sequences 1♥ – 1♠; 2♣, 1♥ – 1N; 2♣, and 1♠ – 1N; 2♣). In most of the modern versions, it shows either a 12-16 hand with the opening major and clubs *or* a 17+ hand with the major and miscellaneous distributions.

This convention is popular in Italy, and from there it received the name Gazzilli, which is the current international name.

The Gazzilli 2♣ is an essential part of the *Fantunes* system, where it is also used after 1♦ – 1N; 2♣. When Fulvio Fantoni was asked “If you had to choose one convention, which one would you pick?” he responded “Gazzilli... it is a convention that I think should be used by all who play natural bridge,” Jacobs (2012).

I implemented a reasonably complex and well-tested version of Gazzilli as it is played in most parts of the world. The 2♣ bid is either natural or shows 17+, while second-round jumps and reverses show 14-16 with extra distribution (55+). After 2♣, responder’s 2♦ is game forcing facing the strong hands, while other bids tend to be weak.

To be sure to get it well-tested, I added it to both 4444 and 5533.

| Board | Match | Imps | Mean | System        |
|-------|-------|------|------|---------------|
| 0.02  | 0.58  | 520  | 1.50 | 5533 Plain    |
| 0.01  | 0.34  | 307  | 1.50 | 5533 Gazzilli |
| -0.01 | -0.14 | -130 | 1.57 | 4444 Plain    |
| -0.03 | -0.77 | -697 | 1.57 | 4444 Gazzilli |

Again, a very interesting result. The actual imp difference is almost negligible, so you could say that for all the hype, and Fantoni picking it as the one convention he would bring with him to a desert island, *it does not matter*. Plain is as good.

In Sweden, the convention became popular when Linda Långström and Catharina Midskog included it in their system the *Witches Elixir*, and in Swedish it is still called the Witch. The current hype in Sweden is to play 5542 with the Witch.

Again, the differences are so small that you should select the treatment you know, understand, and like. If you feel that you bid better with Gazzilli, go ahead and use it. Also, you must of course use it if you get a chance to play with Fulvio Fantoni (and if you want to do that all in all).

## Standard Game Invitations

The recent sections have not been a good experience for some of our most common conventions. Let us look at another, related treatment, namely *invitations*.

One of my partners once congratulated me for my way of handling invitations. I got social plus points for actually acting differently with different hands. This player had two other partners, and he knew what would happen after an invitation to each one of them. The first, an elegant, elderly gentleman with a man's handbag, would *always decline* an invitation. Better safe than sorry. The other, more hot-blooded, originally from south-eastern Europe, would *always accept*. But with me, my partner could not tell beforehand what I would do.

Apart from being a treatment, not a convention, invitations have been around since our beginners' courses. But are they necessary? Do they work well?

I chose notrump as a test example and implemented versions of 4444 and 5533 without the 2N, 3♣, and 3♦ invitations after the 1N opening. Instead, without majors, the systems pass with 0-8 and simply bid 3N with 9+ points.

| Board | Match | Imps | Mean | System             |
|-------|-------|------|------|--------------------|
| 0.02  | 0.48  | 428  | 1.50 | 5533 no invitation |
| 0.01  | 0.20  | 177  | 1.50 | 5533 plain         |
| -0.01 | -0.18 | -162 | 1.57 | 4444 no invitation |
| -0.02 | -0.49 | -443 | 1.57 | 4444 plain         |

This is not a good day for teachers of beginners' courses. Not only are invitations not that necessary. In fact, it is actually a bit better to do without them. In the implementations, the bids 2N, 3♣, and 3♦ are simply not used, and the results are still slightly better (but within the margin of error).

If you have another good use for these bids, you can improve your notrump system. For example, use them as separate transfers to minors, or use 2N as a question for a weak doubleton in opener's hand. The latter is useful both with strong balanced responding hands with a weak doubleton major, and with invitational hands with a long minor that needs at least three-card support from opener.

Most importantly, this was only an example. The standard game invitations may be less valuable than we think in suit bidding too.

## 16. Notrump Defenses

When the opponents open 1N with a balanced hand, they have an advantage, because they have taken away lots of bidding space, and, as opposite to a natural opening in a suit, no suits have been excluded from our side. We are at a higher level and we still have things to find out.

For this reason, several more or less artificial notrump defenses have been invented. The main idea is to let some of the bids have an artificial or multi meaning, so we can pack more distributions into fewer bids.

### Astro

Astro was the first complete notrump defense, giving up the naturalness of 2♣ and 2♦ to allow the showing of two-suiters. It was invented by Paul Allinger, Roger Stern, and Larry Rosler (hence the name). The overcalls have the following meanings:

|      |    |                         |
|------|----|-------------------------|
| (1N) | X  | penalties               |
|      | 2♣ | hearts and a minor      |
|      | 2♦ | spades and another suit |
|      | 2♥ | at least five hearts    |
|      | 2♠ | at least five spades    |
|      | 2N | both minors             |
|      | 3♣ | one-suited clubs        |
|      | 3♦ | one-suited diamonds     |

After 2♣ and 2♦, advancer gives preference to the anchor suit with at least three-card support, and otherwise bids the relay suit (and opener can pass or correct).

| Board | Match | Imps | Mean | System     |
|-------|-------|------|------|------------|
| 0.02  | 0.39  | 350  | 1.50 | 5533       |
| 0.00  | 0.02  | 18   | 1.50 | 5533 Astro |
| -0.00 | -0.02 | -18  | 1.57 | 4444       |
| -0.02 | -0.39 | -350 | 1.57 | 4444 Astro |

The initial notrump defense implemented for 4444 and 5533 is natural, that is, a double is 15+ for penalties, while overcalls show five-card suits, and 2N both minors. As you can see, Astro is actually slightly inferior to the natural defense, although within the margin of error. It forces up the contract too high, and quite often you cannot play two of a minor.

## Brozel

Brozel was invented by the American Bernard Zeller. It is almost identical to something called Pinpoint Astro, except that the double shows a one-suited hand, while it is for penalties in Pinpoint Astro.

|      |    |                     |
|------|----|---------------------|
| (1N) | X  | one-suited          |
|      | 2♣ | clubs and hearts    |
|      | 2♦ | diamonds and hearts |
|      | 2♥ | both majors         |
|      | 2♠ | spades and a minor  |
|      | 2N | both minors         |

In the original Brozel, three-level overcalls showed the short suit in a strong 4441, but in my implementation, they are natural and preemptive.

| Board | Match | Imps | Mean | System      |
|-------|-------|------|------|-------------|
| 0.02  | 0.39  | 354  | 1.50 | 5533 Brozel |
| 0.00  | 0.02  | 14   | 1.50 | 5533        |
| -0.00 | -0.02 | -14  | 1.57 | 4444 Brozel |
| -0.02 | -0.39 | -354 | 1.57 | 4444        |

The Brozel defense is better than natural by a small margin, and clearly better than Astro.

## Cappelletti

The Cappelletti defense is also called Hamilton in America and Pottage in Britain. It may be one of the most popular notrump defenses because of its simple structure. It takes care of all the basics. Double is for penalties, 2♣ handles the one-suiters, 2♦ the majors, and 2♥ and 2♠ shows that major and a side minor. This makes Cappelletti easier to remember than to spell.

|      |    |                    |
|------|----|--------------------|
| (1N) | X  | penalties          |
|      | 2♣ | one-suiter         |
|      | 2♦ | both majors        |
|      | 2♥ | hearts and a minor |
|      | 2♠ | spades and a minor |
|      | 2N | both minors        |
|      | 3♣ | one-suited clubs   |

In the original Cappelletti, a one-suiter in clubs is shown by bidding 2♣ and then repeating with 3♣, but in my version, you bid 3♣ at once.

## Notrump Defenses

| Board | Match | Imps | Mean | System           |
|-------|-------|------|------|------------------|
| 0.02  | 0.38  | 356  | 1.50 | 5533 Cappelletti |
| 0.00  | 0.04  | 36   | 1.50 | 5533             |
| -0.00 | -0.04 | -36  | 1.57 | 4444 Cappelletti |
| -0.02 | -0.38 | -356 | 1.57 | 4444             |

Cappelletti performs equally with Brozel and better than Astro or natural.

## DONT

The DONT notrump defense is another invention by Marty Bergen, see Bergen (1989). DONT is an acronym for “Disturb the Opponents’ Notrump.” The idea is to handle all one-suiters and two-suiters on the two level. After the double, partner bids 2♣ to pass or correct. The two suiters are shown by bidding the lower suit first. If partner prefers the higher, unknown suit, he bids the relay, again to pass or correct.

|      |    |                           |
|------|----|---------------------------|
| (1N) | X  | one-suiter                |
|      | 2♣ | clubs and a “higher” suit |
|      | 2♦ | diamonds and a major      |
|      | 2♥ | both majors               |
|      | 2♠ | spades and a minor        |
|      | 2N | both minors               |

In the original DONT, 2♠ shows a weaker spade one-suiter, but in my implementation, it shows a constructive hand with spades and a minor, where spades are longer.

| Board | Match | Imps | Mean | System    |
|-------|-------|------|------|-----------|
| 0.02  | 0.48  | 456  | 1.50 | 5533 DONT |
| 0.00  | 0.07  | 64   | 1.57 | 4444 DONT |
| -0.00 | -0.07 | -64  | 1.50 | 5533      |
| -0.02 | -0.48 | -456 | 1.57 | 4444      |

As you can see, DONT is the best notrump defense so far. It has a reasonable margin over natural, and it even helps 4444 to pass 5533 without DONT.

The version above is fairly constructive. It demands 10+ hcp to act in second seat. I also tested a more destructive version, where you only need 5+ hcp in second seat, but still 10+ in fourth. Danny Kleinman describes DONT as both a convention and a conviction. The conviction is that you must disturb the opponents’ notrump no matter how weak you

are, see Kleinman (2004). Let us test if this conviction is better or worse than a constructive use of DONT.

| Board | Match | Imps | Mean | System                |
|-------|-------|------|------|-----------------------|
| 0.02  | 0.45  | 404  | 1.50 | 5533 Destructive DONT |
| 0.00  | 0.02  | 20   | 1.57 | 4444 Destructive DONT |
| -0.00 | -0.02 | -14  | 1.50 | 5533                  |
| -0.02 | -0.46 | -410 | 1.57 | 4444                  |

It makes no noticeable difference if you are more or less constructive. This is probably because the most common case is that if one defender is weaker, the other is usually stronger and vice versa.

## Landy

One of the simplest and oldest notrump defenses, Landy, uses 2♣ to show a major two-suiter. The rest is natural.

|      |    |                        |
|------|----|------------------------|
| (1N) | X  | penalties              |
|      | 2♣ | both majors            |
|      | 2♦ | at least five diamonds |
|      | 2♥ | at least five hearts   |
|      | 2♠ | at least five spades   |
|      | 2N | both minors            |
|      | 3♣ | one-suited clubs       |

The drawback is that a club one-suiter must be shown at the three level, and that two-suiters are ignored, except for both majors.

| Board | Match | Imps | Mean | System     |
|-------|-------|------|------|------------|
| 0.02  | 0.39  | 348  | 1.50 | 5533 Landy |
| 0.00  | 0.02  | 20   | 1.50 | 5533       |
| -0.00 | -0.02 | -20  | 1.57 | 4444 Landy |
| -0.02 | -0.39 | -348 | 1.57 | 4444       |

Interestingly enough, this simple defense is as good as Brozel and Cappelletti. If you play Cappelletti because it is easy to remember, Landy is an even easier one. In fact, since Landy is so natural and easy, it is probably one of the best defenses in real life.

## Multi-Landy

The combination of Landy and Multi makes for a popular notrump defense. The 2♣ bid handles major two-suiters, 2♦ weak major one-suiters, and 2♥ and 2♠ constructive majors. In Sweden, it is (of course) called Nilsland's defense.

|      |    |                        |
|------|----|------------------------|
| (1N) | X  | penalties              |
|      | 2♣ | both majors (44+)      |
|      | 2♦ | weak with either major |
|      | 2♥ | at least five hearts   |
|      | 2♠ | at least five spades   |
|      | 2N | both minors            |
|      | 3♣ | one-suited clubs       |
|      | 3♦ | one-suited diamonds    |

The drawback of this defense is that both 2♣ and 2♦ become artificial, so that minor one-suiters can only be introduced on the three level.

| Board | Match | Imps | Mean | System           |
|-------|-------|------|------|------------------|
| 0.01  | 0.29  | 276  | 1.50 | 5533 Multi-Landy |
| 0.01  | 0.12  | 116  | 1.50 | 5533             |
| -0.01 | -0.12 | -116 | 1.57 | 4444 Multi-Landy |
| -0.01 | -0.29 | -276 | 1.57 | 4444             |

This defense is maybe a little bit weaker than Brozel and Cappelletti, but better than Astro and natural.

## Ripcord

Another simple notrump defense is called Ripcord, Kleinman (2004). The idea is that all actions on the two level are transfers. This will tend to make the strong notrump opener the leader, and with a misfit, advancer may sometimes pass. With two suits, you first transfer to one and then bid the other.

|      |    |                                        |
|------|----|----------------------------------------|
| (1N) | X  | at least five clubs                    |
|      | 2♣ | at least five diamonds or both majors  |
|      | 2♦ | at least five hearts                   |
|      | 2♥ | at least five spades                   |
|      | 2♠ | four spades and a six-card minor       |
|      | 2N | both minors                            |
|      | 3♣ | six-card clubs and four-card hearts    |
|      | 3♦ | six-card diamonds and four-card hearts |

By the way, this is quite similar to the older Blue Club notrump defense (where the double was for penalties), Garozzo and Yallouze (1969).

| Board | Match | Imps | Mean | System       |
|-------|-------|------|------|--------------|
| 0.01  | 0.31  | 280  | 1.50 | 5533 Ripcord |
| 0.01  | 0.12  | 110  | 1.50 | 5533         |
| -0.00 | -0.12 | -104 | 1.57 | 4444 Ripcord |
| -0.01 | -0.32 | -286 | 1.57 | 4444         |

Ripcord is another reasonable notrump defense.

## Suction

Finally, let us look at one defense from a family of systems, where each bid is multi between a one-suiter and a two-suiter. The original name seems to be Suction, but in Sweden, it is more often called Trash.

|      |    |                                         |
|------|----|-----------------------------------------|
| (1N) | X  | penalties                               |
|      | 2♣ | diamonds or hearts and spades           |
|      | 2♦ | hearts or spades and clubs              |
|      | 2♥ | spades or clubs and diamonds            |
|      | 2♠ | clubs or diamonds and hearts            |
|      | 2N | clubs and hearts or diamonds and spades |

Advancer assumes the one-suiter (the lowest two-suiter after 2N), and normally corrects to it. If the overcaller has the two-suiter he then bids the lower of these suits, and advancer can pass or correct.

| Board | Match | Imps | Mean | System       |
|-------|-------|------|------|--------------|
| 0.02  | 0.46  | 410  | 1.50 | 5533         |
| 0.00  | 0.02  | 14   | 1.57 | 4444         |
| -0.00 | -0.02 | -20  | 1.50 | 5533 Suction |
| -0.02 | -0.45 | -404 | 1.57 | 4444 Suction |

Suction scores badly (“Suction sucks”). It even pulls 5533 down to 4444 with the natural defense. The weakness is that the higher overcalls, like 2♥, 2♠, and 2N often leave the pair to play on the three-level with too little distribution. Suction is simply a bit too aggressive.

There seem to be hundreds of notrump defenses, but most of them are variations of the above themes. We observe that a simple defense like Landy does very well, and that DONT is the overall winner. Sometimes it pays off to stay low and reach contracts you can make.

Many of these notrump defenses can also be used as runout systems when a one notrump opening is doubled for penalty, especially those that allow you to stay at a low level, such as DONT and Ripcord. Instead of a double, you use a redouble, while the rest is unchanged.

## 17. Strong Club Systems

Now let us go back to comparing complete bidding systems. So far, we have only looked at so-called “natural systems,” with wide-range openings on the one level and a strong 2♣. The strong club systems have another approach to the principle of staying low with strong hands. Use the single 1♣ opening bid to show all strong hands, so that the rest of the opening bids can have a narrower range.

The advantage most often mentioned is the narrow range and well-defined opening bids. If you partner opens 1♥ and the next player bids 3♠, you are in a difficult situation if partner’s strength varies from 11 to 21. Life is easier if partner has shown 11-15 and at least five hearts.

However, there are several more advantages. The bidding after 1♣ is easy and well-defined. The most common method is to use 1♦ as the weak response, and most of the other bids to create a game-forcing situation. Different systems have chosen different approaches:

- You can use *natural bidding*, showing natural five-card suits, then four-carders, and jump to game with weakness or stay low with extras. This makes for natural but effective slam investigations.
- You can use *natural asking bids with artificial step responses*, the so-called Italian-style asking bids. Memorizing a few step scales gives you the possibility of asking for trump queens and even jacks, and side suit controls. Advanced slam bidding becomes easier than in a natural system.
- Finally, the strong club and game-forcing responses are a good ground for *relay bidding*, where opener can discover responder’s exact distribution, aces and kings, and where which controls are located. Adding relay bidding on top of a strong club is considerably easier than fusing it into a natural system.

The main drawback of strong club systems is that the one club opening itself is sensitive to intervention and easily disturbed. Or so people say. We will investigate this soon.

The other two weaknesses are the natural two clubs opening and the often nebulous one diamond. With a club suit, you open one club in a natural system, and can often stop in one notrump. In a strong club

system, you open two clubs, which makes the subsequent bidding more cramped, and if one notrump was the optimal contract, you have passed it already with the opening bid.

If you want to combine a strong club with five-card majors, you get problems with 11-15 hands and short diamonds. The 4=4=1=4 and 4=4=0=5 distributions are the obvious ones, but a simple 4=3=2=4 outside of the notrump range also lacks its place in the system. There are four solutions to this problem:

- In the *Precision Club*, the 2♦ opening bid is used for some of these hands. This solves the problem, but is it efficient?
- You can open 1N on hands in the notrump point range (which typically is 13-15) and *pass* with weaker hands (11-12). This allows 1♦ to become a fully natural four-card suit. But the question is, how well do you feel when passing with 11-12 points? Some players can do this, but others feel sick just thinking about it. And how do you feel about opening 1N with a 4=4=1=4 distribution?
- You can include the 4-4 major hands in the opening bid one heart. But if you cannot trust one heart to promise five, you just lost one important advantage of the five-card majors.
- Finally, you can go for the infamous “nebulous” one diamond, where you open one diamond “naturally” on 4=4=1=4 and maybe even 4=4=0=5.

The main advantage of a strong club system must be the theoretical one – stay low on strong hands. We saw that five-card majors were a little bit better than four-card majors, mostly because of this. Will it mean that strong club systems are better than the natural systems?

It is time to meet our first strong club contestant.

## Classic Precision

The oldest strong club system is the *Vanderbilt Club*. It was invented by Harold S. Vanderbilt and it is also the oldest bidding system of all. However, the *Precision Club* was developed by C. C. Wei and when Taiwan used it to place second in the Bermuda Bowl in 1969 it captured the place of most popular strong club system, see Wei (1973).

## Opening Bids

|                          |                       |
|--------------------------|-----------------------|
| 1♣ 16+ all distributions | 2♣ 11-15 5+ clubs     |
| 1♦ 11-15 3+ diamonds     | 2♦ 11-15 three-suited |
| 1♥ 11-15 5+ hearts       | 2♥ 6-10 6+ hearts     |
| 1♠ 11-15 5+ spades       | 2♠ 6-10 6+ spades     |
| 1N 13-15 balanced        | 2N 22-23 balanced     |

The responses to 1♣ are natural, except 1♦ which is weak (0-7). 1♥, 1♠, 2♣, and 2♦ show five-card suits and are forcing to game. The notrump responses are 1N 8-10, 2N 11-13 or 16+, and 3N 14-15. With 4441 and 8+, responders bids 1♦ and then jumps in the short suit (the “unusual negative”). After higher natural notrump bids, *Classic Precision* uses Baron, where the next club bid asks for four-card suits up the line.

After the 1♥♠ openings, 1N is forcing, while jump shifts and 2N are strong (16+). The 1N opening is 13-15 and uses double Stayman. The 2♦ opening bid shows 4=4=1=4, 4=4=0=5, 4=3=1=5, or 3=4=1=5, and responder’s 2N asks for strength and distribution according to a well-defined response scale.

The implementation is based mainly on Reese (1972) and Jannersten (1976). Since this is *Classic Precision*, I have been careful to follow the bidding as it was in the late sixties and early seventies. Since then, *Precision* has been equipped with lots of modern gadgets, but these are used in a system that I have chosen to call *Modern Precision* (up next).

| Board | Match | Imps | Mean | System            |
|-------|-------|------|------|-------------------|
| 0.01  | 0.30  | 187  | 1.50 | 5533              |
| -0.01 | -0.13 | -83  | 1.57 | 4444              |
| -0.01 | -0.17 | -104 | 1.44 | Classic Precision |

*Classic Precision* comes in a tiny bit worse than 5533 and 4444. But look carefully at the numbers. The differences are small. So far, the tentative conclusion is that the choice of system does not make a difference.

## Modern Precision

Our next contender is – the *Precision Club*. But this time it is younger and stronger.

### Opening Bids

|                          |                       |
|--------------------------|-----------------------|
| 1♣ 16+ all distributions | 2♣ 11-15 5+ clubs     |
| 1♦ 11-15 2+ diamonds     | 2♦ 11-15 three-suited |
| 1♥ 11-15 5+ hearts       | 2♥ 4-10 5+ hearts     |
| 1♠ 11-15 5+ spades       | 2♠ 4-10 5+ spades     |
| 1N 13-15 balanced        | 2N 4-10 55+ in minors |

The responses to 1♣ are transfers and 1♦ is weak (0-7). The notrump responses are 1N 8-11 or 15+ and 2N 12-14. Baron is retired and all notrump bidding is based on Stayman and transfers.

After 1♣ – 1♦; 1♥ shows 19+ with any distribution, while other bids are limited to 16-18. Responder's 1♠ is a second negative, after which 2♣ shows a game-going hand and other bids are natural. After 1♣ – 1♦, 2♠ shows spades and a minor, 2N both minors, 3♣ clubs and hearts, 3♦ diamonds and hearts, and 3♥ the majors.

After the 1♥♠ openings, 1N is forcing, 2N shows trump support, and jump shifts are preemptive. The 1N opening is 13-15 and uses Stayman and transfers. The 2♦ opening bid shows 4=4=1=4, 4=4=0=5, 4=3=1=5, or 3=4=1=5, and responder's 2N asks for strength and distribution according to a well-defined scale. Two of a major is five cards and 2N is weak 55+ with the minors.

This implementation tries to catch several modern developments of *Precision* and it is mainly based on Rigal (1997).

| Board | Match | Imps | Mean | System           |
|-------|-------|------|------|------------------|
| 0.05  | 1.08  | 681  | 1.55 | Modern Precision |
| -0.02 | -0.38 | -237 | 1.50 | 5533             |
| -0.03 | -0.70 | -444 | 1.57 | 4444             |

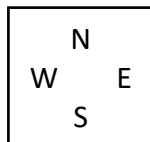
Surprise, surprise. The system architecture is similar, but all the small changes make a difference. Now the strong club is a winner, and with a reasonably large margin.

In the following deal, *Modern Precision* is the home team versus 5533.

Good, Better, Best

Jan 16, 2012      ♠ A K 3  
 Deal 13          ♥ 8 6  
 North            ♦ A 7 4  
 All               ♣ A K Q 5 3

♠ 9 5  
 ♥ 5 3  
 ♦ K Q 6 5 4  
 ♣ 10 8 7 2



♠ 7 6 4  
 ♥ A Q 9 2  
 ♦ J 10 9 8  
 ♣ 9 6

♠ Q J 10 8 2  
 ♥ K J 10 7 4  
 ♦ 2  
 ♣ J 4

| 5533 | Precision | 5533 | Precision |
|------|-----------|------|-----------|
| West | North     | East | South     |
| —    | 1♣        | pass | 1♥        |
| pass | 2♠        | pass | 4♦        |
| pass | 4♠        | pass | 5♥        |
| pass | 5♠        | pass | 6♠        |
| pass | pass      | pass |           |

In the open room, the strong club auction leads to slam. 1♥ is game forcing with at least five spades. The jump to 2♠ shows 21+ and support. South makes two cuebids and then bids the small slam.

| Precision | 5533  | Precision | 5533  |
|-----------|-------|-----------|-------|
| West      | North | East      | South |
| —         | 2N    | pass      | 3♥    |
| pass      | 3♠    | pass      | 3N    |
| pass      | 4♠    | pass      | 5♦    |
| pass      | 5♠    | all pass  |       |

In the closed room, 5533 has a strong notrump auction, which does not find the slam. The *Modern Precision* team wins 13 imps. In general, slam bidding is easier after a strong club than after a high opening bid.

| Deal | Open Room   | Closed Room | Diff | Prec | 5533 |
|------|-------------|-------------|------|------|------|
| 13   | 6S N = 1430 | 5S N +1 680 | 750  | 13   | —    |

## Modern Precision with Multi and Semi-Weak Two

A modern development is to use the 2♦ Multi and combine it with semi-weak natural two openings. Then Multi will take care of the five-card weak two openings, while direct 2♥ and 2♠ can show 10-13 and a six-card suit. This system has become increasingly popular around the world.

| Board | Match | Imps | Mean | System              |
|-------|-------|------|------|---------------------|
| 0.07  | 1.79  | 1129 | 2.54 | Modern Precision M5 |
| -0.03 | -0.74 | -468 | 1.50 | 5533                |
| -0.04 | -1.05 | -661 | 1.57 | 4444                |

The Multi version is a bit better than the standard *Modern Precision* solution.

## Modern Four-Diamond Precision

One of the ways to handle the “short diamond problem” is to decide that the one diamond opening actually promises at least four cards, and to pass with weak balanced hands. Personally, I have a hard time passing 11-12 hands (actually, I have a hard time passing 10 hcp), but I have played this way with several of my partners, and it seems to work very well. Since the system has four diamonds and five-card weak two openings, it is called *4DW5*.

| Board | Match | Imps | Mean | System                |
|-------|-------|------|------|-----------------------|
| 0.09  | 2.18  | 1372 | 3.30 | Modern Precision 4DW5 |
| -0.04 | -0.92 | -579 | 1.50 | 5533                  |
| -0.05 | -1.26 | -793 | 1.57 | 4444                  |

The natural one diamond and the aggressive weak two openings are big winners. This is actually the best system we have discovered so far.

## Modern Precision with Ekrén

In fact, Anders Freij and I play the above system and also use the Ekrén 2♦ opening, which shows 4-10 hcp and at least 44 in the majors. Let us combine this with the weak five-card 2♥ and 2♠ mentioned above.

This weak 2♦ preempt was invented by Norwegian Bjørn Olav Ekrén and presented in the Norwegian BridgeNytt (“Bridge News”) magazine, see Ekrén (1994). The system is called *Modern Precision Ekrén*.

| Board | Match | Imps  | Mean | System                 |
|-------|-------|-------|------|------------------------|
| 0.12  | 2.97  | 1872  | 2.91 | Modern Precision Ekren |
| -0.06 | -1.33 | -841  | 1.50 | 5533                   |
| -0.07 | -1.64 | -1031 | 1.57 | 4444                   |

Here we have a difference of four imps from the strong club down to 5533 and it is even further down to 4444. Yet another notch in the belt for the aggressive two openings.

# Strong Club Systems

In the following deal, *Modern Precision* with Ekrén is the home team versus 5533.

|              |            |
|--------------|------------|
| Jan 06, 2010 | ♠ A K Q    |
| Deal 14      | ♥ Q 3      |
| East         | ♦ 10 8 4 3 |
| None         | ♣ A 9 7 4  |

|               |  |             |
|---------------|--|-------------|
| ♠ —           |  | ♠ J 7 4 2   |
| ♥ J 10 5      |  | ♥ K 8 6 4 2 |
| ♦ Q 9 7 5     |  | ♦ K J 6 2   |
| ♣ K Q J 5 3 2 |  | ♣ —         |

|   |   |   |
|---|---|---|
|   |   |   |
|   | N |   |
| W |   | E |
|   | S |   |
|   |   |   |

|                |
|----------------|
| ♠ 10 9 8 6 5 3 |
| ♥ A 9 7        |
| ♦ A            |
| ♣ 10 8 6       |

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5533        | Precision    | 5533        | Precision    |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | —            | pass        | 2♠           |
| pass        | pass         | pass        |              |

In the open room, South opens a weak 2♠ and plays it.

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| Precision   | 5533         | Precision   | 5533         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | —            | 2♦          | pass         |
| 2♥          | X            | pass        | 3N           |
| pass        | pass         | pass        |              |

In the closed room, East opens 2♦ Ekrén and West gives preference to hearts. North doubles to show 15+ and South takes a chance in 3N. The *Modern Precision* team wins 6 imps. In this case, South knows that East has four spades, so 4♠ is not an obvious choice (and neither is 3N).

| Deal | Open Room |          | Closed Room |           | Diff | Prec | 5533 |
|------|-----------|----------|-------------|-----------|------|------|------|
| 14   | 2S        | S +1 140 | 3N          | S -2 -100 | 240  | 6    | -    |

## Power Precision

Finally, let us have a look at *Power Precision*, developed and played by Alan Sontag and Peter Weichsel, see Sontag (1979).

In the seventies, the basic *Precision Club* became popular, and then the Blue Team developed a more complex version, with more asking bids and special relays after  $1\clubsuit - 2\clubsuit$  and  $1\clubsuit - 2\diamond$ . It was called *Super Precision*, see Belladonna and Garozzo, (1975). Sontag and Weichsel developed this further into *Power Precision*, which helped them to win the Bermuda Bowl in Stockholm 1983, over the Blue Team.

### Opening Bids

|               |       |                   |               |       |                         |
|---------------|-------|-------------------|---------------|-------|-------------------------|
| $1\clubsuit$  | 16+   | all distributions | $2\clubsuit$  | 11-15 | 5+ clubs                |
| $1\diamond$   | 11-15 | 2+ diamonds       | $2\diamond$   | 6-24  | Marmic/weak hearts      |
| $1\heartsuit$ | 11-15 | 5+ hearts         | $2\heartsuit$ | 11-15 | Flannery/short diamonds |
| $1\spadesuit$ | 11-15 | 5+ spades         | $2\spadesuit$ | 6-10  | 6+ spades               |
| 1N            | 15-17 | balanced          | 2N            | 24-25 | balanced                |

*Power Precision* differs from *Classic Precision* in many ways. The bidding after  $1\clubsuit$  has a complex set of asking bids, and a well-developed set of natural relays after the positive responses in minors. The notrump is strong.  $2\diamond$  is either a weak heart or any strong 4441 hand with 16-24 points.  $2\heartsuit$  is either Flannery ( $4\spadesuit$  and  $5\heartsuit$ ) or the *Precision* short diamonds (4414 or 4405).

| Board | Match | Imps | Mean | System          |
|-------|-------|------|------|-----------------|
| 0.02  | 0.40  | 242  | 1.51 | Power Precision |
| 0.00  | 0.05  | 31   | 1.50 | 5533            |
| -0.02 | -0.46 | -273 | 1.57 | 4444            |

The seventies' *Power Precision* is a bit better than the modern 5533 and 4444, but the difference down to 5533 is within the margin of error.

The implemented version of the system does not use the Italian-style asking bids. Instead, it simply uses natural bidding with cuebids, RKCB 1430, and kickback. We will come back to the asking bids in a later chapter.

Let us see the result of a round-robin with all these systems.

| Board | Match | Imps  | Mean | System                 |
|-------|-------|-------|------|------------------------|
| 0.08  | 1.99  | 4382  | 2.91 | Modern Precision Ekren |
| 0.07  | 1.63  | 3585  | 3.30 | Modern Precision 4DW5  |
| 0.03  | 0.68  | 1500  | 1.55 | Modern Precision       |
| 0.02  | 0.56  | 1242  | 2.54 | Modern Precision M5    |
| -0.03 | -0.61 | -1345 | 1.51 | Power Precision        |
| -0.05 | -1.32 | -2908 | 1.44 | Classic Precision      |
| -0.06 | -1.36 | -2997 | 1.50 | 5533                   |
| -0.07 | -1.57 | -3459 | 1.57 | 4444                   |

The main conclusion is clear to see. Strong club systems are obviously better than the natural systems.

However, the real advantages come with the modern conventions and weak two openings. If you play old-fashioned *Classic Precision* or conservative two openings, the difference is not significant.

Note that in the last table, the imp difference from the leader down to 5533 is more than threeimps per 24-deal match. As previously discussed, we could not reasonably expect a much larger difference than that, or otherwise, no one would play the inferior systems. But still, if you learn *Precision* and aggressive weak two openings, you will have around threeimps advantage over your opponents, whenever you sit down to play a match.

## 18. Defenses against Strong Club

The matches above, between natural and strong club systems, were all played using Goren's defense to a strong club. This defense is easy and natural.

|      |               |     |                |
|------|---------------|-----|----------------|
| (1♣) | suit overcall | 10+ | five-card suit |
|      | Double        | 10+ | 55+ in majors  |
|      | 1N            | 10+ | 55+ in minors  |
|      | jump overcall |     | preemptive     |

This is a simple and sound defense against a strong club. However, it is often claimed that you need a more aggressive (or even obstructive) defense in this situation. You should intervene with any point range and any distribution, and the wilder you are, the worse the strong clubbers will crash. At least that is the theory.

This argument can also be put in another way. There is probably little doubt that a pair that opens a strong club on a particular deal will bid at least as well as a natural pair, simply because they begin lower and have more bidding space to use. That is, unless you take away their bidding space. The claim is that a strong club opening is more vulnerable to intervention than a natural opening.

But is this correct? Assume that the bidding goes:

1♥ (3♠) ?

Your partner opened 1♥ and the opponent intervened with 3♠ (a natural preempt). You may be in trouble, but the degree of trouble depends on what partner's 1♥ showed. Here are some alternatives, in order from less to more:

- 11-15 5+ hearts. This is not a very difficult situation. Quite often you know whether to pass or bid 4♥ and that is it.
- 11-20 5+ hearts. This is worse because you are less sure about the strength.
- 11-20 4+ hearts. This is more difficult still. You often need to bid something, but it is dangerous to leap to the four level if partner has a balanced 11-13 instead of a five-card 17+.

Now assume that the bidding goes:

1♣ (3♠) ?

Again, the degree of trouble depends on what 1♣ means.

- 11-20 4+ clubs. As bad as the third case above. Knowing about the four-card club suit is good, but far from enough to guarantee a safe landing place.
- 11-20 3+ clubs. The worst case so far. Partner has clubs or a balanced hand and may be very strong or very weak. This is definitely an awkward situation.
- 16+ any distribution. This is also a problematic situation. You know more about the lower point range, which is helpful. On the other hand, you do not have the safety of knowing that partner has at least three clubs. But how much of a safety would that be?

Personally, I prefer that partner shows 16+ rather than 11-20 and 3+ clubs. The truth is that a strong club may be sensitive to intervention, but so are many other opening bids, and especially 1♣ and 1♦ in 5533, and 1♣ in 5542.

The Goren defense used so far is simple and sound, but aggressive it is not. Let us look at some candidates for aggressive defenses to a strong club.

### IDAK/IDAC and Wonder Bids

It is alphabetically first of the chosen defenses and also has the most aggressive name. In fact, it not only lets you bid on every hand, it has two names. “IDAK” is supposed to mean “Instant Destroyer and Killer.” The alternative name “IDAC” means “Instant Destruction against Clubs.”

|      |                    |    |                   |
|------|--------------------|----|-------------------|
| (1♣) | suit/jump overcall | 0+ | transfer          |
|      | notrump overcall   | 0+ | transfer to clubs |
|      | 1♠                 | 0+ | spades or a 4333  |
|      | jump in spades     | 0+ | minors            |
|      | double             | 0+ | three-suiter      |

All suit overcalls are transfers, and if the overcaller bids again, it shows a two-suited hand. After the double, advancer bids two steps below his long suit allowing overcaller to pass or correct. 2N shows majors and 3N

shows minors. With rounded or pointed suits, advancer jumps in one of his suits, knowing there is a fit in one of them.

IDAK is deemed so aggressive that it is only used non-vulnerable. When vulnerable, you change to Wonder Bids. Thus, below is the coward companion to the instant destruction outlined above.

|      |               |    |                                 |
|------|---------------|----|---------------------------------|
| (1♣) | suit overcall | 0+ | long suit or short three-suited |
|      | 1N            | 0+ | minors                          |
|      | double        | 0+ | majors                          |
|      | 2♦            | 0+ | diamonds and hearts             |
|      | 2♥            | 0+ | clubs and hearts                |
|      | 2♠            | 0+ | spades and minor                |

In the tests, we assume that the standard defense is Goren, so each test will compare to that simple defense. There are four contestants: *Modern Precision* with Goren's Defense and with IDAC/Wonder Bids, and 5533 with Goren's defense and IDAC/Wonder Bids.

| Board | Match | Imps  | Mean | System                |
|-------|-------|-------|------|-----------------------|
| 0.05  | 1.19  | 1122  | 1.55 | Precision             |
| 0.03  | 0.83  | 787   | 1.55 | Precision IDAC/Wonder |
| -0.04 | -0.92 | -870  | 1.50 | 5533                  |
| -0.05 | -1.10 | -1039 | 1.50 | 5533 IDAC/Wonder      |

First, we note that IDAK does not destroy the strong club, and Wonder bids are only a small wonder if even that. In fact, the simple Goren defense is better, but the difference is within the margin of error.

It is also obvious that *Modern Precision* wins over 5533 no matter what the strong club defense is.

## Modified Crash

There are a number of strong club defenses designed to show two-suited hands. Here is one that has been popular in Great Britain. Crash is an acronym for “color-rank-shape.”

|             |     |                             |
|-------------|-----|-----------------------------|
| (1♣) double | 12+ | sound heart suit            |
| 1♦          | 12+ | sound spade suit            |
| 1♥          | 10+ | same color two-suiter       |
| 1♠          | 10+ | same rank two-suiter        |
| 1N          | 10+ | same shape two-suiter       |
| 2♣          | 10+ | diamonds or majors          |
| 2♦          | 10+ | hearts or spades and clubs  |
| 2♥          | 10+ | spades or minors            |
| 2♠          | 10+ | clubs or red suits          |
| 2N          | 10+ | same shape two-suiter (55+) |

The results are as follows:

| Board | Match | Imps | Mean | System          |
|-------|-------|------|------|-----------------|
| 0.04  | 0.92  | 874  | 1.55 | Precision       |
| 0.03  | 0.77  | 723  | 1.55 | Precision Crash |
| -0.03 | -0.79 | -751 | 1.50 | 5533            |
| -0.04 | -0.90 | -846 | 1.50 | 5533 Crash      |

Modified Crash also scores worse than Goren. It has a similar performance to that of IDAK/Wonder Bids.

## Nonsense One Spade

To remove bidding space from the strong club opener pair immediately (that is, with the intervening bid), you need to bid at least 1♠, otherwise pass and double come into play and no space has been lost for the opening side.

The nonsense defense focuses on this very fact, and demands that second hand always bid 1♠, not matter what. This must be the most obstructive defense of all against a strong club.

This defense is unusual, and I have not found any proper documentation of any version. However, I have faced it in play in the Swedish open pair final. Thus, I have designed my own version of responses for advancer when responder passes or doubles the one spade intervention.

|         |          |       |      |                          |
|---------|----------|-------|------|--------------------------|
| (1♣) 1♠ | (pass/X) | pass  | 0-14 | spades or balanced       |
|         |          | 1N    | 15+  | any                      |
|         |          | 2♣♦♥  | 0-14 | five or six-card suit    |
|         |          | 2♠    | 0-14 | six-card suit            |
|         |          | 3♣♦♥♠ | 0-14 | seven-card suit          |
|         |          | 4♣♦♥♠ | 0-14 | eight-card suit at least |

Clearly, this is the most obstructive defense so far, but is it good?

| Board | Match | Imps  | Mean | System             |
|-------|-------|-------|------|--------------------|
| 0.07  | 1.67  | 1574  | 1.55 | Precision          |
| 0.04  | 0.94  | 889   | 1.55 | Precision Nonsense |
| -0.03 | -0.79 | -742  | 1.50 | 5533               |
| -0.08 | -1.82 | -1721 | 1.50 | 5533 Nonsense      |

As you may have guessed, the Nonsense defense is not particularly good. So far it has the lowest scores, although not awful.

Most practical versions of Nonsense allow other overcalls with, for example, long suits, and 1♠ is only used as the weak catch-all bid.

The previous experiment used a version of *Modern Precision* with a fairly normal treatment of overcalls of one club. I also implemented an “Anti-Nonsense” version where responder uses double for most hands with 8+ points.

| Board | Match | Imps | Mean | System             |
|-------|-------|------|------|--------------------|
| 0.04  | 0.94  | 893  | 1.55 | Precision Anti     |
| 0.03  | 0.84  | 791  | 1.55 | Precision Nonsense |
| -0.03 | -0.80 | -756 | 1.50 | 5533 Anti          |
| -0.04 | -0.98 | -928 | 1.50 | 5533 Nonsense      |

Interestingly, it does not pay off to try and penalize the overcaller at all costs. It is probably better to bid constructively and enjoy the penalties that opportunity will give you.

## Suction/Trash

Another popular defense is called either Suction or Trash. It has already been tested as defense against one notrump openings. The idea is to use multiple meaning bids to show one and two-suiters. Most overcalls show either the next higher suit or the two following ones.

## *Defenses against Strong Club*

|      |        |     |                              |
|------|--------|-----|------------------------------|
| (1♣) | double | 10+ | diamonds and spades          |
|      | 1♦     | 10+ | hearts or clubs and spades   |
|      | 1♥     | 10+ | spades or minors             |
|      | 1♠     | 10+ | clubs or diamonds and hearts |
|      | 1N     | 10+ | clubs and hearts             |
|      | 2♣     | 10+ | diamonds or majors           |

Higher bids are natural preempts. Will Suction suck again?

| Board | Match | Imps | Mean | System            |
|-------|-------|------|------|-------------------|
| 0.04  | 0.91  | 862  | 1.55 | Precision Suction |
| 0.03  | 0.74  | 701  | 1.55 | Precision         |
| -0.03 | -0.69 | -649 | 1.50 | 5533 Suction      |
| -0.04 | -0.97 | -914 | 1.50 | 5533              |

Finally, we have found a defense which is better than Goren, although not by a large margin. This time, Suction did not suck.

### Truscott

The Truscott defense was invented by Alan Truscott, an Englishman in New York. The lowest overcalls show two-suiters while jumps show one-suiters.

|      |        |     |                     |
|------|--------|-----|---------------------|
| (1♣) | double | 10+ | clubs and hearts    |
|      | 1♦     | 10+ | diamonds and hearts |
|      | 1♥     | 10+ | hearts and spades   |
|      | 1♠     | 10+ | spades and clubs    |
|      | 1N     | 10+ | diamond and spades  |
|      | 2♣     | 10+ | club and diamonds   |

Higher overcalls are weak one-suiters.

| Board | Match | Imps | Mean | System             |
|-------|-------|------|------|--------------------|
| 0.04  | 0.91  | 863  | 1.55 | Precision Truscott |
| 0.03  | 0.75  | 709  | 1.55 | Precision          |
| -0.03 | -0.75 | -705 | 1.50 | 5533 Truscott      |
| -0.04 | -0.92 | -867 | 1.50 | 5533               |

Alan Truscott shares the first place with Suction/Trash, but again, the margin down to Goren is so small that it is clearly within the margin of uncertainty.

We can draw two conclusions from this. First, the choice of strong club defense is not critical, and we have not found any defense that is clearly better or worse than the others. The simple Goren defense compares very well with the others.

Secondly, *Modern Precision* beats 5533 firmly in all cases, and these wins are clearly higher than the random margin. Some players believe that strong club systems are easy to disturb with an aggressive defense, but it seems quite obvious that this is not true. Instead, strong club systems are obviously better than natural systems.

## 19. A Tour of the World of Systems

Now it is time to look at more systems. We will investigate both old, classical systems and really modern ones, as well as natural and highly conventional systems.

### Culbertson

The *Culbertson* system ruled the world from the thirties to the sixties, and the main competitor, *Goren*, was in fact very similar. The base was four-card openings, a strong notrump, and strong two openings. However, the strength of all the openings was a point or two higher than in modern systems. Thus, the one openings show 13-21 hcp, one notrump 16-18, two notrump 22-23 and two of a suit 22+.

#### Opening Bids

|    |       |             |    |       |             |
|----|-------|-------------|----|-------|-------------|
| 1♣ | 13-21 | 4+ clubs    | 2♣ | 22+   | 5+ clubs    |
| 1♦ | 13-21 | 4+ diamonds | 2♦ | 22+   | 5+ diamonds |
| 1♥ | 13-21 | 4+ hearts   | 2♥ | 22+   | 5+ hearts   |
| 1♠ | 13-21 | 4+ spades   | 2♠ | 22+   | 5+ spades   |
| 1N | 16-18 | balanced    | 2N | 22-23 | balanced    |

*Culbertson* introduced forcing one-over-one and two-over-one. The negative one notrump was weaker, 6-9 points, and so was two-over-one. The double raise was game forcing instead of a limit raise. With a 4-3-3-3 distribution, *Culbertson* recommended opening one club, but this has not been implemented in the test system. The two openings are natural with 2N as an artificial negative response.

*Culbertson* is a simple system and the grandparent of all the modern, natural systems. However, in a comparison, it will suffer from being non-aggressive, because of the high lower limit of opening bids, and the lack of weak two openings.

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.10  | 2.40  | 2157  | 1.55 | Modern Precision |
| 0.04  | 0.95  | 859   | 1.50 | 5533             |
| 0.02  | 0.43  | 387   | 1.57 | 4444             |
| -0.16 | -3.78 | -3403 | 0.99 | Culbertson       |

When compared to modern standard systems, *Culbertson* is inferior. Especially the lack of weak two openings simply makes it too passive.

## Blue Club

The next system became famous when the Blue Team rose to the top and started their long streak of Bermuda Bowl wins in the fifties, sixties, and seventies. The Blue Team started with two systems, the *Neapolitan Club* and the *Roman Club*. The *Neapolitan Club* (“Fiori Napolitano”) was developed and played by Eugenio Chiaradia, Massimo D’Alelio, Pietro Forquet, and Guglielmo Siniscalco. It developed into the *Blue Club* (“Fiori Blue Team”), played by Pietro Forquet, Benito Garozzo, Leon Yallouze, and Omar Sharif, as described in Garozzo and Yallouze (1969).

### Opening Bids

|    |       |                   |    |       |           |
|----|-------|-------------------|----|-------|-----------|
| 1♣ | 17+   | all distributions | 2♣ | 12-16 | 6+ clubs  |
| 1♦ | 12-16 | 3+ diamonds       | 2♦ | 17-24 | 4441      |
| 1♥ | 12-16 | 4+ hearts         | 2♥ | 7-11  | 6+hearts  |
| 1♠ | 12-16 | 4+ spades         | 2♠ | 7-11  | 6+ spades |
| 1N | 13-17 | balanced          | 2N | 21-22 | balanced  |

The successes of the *Neapolitan* and *Blue Club* meant that strong club systems broke the *Culbertson* hegemony and became popular. The *Blue Club* uses control-showing responses after one club, followed by natural bidding. The bidding after the other one of a suit openings uses canapé for both opener and responder. The notrump opening comprises both a weak 13-15 range with balanced hands and short diamonds (typically 3-3-2-5 and similar distributions) and a strong 16-17 range.

The two diamonds opening shows 17-24 4441 hands and the following bidding has coded sequences which became an inspiration for modern relay systems. We note that 4441 hands are unusual and devoting an opening bid to these should be a weakness if you believe in statistics.

The *Blue Club* uses canapé. With 12-14 hands it opens the highest four-card suit, which makes it an aggressive system, and with 15-16 (shown by a reverse or jump) the second suit is always as long as or longer than the first.

Responder also uses canapé, which is an interesting idea. In the *Blue Club*, an auction like 1♥ – 2♣; 2♦ – 2♠ may mean that responder’s 2♣ bid is only made to set up a strong sequence. The spade suit is at least five cards long and responder forces to game, but the club suit may be as

short as two cards. In a sense, 2♣ and 2♦ are often used as *strong relay bids*.

I implemented the system according to Terence Reese's excellent English translation, see Garozzo and Yalozze (1969). It is a nice book to read.

Before we see the results, let us remember that the Blue Team has been accused of cheating, see Wilsmore (2018). Wilsmore devotes a chapter in his book to examples that are supposed to show that the Italian bidding systems were, in real life, inferior, and that the successes were due to the cheating. He writes:

"Neapolitan/Blue Team Club and Roman Club/Little Roman have long been discarded. Nothing remains. Insofar as those methods ever conveyed any advantage, that time passed in the mid-60s."

He continues:

"The Italian edge of bidding began to fade away in the early 1960s. Indeed, one could study a copy of Alvin Roth and Tobias Stone's 'Bridge is a Partnership Game' (1958) and, with minor changes, be playing quite a reasonable version of Standard American today. In the mid-1960s American partnership bidding became well-organized and never looked back."

Before the implementation and testing, I expected that the *Blue Club* would not hold up to modern systems. The next matches have lots of honor hanging in the balance. Here are the results.

| Board | Match | Imps | Mean | System    |
|-------|-------|------|------|-----------|
| 0.07  | 1.71  | 1026 | 1.53 | Blue Club |
| -0.03 | -0.70 | -418 | 1.50 | 5533      |
| -0.04 | -1.01 | -608 | 1.57 | 4444      |

We have a sensation in the offing. Let us add our best contender so far, *Modern Precision*. Since this system uses five-card weak twos, let us give these to the *Blue Club* also.

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.13  | 3.18  | 2864  | 2.73 | Blue Club W5     |
| 0.02  | 0.38  | 344   | 1.55 | Modern Precision |
| -0.07 | -1.73 | -1555 | 1.50 | 5533             |
| -0.08 | -1.84 | -1653 | 1.57 | 4444             |

There you have it. Wilshire may have good arguments when it comes to suspect bidding sequences from the Blue Team, but when it comes to this system, he is wrong. The *Blue Club* from the sixties scores a significant win over both the modern version of *Standard American* and *Precision*.

Believe it or not, right now, we have a new overall leader, the *Blue Club*.

When I started to implement the *Blue Club*, I had not yet implemented control responses in the bidding system definitions, so I used a simple version with point range responses instead. Then I implemented the control responses and got the results shown above.

However, the point range responses also gave me a surprise. They look like this:

|    |    |       |
|----|----|-------|
| 1♣ | 1♦ | 0-5   |
|    | 1♥ | 6-8   |
|    | 1♠ | 9-11  |
|    | 1N | 12-14 |
| 2♣ |    | 15-17 |
| 2♦ |    | 18+   |

Here are the results of using these responses.

| Board | Match | Imps | Mean | System                |
|-------|-------|------|------|-----------------------|
| 0.08  | 1.81  | 1089 | 1.53 | Blue Club Point Range |
| -0.03 | -0.76 | -453 | 1.50 | 5533                  |
| -0.04 | -1.06 | -636 | 1.57 | 4444                  |

Let us add *Modern Precision* and let *Blue Club* use five-card weak twos.

| Board | Match | Imps  | Mean | System                   |
|-------|-------|-------|------|--------------------------|
| 0.14  | 3.36  | 3023  | 2.73 | Blue Club Point Range W5 |
| 0.01  | 0.31  | 281   | 1.55 | Modern Precision         |
| -0.07 | -1.79 | -1607 | 1.50 | 5533                     |
| -0.08 | -1.89 | -1697 | 1.57 | 4444                     |

The *Blue Club* continues to impress. The point range responses may seem beginner-like but actually score a little bit better than the control responses, but within the margin of randomness.

In the following deal, *Blue Club* is the home team versus 5533.

# A Tour of the World of Systems

Jan 04, 2012

Deal 9

North

EW

♠ K 7 2

♥ K J 10 7 3

♦ A K Q 4

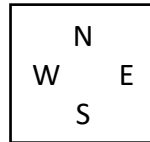
♣ 3

♠ A 10 8

♥ 8 5 4 2

♦ 9 2

♣ K 10 9 8



♠ Q 9 6 4

♥ A 6

♦ J 10 8 7 6 5

♣ Q

♠ J 5 3

♥ Q 9

♦ 3

♣ A J 7 6 5 4 2

5533

**West**

—

pass

pass

pass

Blue Club

**North**

1♦

2♥

3♥

pass

5533

**East**

pass

pass

pass

pass

Blue Club

**South**

1N

3♣

3N

In the open room, North shows 15-16 with a 2♥ strong canapé, and this is enough for South to bid the barely making game.

Blue Club

**West**

—

pass

pass

5533

**North**

1♥

2♦

pass

Blue Club

**East**

pass

pass

pass

5533

**South**

1N

3♥

In the closed room, 5533 performs a reasonable auction. The difference is that North has shown 12-16 and South 9-10, so 5533 cowardly decides to stay in a part score. The *Blue Club* team wins 6 imps.

| Deal | Open Room |   |       | Closed Room |   |       | Diff | Blue | 5533 |
|------|-----------|---|-------|-------------|---|-------|------|------|------|
| 9    | 3N        | S | = 400 | 3H          | N | = 140 | 260  | 6    | -    |

The next obvious step is, of course, to test the other Blue Team system.

## Roman Club

The *Roman Club* (Italian “Fiori Romani”) took the bridge world by storm in 1957. In a world which opened four-card suits, strong on the two level, and 1N if 16-18 and stoppers in all suits, this was a revolution. It was developed and played by Walter Avarelli and Giorgio Belladonna. A variant of the system, *Arno*, was played by Massimo D’Alelio and Camillo Pabis Ticci. The *Roman Club* handles balanced hands with 1♣ and 1N, and unbalanced hands with the other opening bids.

### Opening Bids

|    |       |             |    |       |                      |
|----|-------|-------------|----|-------|----------------------|
| 1♣ | 12+   | 2+ clubs    | 2♣ | 12-16 | 4441 or 5440         |
| 1♦ | 12+   | 3+ diamonds | 2♦ | 17+   | 4441 or 5440         |
| 1♥ | 12+   | 3+ hearts   | 2♥ | 12-16 | 5+hearts, 4+ clubs   |
| 1♠ | 12+   | 3+ spades   | 2♠ | 12-16 | 5+ spades, 4+ clubs  |
| 1N | 17-20 | balanced    | 2N | 12-16 | 5+ diamonds, 4+clubs |

The one openings are all unlimited, and thus extremely wide range. The next response is a negative relay. When opener shows a strong hand with a jump bid, the *Roman Club* introduced a number of asking bids with step responses. For example, assume that the bidding goes 1♣ – 1N; 2♥. Opener’s 1♣ shows a balanced hand with either 12-16 or 21+ hcp. Responder’s 1N shows 12-15 hcp in a balanced hand. Now two of a major shows that major and asks for strength and support:

|    |    |       |                         |
|----|----|-------|-------------------------|
| 1♣ | 1N |       |                         |
| 2♥ | 2♠ | 12-13 | no heart support        |
|    | 2N | 12-13 | four-card heart support |
|    | 3♣ | 14-15 | no heart support        |
|    | 3♦ | 14-15 | four-card heart support |

The *Roman Club* uses this kind of asking bids with step responses in many situations. This became the inspiration for modern asking bids, for example, those used in the *Precision Club*.

I have implemented the system according to Vee Packer’s excellent American translation, see Belladonna and Avarelli (1959). This is also a nice book to read.

Before the implementation, I felt rather certain that this system would not do well. It has no weak two openings, and it devotes both 2♣ and 2♦ to three-suited hands. This simply cannot be good.

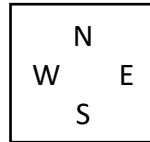
| Board | Match | Imps  | Mean | System     |
|-------|-------|-------|------|------------|
| 0.10  | 2.35  | 1409  | 1.50 | 5533       |
| 0.08  | 1.81  | 1086  | 1.57 | 4444       |
| -0.17 | -4.16 | -2495 | 1.72 | Roman Club |

Again, we have a very interesting result. The *Roman Club* is as bad as the *Blue Club* is good. Some of the reasons for this have already been mentioned, but the *Roman Club* is also the most imprecise system so far in point ranges.

In the following deal, the *Roman Club* is the home team versus 5533.

Jan 09, 2012      ♠ Q 10 6 2  
 Deal 5            ♥ —  
 North            ♦ 9 5  
 NS                ♣ A K Q 8 7 6 5

♠ J 8 3  
 ♥ J 10 2  
 ♦ A K J 8 7 3  
 ♣ 10



♠ K 9 5 4  
 ♥ A 8 7 5  
 ♦ Q 2  
 ♣ 9 3 2

♠ A 7  
 ♥ K Q 9 6 4 3  
 ♦ 10 6 4  
 ♣ J 4

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5533        | Roman Club   | 5533        | Roman Club   |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♠           | pass        | 2♥           |
| pass        | 2N           | pass        | 3♣           |
| pass        | 4♣           | pass        | pass         |
| pass        |              |             |              |

In the open room, North opens a canapé 1♠. The 2N bid shows 12-14, at least three spades and at least five clubs (3♣ would have shown 15-16). When North invites with 4♣, South finds the optimal contract.

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| Roman Club  | 5533         | Roman Club  | 5533         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♣           | pass        | 1♥           |
| 2♦          | 3♣           | pass        | 4♣           |
| pass        | 5♣           | pass        | pass         |
| pass        |              |             |              |

In the closed room, 5533 performs a standard auction. The difference is that South invites, and North over-evaluates the heart void. The *Roman Club* team wins 6 imps, but more often, the system is less precise than this.

| Deal | Open Room |   |   |     | Closed Room |   |    |      | Diff | Roman | 5533 |
|------|-----------|---|---|-----|-------------|---|----|------|------|-------|------|
| 5    | 4C        | S | = | 130 | 5C          | N | -1 | -100 | 230  | 6     | -    |

Here is a match with both the *Blue Club* and the *Roman Club*.

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.12  | 2.86  | 3433  | 2.73 | Blue Club        |
| 0.07  | 1.71  | 2048  | 1.55 | Modern Precision |
| 0.01  | 0.22  | 266   | 1.50 | 5533             |
| -0.00 | -0.09 | -111  | 1.57 | 4444             |
| -0.20 | -4.70 | -5636 | 1.72 | Roman Club       |

The *Blue Club* is the best system we have found so far, and the *Roman Club* the worst. However, one might argue that another comparison is more relevant.

| Board | Match | Imps  | Mean | System     |
|-------|-------|-------|------|------------|
| 0.24  | 5.79  | 3475  | 1.52 | Blue Club  |
| -0.09 | -2.22 | -1333 | 0.99 | Culbertson |
| -0.15 | -3.57 | -2142 | 1.72 | Roman Club |

When the Blue Team came to the world stage, they brought with them the *Neapolitan Club* (soon changed to the *Blue Club*), which was clearly better than the ruling *Culbertson*, and the *Roman Club*, which was worse, but not by as much.

Note the big numbers. Whenever Forquet and Garozzo sat down for a match against classical *Culbertson* players, they were leading by a non-vulnerable game swing.

Other players reacted in different ways. The famous Dallas Aces Teams pair Bob Hamman and Bobby Wolf invented and played the *Aces Club*, which was very similar to the *Blue Club*.

“A standard Ford, however much jazzed up, won’t beat a Ferrari.”

We will leave it as a task for the reader to philosophize over that statement, and move on to something completely different, a general system idea, which spread by word of mouth from California in the late fifties and landed on the East coast of America in the sixties.

## EHAA

The idea is simple. Take wide range weak two openings of 6-12 points and five-card suits, with side suits – even majors – and the Kamikaze 10-12 weak notrump and mold it onto good, old, honest *Culbertson*, and you have a natural and super-aggressive system. This is the definition of *Every Hand an Adventure (EHAA)*.

### Opening Bids

|    |       |             |    |       |             |
|----|-------|-------------|----|-------|-------------|
| 1♣ | 13+   | 4+ clubs    | 2♣ | 6-12  | 5+ clubs    |
| 1♦ | 13+   | 4+ diamonds | 2♦ | 6-12  | 5+ diamonds |
| 1♥ | 13+   | 4+ hearts   | 2♥ | 6-12  | 5+ hearts   |
| 1♠ | 13+   | 4+ spades   | 2♠ | 6-12  | 5+ spades   |
| 1N | 10-12 | balanced    | 2N | 20-24 | balanced    |

According to the system, the weak notrump and the wild, weak two openings are treated in an interesting way. You have to open *any* 6-12 hand with a five-card suit.

The notrump methods are simple. Two clubs is at least invitational Stayman, and other suit bids are to play or preemptive. After a weak two opening, a raise to three is both invitational and preemptive at the same time, because of the opening bid's wide point interval, and two notrump is natural and the same without support.

Since the two clubs opening is a weak-two bid, there is no strong or game-forcing opening bid. The classical solution in *EHAA* is to ignore this and open one of a suit, which in practice makes the system similar to the *Roman Club* or *Fantunes*. An alternative solution is to use three clubs as a game-forcing opening bid. The implementation is based on the book by Landau and Baron (1996).

In his book *Power Precision*, Alan Sontag writes as follows:

“Some people believe an expert can win using any system. This is simply not true. A player employing an inferior or outmoded bidding system – and bidding is 80 percent of the game – is at an enormous disadvantage. Of the many systems Peter and I played and studied – except possibly E.H.A.A., the Strange Diamond, and the Solar System – each contained many excellent ideas, but they had faults,” see Sontag (1979).

Possibly, *EHAA* does not contain any excellent ideas. However, we have already seen that five-card weak two openings are good, while weak notrump is bad.

Let us first test a system with the 6-12 weak two openings, but otherwise standard, that is, *Culbertson*. The notrump opening is 16-18 and two clubs forcing to game.

| Board | Match | Imps | Mean | System             |
|-------|-------|------|------|--------------------|
| 0.01  | 0.20  | 120  | 1.50 | 5533               |
| -0.00 | -0.09 | -54  | 1.57 | 4444               |
| -0.00 | -0.11 | -66  | 3.14 | 4444 6-12 Weak Two |

Surprisingly, the weak two openings do not pay off as well as we could expect. The range is probably too large, and the *EHAA* openings can be too strong, so they sometimes preempt partner. Note that the differences are minimal. What you lose on the swings, you gain on the roundabouts.

Also note that *EHAA* has a very high mean opening, thanks to the wide-range five-card weak two openings.

Up next is a version where the two clubs opening is weak, and the one openings are unlimited.

| Board | Match | Imps | Mean | System        |
|-------|-------|------|------|---------------|
| 0.01  | 0.29  | 174  | 3.58 | EHAA Weak Two |
| 0.00  | 0.02  | 10   | 1.50 | 5533          |
| -0.01 | -0.31 | -184 | 1.57 | 4444          |

The results are slightly better for *EHAA*, but still within the margin of randomness. Again, the differences are surprisingly small. Finally, let us add the weak notrump. We suspect that this will be a bit worse.

| Board | Match | Imps | Mean | System |
|-------|-------|------|------|--------|
| 0.03  | 0.82  | 493  | 1.50 | 5533   |
| 0.01  | 0.31  | 184  | 1.57 | 4444   |
| -0.05 | -1.13 | -677 | 4.07 | EHAA   |

Yes, the weak notrump lowers the performance of *EHAA*. However, it is not as awful as you expected, having read Alan Sontag's quote above.

## Fantunes

Fulvio Fantoni and Claudio Nunes became the world's number one and two in 2011, after winning the World Open Pairs 2002, the World Olympiads in 2004 and 2008, and the Bermuda Bowl in 2005. They used their own bidding system, obviously inspired by 5542 and the *Roman Club*, but also much modernized. The system is called *Fantunes*.

### Opening Bids

|    |       |               |    |       |             |
|----|-------|---------------|----|-------|-------------|
| 1♣ | 14+   | 2+ clubs      | 2♣ | 10-13 | 5+ clubs    |
| 1♦ | 14+   | 4+ diamonds   | 2♦ | 10-13 | 5+ diamonds |
| 1♥ | 11+   | 5+ hearts     | 2♥ | 10-13 | 5+ hearts   |
| 1♠ | 11+   | 5+ spades     | 2♠ | 10-13 | 5+ spades   |
| 1N | 12-14 | semi-balanced | 2N | 21-22 | balanced    |

As you can see, this is a very natural system – more natural than a typical “natural” system. However, the continued bidding is full of artificial sequences.

The one openings are solid and unlimited, from 14 and upwards. 1♥ and 1♠ can also be 11-13 *with both majors*. One notrump contains all balanced and semi-balanced shapes, including 5422 (except with both majors).

After the 1♣ opening, the one-level responses are transfers, while after 1♦♥♠ they are weak and natural. Fantunes uses several Gazzilli sequences to manage the wide-range one openings. After the semi-weak two openings, the next bid is a relay followed by artificial sequences.

Fantunes has become popular around the world, both because it is easy to play (at least in its simplified versions), and because of the successes of Fantoni and Nunes. I have implemented the system based on the book by Bill Jacobs, see Jacobs (2012).

In the book, Jacobs refers to statistics from BBO. Up until 2012, Fantunes had played 410 sessions and opened from 1♣ to 2♠ on 2,723 deals. They won 16.08imps per 24 deals on average. On 1,676 deals, they played the same contract as the opponents, and won 9.12imps per 24 deals. A fair estimate would be that their bidding gained them  $16.08 - 9.12 = 6.96$ imps per 24 deals. This is an impressive number, but of course, it includes several human factors, such as hand evaluation and bidding skill. Bill Jacobs writes:

“However you slice these numbers, there can be little doubt that the *Fantunes* bidding system generates a net imp gain for its proponents,” Jacobs (2012).

| Board | Match | Imps | Mean | System   |
|-------|-------|------|------|----------|
| 0.05  | 1.09  | 654  | 1.50 | 5533     |
| 0.02  | 0.41  | 247  | 1.57 | 4444     |
| -0.06 | -1.50 | -901 | 2.16 | Fantunes |

However, *Fantunes* actually performs less well than 4444 and 5533. The semi-weak two openings are good, but they mean that the system lacks weak two openings, which are even better, and also we already know that the weak notrump is a liability, not an advantage.

There can be little doubt that the main explanation of Fantoni’s and Nunes’ impressive performance on BBO and on the world stage is not thanks to their system. It must depend on superior skills in bidding and play, or (this being before 2015 and on BBO) “other factors.”

## 2/1

Today, *Standard American* or 5533 is the most popular bidding system in the world. As we have seen, 5533 is also the best natural system we have tested so far. The implementation is based on a combination of different documents describing *Standard American Yellow Card* (SAYC).

However, SAYC is not the most advanced version of 5533. A modern trend is to play two-over-one bids as game-forcing, and the 1N response as more wide-range and forcing for one round. This version of 5533 is known as 2/1, short for “two-over-one game force.”

The advantages of this approach are that the bidding after two-over-one becomes easier (much like after a strong club and a game-forcing response). You can first show suits, and then start cue-bidding for slam. Nowadays, 2/1 is seen as the more advanced and better version of 5533. But is it? My implementation is mainly based on Grant and Rodwell (2009).

| Board | Match | Imps | Mean | System         |
|-------|-------|------|------|----------------|
| 0.02  | 0.46  | 277  | 1.50 | 2/1 Game Force |
| -0.00 | -0.04 | -21  | 1.50 | 5533           |
| -0.02 | -0.43 | -256 | 1.57 | 4444           |

We have found a new leader among the natural systems. The most modern development has gone in the right direction. But observe the relatively small numbers. The differences are on the margin of error.

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.08  | 1.80  | 2166  | 2.73 | Blue Club        |
| 0.04  | 0.91  | 1095  | 1.55 | Modern Precision |
| -0.02 | -0.54 | -644  | 1.50 | 2/1 Game Force   |
| -0.04 | -0.97 | -1164 | 1.50 | 5533             |
| -0.05 | -1.21 | -1453 | 1.57 | 4444             |

When we compare with the strong club systems, the result is bleaker. The *Blue Club* and *Modern Precision* score better, and 2/1 does not really make any big difference.

## Scanian 5533

In 2019, Mats Nilslund published a new version of 5533, which he developed and plays with Björn Fallenius, see Nilslund (2019). The book was published both in paper and on the Internet, and has become quite popular in, among other places, China.

### Opening Bids

|    |       |             |    |                             |
|----|-------|-------------|----|-----------------------------|
| 1♣ | 11-21 | 3+ clubs    | 2♣ | 18-21 bal or 22+ with ♣♥♠   |
| 1♦ | 11-21 | 3+ diamonds | 2♦ | 3-10 ♥ or ♠, 25+ bal, 22+ ♦ |
| 1♥ | 11-21 | 5+ hearts   | 2♥ | 10-13 6+ hearts             |
| 1♠ | 11-21 | 5+ spades   | 2♠ | 10-13 6+ spades             |
| 1N | 15-17 | balanced    | 2N | 22-24 balanced              |

The longest suit is always opened first, and the highest of two five-card suits. With 44 in the minors, you open 1♦, with 33 1♣. This means that 1♦ is either a natural four-card suit or exactly 4=4=3=2.

The one-level responses after 1♣ are transfers, and two-over-one is game-forcing. The 2♣ opening is 18-21 balanced or game-forcing with all suits except diamonds. The 2♦ opening is Multi with weak majors, 25+ balanced, or game-forcing with diamonds. The 2♥ and 2♠ openings show 10-13 and six-card suits.

On the surface, the system is similar to 2/1 but in the details, it is vastly more complicated, using a large number of multi-meaning bids, transfers, and Gazzilli in the continued bidding sequences. Special for the system is

also the use of transfer responses after the opponents' interventions (to place the opening lead in the overcalling hand as often as possible).

Suspecting that this was a candidate for best natural system, I implemented it in two different ways. First, I modified the 2/1 implementation to use the Scanian two-level openings and the special 2♣. I will call this *Scanian Simple*. When this test came out positive, I undertook the effort of implementing the entire system from scratch from the very detailed book. This version is called *Scanian*. By the way, the book is the most detailed system description I have come across during this project, and I really recommend it, see Nilsland (2019).

| Board | Match | Imps | Mean | System         |
|-------|-------|------|------|----------------|
| 0.05  | 1.09  | 654  | 2.49 | Scanian Simple |
| -0.02 | -0.46 | -274 | 1.50 | 5533           |
| -0.03 | -0.63 | -380 | 1.50 | 4444           |

As we can see, *Scanian Simple* is better than the standard systems.

Now let us try the brand-new book version, with all the extra complexity. Nilsland mentions that 12 hcp is always an opening hand, while 11 may or may not be opened. However, in the system texts, he uses 11 hcp, so I assume that this is the real opening bid limit. I implemented both versions. The W5 means five-card weak two openings as usual. This time they are used in the Multi 2♦.

| Board | Match | Imps | Mean | System            |
|-------|-------|------|------|-------------------|
| 0.04  | 0.97  | 580  | 2.49 | Scanian Simple W5 |
| -0.02 | -0.48 | -287 | 2.49 | Scanian 12 W5     |
| -0.02 | -0.49 | -293 | 2.49 | Scanian 11 W5     |

Interestingly enough, the complexity does not pay off. The simple version based on *Standard American* or 2/1 is slightly better (and much easier to learn and remember). By the way, *Scanian Simple* opens from 12 hcp.

In the following deal, *Scanian* is the home team versus 5533.

|              |                  |
|--------------|------------------|
| Jan 09, 2012 | ♠ Q J 10 9 8 5 2 |
| Deal 2       | ♥ 8 5            |
| East         | ♦ K 6 3          |
| NS           | ♣ J              |

|                 |  |               |
|-----------------|--|---------------|
| ♠ K 4           |  | ♠ A           |
| ♥ —             |  | ♥ K 9 7 6 4 3 |
| ♦ 8 5 4 2       |  | ♦ J 7         |
| ♣ A K 8 6 5 4 3 |  | ♣ Q 10 9 7    |

|   |   |   |
|---|---|---|
|   |   |   |
|   | N |   |
| W |   | E |
|   | S |   |

|              |
|--------------|
| ♠ 7 6 3      |
| ♥ A Q J 10 2 |
| ♦ A Q 10 9   |
| ♣ 2          |

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5533        | Scanian      | 5533        | Scanian      |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | —            | 1♥          | pass         |
| 2♣          | 3♠           | pass        | 4♠           |
| pass        | pass         | pass        |              |

In the open room, East opens 1♥ and West's 2-over-1 shows 4+ clubs. North's preemptive overcall (made by the natural bidder based on the law of total tricks) and South's raise buy the contract.

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| Scanian     | 5533         | Scanian     | 5533         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | —            | 2♥          | pass         |
| 3♣          | 3♠           | pass        | 4♠           |
| pass        | pass         | 5♣          | pass         |
| pass        | pass         |             |              |

In the closed room, East opens 2♥ showing 10-13 and six hearts. West's 3♣ shows 8-12 and 6+ clubs, and East can bid 5♣. The *Scanian* team wins 7 imps thanks to the good continuation after the semi-weak 2♥.

| Deal | Open Room    | Closed Room | Diff | Scanian | 5533 |
|------|--------------|-------------|------|---------|------|
| 2    | 4S N -1 -100 | 5C W = -400 | 300  | 7       | -    |

## Best Natural So Far

Let us recap the current standings. The best natural system is *2/1*. In fact, the version that is currently in the lead is not fully tuned. We saw that an 11-point opening limit was slightly better for 5533, and that Bergen raises and five-card weak two openings also improve the situation. After some comparisons, I found the best performing version of *2/1*. It opens from 12 hcp, has Bergen raises, and uses five-card weak two openings.

Our second candidate for best natural system is *Scanian Simple*. In this new game between the natural systems, all are equipped with the best version of weak two, that is, 5-11 and five-card suits, while *Scanian* uses the same in its Multi 2♠.

| Board | Match | Imps | Mean | System                |
|-------|-------|------|------|-----------------------|
| 0.03  | 0.77  | 692  | 2.49 | <b>Scanian Simple</b> |
| 0.02  | 0.55  | 494  | 2.91 | <b>2/1</b>            |
| -0.02 | -0.59 | -530 | 1.50 | <b>5533</b>           |
| -0.03 | -0.73 | -656 | 1.57 | <b>4444</b>           |

*Scanian Simple* is the new best natural system, but the difference down to *2/1* with Bergen raises and five-card weak two openings is not large enough to imply a trustworthy difference.

| Board | Match | Imps | Mean | System         |
|-------|-------|------|------|----------------|
| 0.03  | 0.69  | 618  | 2.91 | <b>2/1</b>     |
| 0.01  | 0.28  | 251  | 2.49 | <b>Scanian</b> |
| -0.02 | -0.42 | -376 | 1.50 | <b>5533</b>    |
| -0.02 | -0.55 | -493 | 1.57 | <b>4444</b>    |

However, *2/1* is slightly better than the full version of *Scanian*. Once again, we see (very surprisingly) that added complexity does not automatically pay off. One-level transfers, multi-meaning bids, and Gazzilli actually perform less well than plain old natural bidding.

## Best Strong Club So Far

Let us also recap the situation between the strong club systems.

| Board | Match | Imps  | Mean | System                 |
|-------|-------|-------|------|------------------------|
| 0.07  | 1.77  | 2235  | 2.91 | Modern Precision Ekrén |
| 0.03  | 0.79  | 997   | 1.53 | Blue Club              |
| 0.01  | 0.25  | 321   | 1.55 | Modern Precision       |
| -0.04 | -1.03 | -1294 | 1.51 | Power Precision        |
| -0.07 | -1.79 | -2259 | 1.44 | Classic Precision      |

*Modern Precision* with a natural four-card diamond opening, five-card weak 2♥ and 2♠, and the aggressive Ekrén 2♦ is the clear leader, with the venerable *Blue Club* on second place.

Finally, let us see how the overall leaders are doing. In this test, I changed the weak two majors of the *Blue Club* to 5-11 and five-card suits. In this way, all four systems have the best set of their weak two openings.

| Board | Match | Imps | Mean | System                 |
|-------|-------|------|------|------------------------|
| 0.09  | 2.13  | 1921 | 2.73 | Blue Club W5           |
| -0.01 | -0.19 | -170 | 2.91 | Modern Precision Ekrén |
| -0.04 | -0.90 | -808 | 2.49 | Scanian Simple         |
| -0.04 | -1.05 | -943 | 2.91 | 2/1 Bergen W5          |

Who would have expected this? The *Blue Club* is the best system so far, and the strong club systems clearly beat the natural ones.

Now we will continue to look for new contenders, which means that we must start checking slightly more unusual systems.

## Strong Club with Symmetric Relays

A relay bid is basically the next bid, with the meaning of “tell me more.” A relay system uses this principle to let one hand ask and the other one to show its values. Usually, this is done in three phases.

- Show distribution
- Show the number of aces and kings, or aces, kings, and queens
- Show the location of the high cards

Probably the best-known relay system is called Symmetric Relays, which was invented in the eighties by Roy Kerr, New Zealand. This has been

described by Barry Rigal as a response system after a strong club, see Rigal (1997).

Symmetric relay is a name inspired by the answers that show distributions. The distribution answer scales are indeed very symmetric. Modern versions of both strong club and forcing pass systems are described in Hughes (2020).

I implemented the first phase according to Rigal’s description, and added it to *Modern Precision*, with both natural and relay continuations after 1♣ – 1♦.

| Board | Match | Imps | Mean | System                  |
|-------|-------|------|------|-------------------------|
| 0.01  | 0.19  | 114  | 1.55 | Modern Precision        |
| -0.00 | -0.09 | -54  | 1.55 | Symmetric and 1H relay  |
| -0.00 | -0.10 | -60  | 1.55 | Symmetric 1C-1D natural |

Relay systems are quite impressive when it comes to finding the exact distribution and bidding spectacular slams. However, it seems that these do not occur very commonly in practice, and there is no observable advantage in knowing the exact distribution when playing through the 7,200 deals in our test set.

In fact, the natural version scores a little better than both the relay versions, but these results are within the margin of error. This is certainly a disappointment for all the relay system users around the world.

## Moscito

In 1986, Paul Marston and Anthony Burgess of New Zealand placed third in the World Pairs in Miami using a strong club system with transfer openings on the one level and symmetric relays – *Moscito*.

### Opening Bids

|                             |                            |
|-----------------------------|----------------------------|
| 1♣ 15+ all distributions    | 2♣ 10-14 6+ clubs          |
| 1♦ 10-14 4+ hearts          | 2♦ 6-9 6+ hearts or spades |
| 1♥ 10-14 4+ spades          | 2♥ 10-12 5+ hearts         |
| 1♠ 10-14 6+ ♦ or 54+ minors | 2♠ 10-12 5+ spades         |
| 1N 11-14 balanced           | 2N 7-10 55+ in minors      |

The responses after 1♣ are symmetric relays, so that 1♦ is negative, 1♥ shows four hearts, 1♠ denies hearts and shows four spades, and so on. After the 1♦ and 1♥ transfer openings, the next bid (completing the

transfer) is strong, starts a relay sequence, and gets to play the contract if the opener's suit becomes trump. The strong continuations are again based on symmetric relays. In this way, *Moscito* uses the idea that the weaker hand shows while the stronger hand asks and becomes declarer.

Thanks to the low opening point range and the symmetric relays, *Moscito* has a reputation of being a modern, aggressive, and precise system. It is definitely a candidate for best bidding system in the world.

| Board | Match | Imps | Mean | System         |
|-------|-------|------|------|----------------|
| 0.02  | 0.41  | 247  | 1.50 | 5533           |
| 0.01  | 0.28  | 166  | 1.74 | <b>Moscito</b> |
| -0.03 | -0.69 | -413 | 1.57 | <b>4444</b>    |

Or so I thought...

It is interesting that *Moscito* does not perform better. We know parts of the explanation already: weak one opening limits, weak notrump, and relatively “lame” weak two openings. However, in several cases, the transfer openings also lead to trouble. With weak and invitational hands, the system often ends up a bit too high or in the wrong part score after the openings 1♦, 1♥, and 1♠.

## Moscito 2005

In 2005, Paul Marston devised a new version of the responses after 1♣. The idea is that 1♦ is a positive, 1♠ is the negative, and other responses are invitational with 6-9 hcp, see Marston (2005). The motivation for this is that responder most often holds 6-9 points after a 15+ opening. On the other hand, 1♠ may be a bit high for a pure negative. Richard Willey helped with advice during the implementation.

| Board | Match | Imps | Mean | System              |
|-------|-------|------|------|---------------------|
| 0.05  | 1.09  | 656  | 1.74 | <b>Moscito 2005</b> |
| -0.01 | -0.28 | -170 | 1.50 | <b>5533</b>         |
| -0.03 | -0.81 | -486 | 1.57 | <b>4444</b>         |

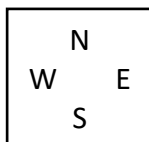
The modern version is better, but far from a contender for best system overall. This shows that the idea of invitational responses to a strong club may be worth trying in other systems too.

In the following deal, *Moscito* is the home team versus 5533.

# A Tour of the World of Systems

Jan 02, 2012      ♠ K 8 7  
 Deal 1            ♥ K Q 6 5  
 North            ♦ K J 9 6  
 None            ♣ Q 10

♠ A 10 9 3 2  
 ♥ 9 7 4  
 ♦ A 7 3  
 ♣ A 2



♠ 6 5 4  
 ♥ 10 3  
 ♦ Q 5 4  
 ♣ K J 9 6 3

♠ Q J  
 ♥ A J 8 2  
 ♦ 10 8 2  
 ♣ 8 7 5 4

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5533        | Moscito      | 5533        | Moscito      |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♦           | pass        | 2♥           |
| 2♠          | pass         | pass        | pass         |

In the open room, North opens 1♦, showing 10-14 and 4+ hearts. South's 2♥ shows 0-11 and 3-4 hearts (since 1♥ would be the strong relay). West buys the contract with 2♠. North-South do not know East-West's trump length.

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| Moscito     | 5533         | Moscito     | 5533         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♦           | pass        | 1♥           |
| 1♠          | 2♥           | 2♠          | 3♥           |
| pass        | pass         | pass        |              |

In the closed room, North also opens 1♦, but this time it shows 12-19 and at least three diamonds. South can bid a natural 1-over-1 and West can overcall on the one level. This time, both North and South know that they have eight hearts and that East-West have eight spades, so South can bid 3♥, that is, bid over once on the three level according to the law of total tricks. The 5533 team wins 2 imps.

| Deal | Open Room |      | Closed Room |     | Diff | Moscito | 5533 |
|------|-----------|------|-------------|-----|------|---------|------|
| 1    | 2S W =    | -110 | 3H S -1     | -50 | -60  | -       | 2    |

## Polish Club

Let us look at another interesting system solution, the *Polish Club*. In Polish, this system is called *Wspólny Język (WJ)*, the “common language.” This system was created in the mid-sixties and when the strong pass systems were forbidden, it became the most popular system in Poland.

The *Polish Club* has an interesting base that differs from the other systems we have seen so far. The 1♣ opening contains a weak notrump (12-14), natural club hands from 15 and up, and *all* strong hands with 18+ points. Combined with a 15-17 notrump and a *Precision* 2♣, this means that the range of 1♦, 1♥, and 1♠ is 12-17 (with two strength zones only – weak 12-14 and strong 15-17).

### Opening Bids

|    |       |                  |    |       |                  |
|----|-------|------------------|----|-------|------------------|
| 1♣ | 12+   | bal/clubs/strong | 2♣ | 12-15 | 5+ clubs         |
| 1♦ | 12-17 | 4+ diamonds      | 2♦ | 6-11  | 55+ in two suits |
| 1♥ | 12-17 | 5+ hearts        | 2♥ | 6-11  | 6 hearts         |
| 1♠ | 12-17 | 5+ spades        | 2♠ | 6-11  | 6 spades         |
| 1N | 15-17 | semi-balanced    | 2N | 6-11  | 55+ in minors    |

The system uses five-card majors, a forcing 1N response, and all modern standard gadgets. Older versions of the system had a game-forcing 2♣, but the modern version uses a copy of the *Precision* 2♣ instead.

The continuation bidding follows standard methods, except after 1♣, where many artificial sequences are needed. Typical for the *Polish Club* is that opener’s 2♦ rebid is often used as a forcing bid, which can be followed by advanced relay-style bidding. The implementation is based on the excellent book by Matula (1994), double-checked against the book by Jassem (2005).

One particular opening bid deserves to be mentioned, the Wilkosz 2♦. This shows a weak hand with 55+ in any two suits except the minors. It was typically combined with standard weak 2♥ and 2♠. However, new world regulations meant that Wilkosz 2♦ became illegal, and slowly (and grudgingly), the Polish players turned to Multi combined with 2♥ and 2♠ showing 55+ in the opening suit and a minor.

It is, of course, completely illogical that Wilkosz should be forbidden while Multi is allowed, or that Multi is allowed while Wilkosz is forbidden. It just shows that ideas that have been established

internationally are treated differently from similar ideas that are less famous or well-spread.

| Board | Match | Imps | Mean | System      |
|-------|-------|------|------|-------------|
| 0.07  | 1.71  | 1076 | 1.75 | Polish Club |
| -0.03 | -0.65 | -409 | 1.50 | 5533        |
| -0.04 | -1.06 | -667 | 1.57 | 4444        |

The *Polish Club* beats both 4444 and 5533, with a clear margin. However, this was the traditional version, with the Wilkosz 2♠. Is the modern version with Multi as good?

| Board | Match | Imps | Mean | System            |
|-------|-------|------|------|-------------------|
| 0.09  | 2.18  | 1374 | 1.58 | Polish Club Multi |
| -0.04 | -0.89 | -558 | 1.50 | 5533              |
| -0.05 | -1.30 | -816 | 1.57 | 4444              |

A surprise, especially in Poland. It seems that Multi is actually better than the old Wilkosz. Let us see how they fare when they meet in a match.

| Board | Match | Imps  | Mean | System              |
|-------|-------|-------|------|---------------------|
| 0.06  | 1.56  | 1471  | 1.58 | Polish Club Multi   |
| 0.04  | 1.04  | 979   | 1.75 | Polish Club Wilkosz |
| -0.05 | -1.12 | -1054 | 1.50 | 5533                |
| -0.06 | -1.48 | -1396 | 1.57 | 4444                |

Yes, indeed. Multi beats Wilkosz, by a small margin.

So, the modern *Polish Club* is no underdog, but a real contender. But how does it compare to a strong club?

One of the argued strengths of the *Polish Club* is that its 1♣ opening contains weak hands as well as the 18+ variants. Because of this, the opponents cannot get away with overly destructive methods, as they supposedly can against a strong club. However, we now know that a strong club will not be easily disturbed. Does the Polish 1♣ still have an advantage over a strong 1♣?

| Board | Match | Imps  | Mean | System            |
|-------|-------|-------|------|-------------------|
| 0.06  | 1.39  | 1318  | 1.58 | Polish Club Multi |
| 0.04  | 0.98  | 926   | 1.55 | Modern Precision  |
| -0.04 | -1.05 | -995  | 1.50 | 5533              |
| -0.06 | -1.32 | -1249 | 1.57 | 4444              |

Indeed, the *Polish Club* actually beats *Modern Precision*. It is not a very large margin, but it is undoubtedly another notch on the belt for Poland. Let us bring in the Blue Team again.

| Board | Match | Imps  | Mean | System            |
|-------|-------|-------|------|-------------------|
| 0.06  | 1.55  | 1466  | 1.52 | Blue Club         |
| 0.06  | 1.41  | 1329  | 1.58 | Polish Club Multi |
| -0.05 | -1.31 | -1241 | 1.50 | 5533              |
| -0.07 | -1.64 | -1554 | 1.57 | 4444              |

This is an interesting result in several ways. The *Polish Club* competes well with the modern strong club, and clearly beats the modern natural systems. However, the *Blue Club* from the sixties is still the leader.

Here is a question for the Swedish junior elite. If you do not want to change to something as old-fashioned as the *Blue Club*, maybe you should at least consider a modern version of the *Polish Club*, rather than 5542?

## Swedish Club

Having had a look at the *Polish Club*, it is only fair that we have a look at another system with a reference to a country in its name, the *Swedish Club* (these are two of the celebrities of the bridge “country club”).

While the *Polish Club* has its ancestry in the sixties, the idea behind the *Swedish Club* goes back to the fifties and Terrence Reese’s *Little Major*, where 1♥ was either very strong (19+) or very weak (5-8) – the latter to make life more difficult for obstructive opponents.

Keeping this idea in mind, we turn to Sweden’s number one comical bridge writer, Max Ödlund. In the late seventies, he introduced the idea of combining a standard strong club opening with a weak alternative (typically a very weak notrump), to inhibit the obstructive interventions, which were very much in fashion at the time. The system he introduced had two interesting ideas, to use both 1♦ and 1N for balanced hands, and

a “strong” one club opening showing either 8-10 balanced or 17+ points. The system comprised several multi-meaning bids, and since arctic cloudberryes are named *Multebeeren* in German, Max Ödlund decided to name his system *Hjortronklöver* (the *Arctic Cloudberry Club*).

The strongest and most influential team in Sweden in those days, the Carrot Team, quickly added this idea to their *Carrot Club* system. Because of this, the idea of a weak notrump in the strong club opening spread quickly, in Sweden and then internationally, and became known as the *Swedish Club*.

In the modern version, the system is quite similar to *Modern Precision*, and there are a lot of local variations. I decided to implement a version with a 13-15 notrump opening, and 10-12 balanced contained within the 1♣ opening.

#### Opening Bids

|    |           |              |    |       |              |
|----|-----------|--------------|----|-------|--------------|
| 1♣ | 10-12/16+ | balanced/all | 2♣ | 11-15 | 5+ clubs     |
| 1♦ | 11-15     | 4+ diamonds  | 2♦ | 11-15 | three-suited |
| 1♥ | 11-15     | 5+ hearts    | 2♥ | 6-10  | 6+ hearts    |
| 1♠ | 11-15     | 5+ spades    | 2♠ | 6-10  | 6+ spades    |
| 1N | 13-15     | balanced     | 2N | 21-23 | balanced     |

The responses to 1♣ come from the Carrot Team. 1♦ is negative and after this, opener bids 1♥/1♠ with both 10-12 and 16+. The 1♥/1♠ responses to 1♣ are positive with 8+ and at least four-card suits, 1N is 8-13 balanced, and 2♣/2♦ 8-13 with five-cards suits. The 2♥ response is invitational facing 10-12 with 54+ in the minors and 2♠ is game-forcing and a puppet to 2N, with a balanced hand or one or both minors.

We would expect the *Swedish Club* to be similar to *Modern Precision* in performance. The idea is to protect against obstructive overcalls of 1♣, but we have seen that this is not a big problem for a strong club, so the gain, if any, is probably not large.

The drawback with the *Swedish Club* is that if the opponents can make a higher preemptive bid, you are in a worse position than after a strong club. If we open 1♣ and the next opponent bids 3♥, what do we do with the following hand:

♠ K J 8 7 5   ♥ 6 2   ♦ 7 5   ♣ A Q 8 6

If the 1♣ opening is known to be 16+ we can venture a 3♠ bid, but if it is either 10-12 or 16+, it is not so obvious. The *Swedish Club* may prevent obstructive overcalls, but it is more sensitive to regular ones.

| Board | Match | Imps | Mean | System              |
|-------|-------|------|------|---------------------|
| 0.04  | 0.89  | 560  | 1.49 | <b>Swedish Club</b> |
| -0.01 | -0.31 | -195 | 1.50 | 5533                |
| -0.02 | -0.58 | -365 | 1.57 | 4444                |

The *Swedish Club* beats the natural systems, as did most of the strong clubs and the *Polish Club*.

| Board | Match | Imps | Mean | System                  |
|-------|-------|------|------|-------------------------|
| 0.05  | 1.10  | 1042 | 1.55 | <b>Modern Precision</b> |
| 0.02  | 0.41  | 388  | 1.49 | <b>Swedish Club</b>     |
| -0.03 | -0.67 | -632 | 1.50 | 5533                    |
| -0.04 | -0.84 | -798 | 1.57 | 4444                    |

However, *Modern Precision* wins over the *Swedish Club* by a fair margin. There is no big advantage in protecting against obstructive overcalls.

## Auken – von Arnim Club

In the search for good strong club systems, let us investigate the version played by Sabine Auken and Daniela von Arnim. Among other successes, they won the Venice Cup in 1995 and 2001 using this system.

### Opening Bids

|             |                   |          |                         |
|-------------|-------------------|----------|-------------------------|
| 1♣ 16+      | all distributions | 2♣ 10-15 | 6+ clubs                |
| 1♦ 11-15    | 3+ diamonds       | 2♦ 4-9   | 5+♥ or 55+ in ♠ and ♣/♦ |
| 1♥ 10-15    | 4+ hearts         | 2♥ 4-9   | 5+♠ or 55+ in ♥ and ♣/♦ |
| 1♠ 10-15    | 4+ spades         | 2♠ 4-9   | 55+ in minors or majors |
| 1N variable | balanced          | 2N 22-24 | balanced                |

After 1♣, the positive responses 1♥ and 1♠ are made on four-card suits, which saves bidding space. The one of a major openings show four cards and are used both when the major is longer and when there is a longer minor (canapé). The internal lengths are resolved in the second or third round. The notrump is variable (10-12 or 15-17), and two clubs shows at least six cards. The system contains a mix of aggressive natural bidding and artificial relay sequences. The system also uses a set of three multi

weak two openings (the Triple Multi described in Chapter 9). Since the *Blue Club* was so successful with weak canapé, it will be interesting to see what a more modern system with the same idea can do.

| Board | Match | Imps | Mean | System          |
|-------|-------|------|------|-----------------|
| 0.04  | 0.94  | 595  | 2.80 | Auken-von Arnim |
| -0.01 | -0.34 | -215 | 1.50 | 5533            |
| -0.03 | -0.60 | -380 | 1.57 | 4444            |

*Auken-von Arnim* is better than the standard natural systems, but actually not that much.

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.09  | 2.15  | 2711  | 1.55 | Modern Precision |
| 0.06  | 1.39  | 1749  | 2.73 | Blue Club        |
| -0.01 | -0.35 | -438  | 2.80 | Auken-von Arnim  |
| -0.06 | -1.51 | -1900 | 1.50 | 5533             |
| -0.07 | -1.68 | -2122 | 1.57 | 4444             |

Both *Precision* (with four-card diamonds, five-card weak two openings, and Ekrén 2♦) and the *Blue Club* win over *Auken-von Arnim*.

## Cottontail Club

As the author, I also take the opportunity to introduce my own favorite system. I started to play as a junior in the late seventies and my partner Sören Romare and I developed a strong club system with 10-14 one level openings and 1♣ 15+. We soon changed it to a *Swedish Club* with 1♣ 8-9 or 15+. This system was called the *Tangerine Club*.

Then I had a long leave from bridge and took it up again around 2005. Together with my partner and wife Anu Uus, we developed a new version called the *Cottontail Club*. Since the obstructiveness of the eighties had died out, we made it a strong club system, but we added a set of aggressive weak two openings and other conventions.

Anu and I lived in California from 1993 to 1996. Anu worked in a software company and I was a researcher at Stanford University. We visited the wine country and the surrounding mountains often. In our personal relationship we call each other the little rabbit and the bear, and in California we met a lot of wild rabbits called cottontails. That is the background of the name *Cottontail Club*.

## Opening Bids

|    |       |                   |    |       |               |
|----|-------|-------------------|----|-------|---------------|
| 1♣ | 15+   | all distributions | 2♣ | 10-14 | 5+ clubs      |
| 1♦ | 10-14 | 3+ diamonds       | 2♦ | 4-9   | three-suited  |
| 1♥ | 10-14 | 4+ hearts         | 2♥ | 4-9   | 5+ hearts     |
| 1♠ | 10-14 | 4+ spades         | 2♠ | 4-9   | 5+ spades     |
| 1N | 10-12 | balanced          | 2N | 4-9   | 55+ in minors |

The responses to 1♣ show suits based on transfers where 1♥ is 5+ spades, 1♠ is a balanced hand or 4441, 1N is 5+ hearts, 2♣ is 5+ diamonds, and 2♦ is 5+ clubs. Opener's next bid asks for top controls, and then follows a simple version of Italian-style asking bids. One of a suit shows four-cards, except 1♦ which can also be 3-3-3-4. We use canapé except when clubs are involved. The nearest bid after an opening in one of a suit is triple-multi, a weak relay (0-9), a natural suit (10+), or a strong (15+) relay with any distribution.

The last item is an important corollary to canapé openings. A weak relay response gives you the opportunity to keep the bidding open with very weak hands, instead of leaving both the auction and the play to the opponents (and declarer will know that responder was weak enough not to have a bid). Instead, we can continue to bid in the face of strong opponents and try to find a better contract than the opening suit. The notrump opening is 10-12 or 15-17 depending on vulnerability.

| Board | Match | Imps | Mean | System        |
|-------|-------|------|------|---------------|
| 0.07  | 1.64  | 1036 | 3.57 | Cottontail 15 |
| -0.02 | -0.57 | -357 | 1.50 | 5533          |
| -0.04 | -1.08 | -679 | 1.57 | 4444          |

Again, an interesting result. We know that a strong club and five-card weak two openings are good, but now we also see that canapé is not that bad either.

However, we have also seen that opening from ten points seems to be too aggressive. With 4444, opening from 11 was the best, so I decided to try *Cottontail Club* with the base 11-15 and 1♣ 16+ instead.

| Board | Match | Imps  | Mean | System        |
|-------|-------|-------|------|---------------|
| 0.18  | 4.28  | 2567  | 3.77 | Cottontail 16 |
| -0.08 | -1.97 | -1182 | 1.50 | 5533          |
| -0.10 | -2.31 | -1385 | 1.57 | 4444          |

We have a new overall leader. Note the large numbers. There is a difference of 6.2 imps down to 5533 and 6.6 to 4444. Let us see how *Cottontail* does against the previous top system.

| Board | Match | Imps  | Mean | System        |
|-------|-------|-------|------|---------------|
| 0.15  | 3.57  | 3376  | 3.77 | Cottontail 16 |
| 0.03  | 0.75  | 707   | 2.73 | Blue Club     |
| -0.08 | -2.02 | -1905 | 1.50 | 5533          |
| -0.10 | -2.30 | -2178 | 1.57 | 4444          |

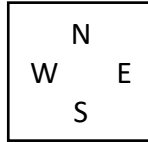
Yes, we do have a new leader and it is with large numbers. A five-imp bonus in every match you play is significant.

The implemented version uses natural bidding, while the Cottontail actually played by us uses Italian-style asking bids after the 1♣ opening bid and after one of a suit and a strong relay. I implemented this version too, but there is no improvement in the results. In fact, natural slam bidding, asking bids, and relay bidding are equally good. However, the conclusion is not that you should use natural bidding. Rather, you should use the style of bidding that you know and like best, and which gives you the best results.

In the following deal, *Cottontail* is the home team versus 5533.

Jan 30, 2012      ♠ 10  
 Deal 2            ♥ A J 9 5  
 East              ♦ A Q 7 2  
 NS                ♣ A K Q 10

♠ K Q 8 7 6 2  
 ♥ 2  
 ♦ J 4 3  
 ♣ 7 6 2



♠ J 9 5  
 ♥ Q 8 3  
 ♦ K 8 6  
 ♣ 8 5 4 3

♠ A 4 3  
 ♥ K 10 7 6 4  
 ♦ 10 9 5  
 ♣ J 9

| 5533 | Cottontail | 5533 | Cottontail |
|------|------------|------|------------|
| West | North      | East | South      |
| —    | —          | pass | 2♥         |
| pass | 2N         | pass | 3♥         |
| pass | 4N         | pass | 5♥         |
| pass | 6♥         | pass | pass       |
| pass |            |      |            |

In the open room, South opens a weak, five-card 2♥. North's 2N is 18+ and South's 3♥ shows 7-9 points but a weak heart suit. The 4N is Roman Key-Card Blackwood and 5♥ shows two keycards but no trump queen. Destructive weak two openings can lead to constructive auctions.

| Cottontail | 5533  | Cottontail | 5533  |
|------------|-------|------------|-------|
| West       | North | East       | South |
| —          | —     | pass       | pass  |
| 2♠         | X     | pass       | 3♥    |
| pass       | 4♥    | pass       | pass  |
| pass       |       |            |       |

In the closed room, South passes, and West gets the chance for a weak 2♠. North-South do not find the slam. The *Cottontail* team wins 13 imps.

| Deal | Open Room |           | Closed Room |          | Diff | Cotton | 5533 |
|------|-----------|-----------|-------------|----------|------|--------|------|
| 2    | 6H        | S +1 1460 | 4H          | S +3 710 | 750  | 13     | -    |

I also tested a version with a *Swedish Club* style 1♣ opening, showing 9-10 balanced or 16+ any distribution. As previously mentioned, this version of the system is actually older than the current strong club version.

After the double-meaning 1♣, the responses are natural. The positive responses show 9-15, except that 1♥ also contains all 16+ hands. Opener shows the strong hand with the relay, while other bids on the lowest level are natural with 9-10. After the 1♥ response, *responder's* bids higher than 2♥ show 16+.

| Board | Match | Imps  | Mean | System            |
|-------|-------|-------|------|-------------------|
| 0.13  | 3.04  | 2739  | 3.77 | Cottontail        |
| 0.08  | 1.93  | 1736  | 3.82 | Double meaning 1C |
| -0.10 | -2.34 | -2108 | 1.50 | 5533              |
| -0.11 | -2.63 | -2367 | 1.57 | 4444              |

As was to be expected, the weak balanced meaning of 1♣ does not pay off, because a strong club is not that easily disturbed. However, the *Cottontail* response system after a *Swedish Club* seems both simpler and better than the more common system used in Sweden.

In one sense, these results give me mixed feelings. Of course, it is very satisfying to know that I have invented a good bidding system, but on the other hand, it feels a bit silly that as an author, I present my own system as the best. I had hoped that it would be good, or even very good, but now I also feel that the success puts me under some kind of suspicion.

The only thing I can say is that I promise that I did not mess up the other systems, just so my own system could beat them. I have put a lot of effort into each single system definition (typically 3-5 workdays of reading, editing, checking, and testing), and all the results are trustworthy and as correct as I could possibly get them.

Of course, it feels nice to be in the lead, and by the way, I should probably put the *Cottontail* system notes into book form in English.

Now I only hope that I will not find any other, even better system.

## 20. Asking Bids and Relay Systems

Some of the strong club systems are usually played with advanced slam-bidding tools. There are basically two kinds in modern systems, Italian-style asking bids and relay systems.

### Asking Bids

Asking bids have been around almost from the beginning of contract bridge. As early as 1936, Ely Culbertson invented a fairly complex system of asking bids, which, however, never became a popular success.

The Blue Team introduced asking bids in the *Roman Club*, and these inspired a set of asking bids in the original *Precision Club*. These, in turn, were developed further by Garozzo and Belladonna in the *Super Precision*, and by Sontag and Weichsel in *Power Precision*.

When I first added these systems, I skipped the asking bids and used natural slam bidding with cuebids and RKCB 1430 instead. The results that have been shown so far are based on the natural slam bidding versions.

Since I play asking bids myself with Anu Uus, I thought it would be interesting to implement a simple version of asking bids and add it to *Modern Precision*. I implemented control asking, support asking, and trump asking, or beta, theta, and gamma according to the *Super Precision* vocabulary.

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.04  | 1.03  | 971   | 1.55 | Asking Bids      |
| 0.04  | 1.01  | 952   | 1.55 | Modern Precision |
| -0.04 | -0.95 | -901  | 1.50 | 5533             |
| -0.05 | -1.08 | -1022 | 1.57 | 4444             |

Interestingly enough, we again see one of those results where a more complex and in principle better set of conventions does not translate into any practical advantage. The problems here seem to be that the occasions when the asking bids actually win over natural bidding are fairly few, and sometimes, when the responder has extra values, the asking bids are actually less efficient. The asker does not know about, for example, useful extra length in responder's hand and the responder does not know enough about asker's hand to go on.

The conclusion is that if you like asking bids and think that you bid well with them, continue to use them. They are as good as the best of natural bidding. If you like natural bidding methods better, there is no strong need to investigate asking bids.

## Relay Systems

The most advanced methods of slam bidding are relay systems. In principle, they all work in a similar way. First, one partner shows a strong hand and the other partner describes his distribution. The strong hand keeps bidding the next bid, the relay, and the partner describes his complete distribution in a few rounds. After this, the next relay asks for top controls, either aces and kings, or aces, kings, and queens. In the third phase, the responder shows the locations of these top controls, often by skipping the suits where they are located, so-called denial cuebids. The *Viking Club* instead asks for aces, kings, and queens with answers that are similar to color-rank-shape Blackwood.

There are many relay systems. One of the first was *Monaco*, by Pierre Ghestem. *Danish Relays* is a simpler system by Lars Blakset and Søren Christiansen. Ron Klinger uses quite complicated relays in the *Power System*, see Klinger (1993). Jon Baldursson developed *Ice Relay*, see Baldursson (1990). Glen Grøtheim created the *Viking Club Precision*, see Grøtheim (2000). Magnus Lindkvist, Björn Fallenius and Peter Fredin created a Swedish relay system in the nineties. Maybe the most well-known system is *Symmetric Relay*, which was developed by the Australian Roy Kerr and used in the *Moscito* system. One of the more complex systems is the *Ultimate Club*, created by Dave Cliff, Ron Rubin, Matt Granovetter and Michael Becker, see Becker, Ginsberg, Granovetter, and Rubin (1981). Nick Hughes describes the most modern Australian versions of symmetric relays for both strong club and forcing pass, see Hughes (2020).

Symmetric relays are usually combined with a *Precision*-style strong club and they are an intrinsic property of the *Moscito* system. When I first implemented these systems, I only used the first phase where the distribution was described. As we have seen, this did not result in anything that was better than natural bidding sequences. To test this further, I used the *Precision* version and implemented both the complete distribution phase, and also the showing of controls (aces and kings).

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.05  | 1.28  | 1155  | 1.55 | Modern Precision |
| 0.04  | 1.07  | 962   | 1.55 | Symmetric Relays |
| -0.05 | -1.08 | -975  | 1.50 | 5533             |
| -0.05 | -1.27 | -1142 | 1.57 | 4444             |

However, this did not produce better results. The reason seems to be the same as for asking bids. The relay system is used quite seldom, and there are only a few situations where there is an obvious gain.

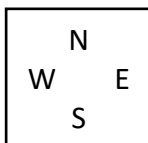
I also admit that it would be quite complex to implement all the reasoning needed to get a perfect application of the denial cuebids (quite often indirect, negative inferences).

Again, the conclusion seems to be that if you know and like your relay system, go ahead and use it. Every now and then it will allow you to bid a perfect slam that others will not find. But if you prefer natural bidding or the simpler asking bids, do not worry about not using relays. They will pay off too seldom to be worthwhile.

In the following deal, *Modern Precision* is the home team versus *Symmetric Relay*.

Jan 16, 2012      ♠ A K 3  
 Deal 13          ♥ 8 6  
 North            ♦ A 7 3  
 All                ♣ A K Q 5 3

♠ 9 5  
 ♥ 5 3  
 ♦ K Q 6 5 4  
 ♣ 10 8 7 2



♠ 7 6 4  
 ♥ A Q 9 2  
 ♦ J 10 9 8  
 ♣ 9 6

♠ Q J 10 8 2  
 ♥ K J 10 7 4  
 ♦ 2  
 ♣ J 4

| Symmetric<br>West | Precision<br>North | Symmetric<br>East | Precision<br>South |
|-------------------|--------------------|-------------------|--------------------|
| —                 | 1♣                 | pass              | 1♥                 |
| pass              | 2♠                 | pass              | 4♦                 |
| pass              | 4♠                 | pass              | 5♥                 |
| pass              | 5♠                 | pass              | 6♠                 |
| pass              | pass               | pass              |                    |

In the open room, North opens a strong club, South's 1♥ shows 8+ and five-card spades, and North jumps to 2♠ to show 21+ and support. South makes two control bids and then takes a chance in the slam.

| Precision<br>West | Symmetric<br>North | Precision<br>East | Symmetric<br>South |
|-------------------|--------------------|-------------------|--------------------|
| —                 | 1♣                 | pass              | 1♥                 |
| pass              | 1♠                 | pass              | 1N                 |
| pass              | 2♣                 | pass              | 2♠                 |
| pass              | 2N                 | pass              | 3♣                 |
| pass              | 3♦                 | pass              | 3♥                 |
| pass              | 3♠                 | pass              | 3N                 |
| pass              | 4♠                 | pass              | pass               |
| pass              |                    |                   |                    |

In the closed room, South shows his distribution. 1♥ shows 4+ hearts, 1N shows 4+ spades, 2♠ five-five in the majors, 3♣ longer clubs than diamonds, and 3♥ shows 5-5-1-2. North asks for top controls and South's 3N shows 0-2 controls. With three missing controls and a weak doubleton heart, North gives up on the slam try and since South does not know about North's extra strength, he cannot go on either. The *Modern Precision* team wins 13 imps.

| Deal | Open Room   | Closed Room | Diff | Prec | Sym |
|------|-------------|-------------|------|------|-----|
| 13   | 6S N = 1430 | 4S N +2 680 | 750  | 13   | -   |

## 21. Weak Opening Systems

The late seventies and early eighties saw a rapid development in artificial bidding systems. Strong pass systems became especially famous or infamous. After a few years of debates, most regions in the world created regulations that severely limited the use of the most artificial systems.

Today, the World Bridge Federation (WBF) classifies bidding systems in the following categories:

- Green – natural systems
- Blue – strong club and diamond systems
- Red – multi and transfer openings, and other types of artificial but non-yellow systems
- Yellow – highly unusual methods (HUM) systems

The HUM systems are defined by either having a pass that can be stronger than an opening bid on the one level or having opening bids on the one level that are weaker than pass. The other kind of bids that lead to a HUM classification are multi-style openings on the one level. Today's regulations make it impossible or at least very difficult to play HUM systems, except on the highest levels, and since people cannot train with these systems, in practice they are forbidden.

The WBF rules also limit the use of multi-meaning opening bids, so-called brown stickers. Quite illogically, Multi 2♣ and 2♦ are allowed, while other multi openings are limited. This means that, for example, the Triple-Multi two openings used by Auken-von Arnim, and Wilkosz 2♦ are forbidden except on the highest international levels.

Before we go into the jungle of highly unusual methods to face the beasts of the forcing pass (and the even more dangerous and smelly fertilizer openings), let me tell you a story of a dramatic bidding sequence. Supposedly, it is from a junior European or World Championship in the late seventies. It is based firmly on hearsay only, but I do not hesitate to tell it to you anyway.

It is actually one of most dramatic bidding sequences in history.

| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
|-------------|--------------|-------------|--------------|
| pass        | pass         | pass        | pass         |

It reminds us of the nerve-wracking battles between submarines during the cold war. Let us look under the surface.

| <b>West</b>       | <b>North</b>      | <b>East</b>       | <b>South</b>      |
|-------------------|-------------------|-------------------|-------------------|
| pass <sup>1</sup> | pass <sup>2</sup> | pass <sup>3</sup> | pass <sup>4</sup> |

- 1) 13+ any distribution. Supposedly West is from Poland.
- 2) A very quickly invented defense, “let us pass with all strong hands.”
- 3) East, also supposedly Polish, deviates from the system because South will have to bid.
- 4) Undiscussed, but how could you avoid passing after this auction?

If we choose to believe this story, the first observation is that strong pass systems were popular and well established in Poland, and on the top international level, for a short while in the late seventies and early eighties. It would be quite reasonable to assume that East-West were a pair of hot, upcoming Polish juniors playing *Big Beat*, *No Name*, *Suspensor*, or, most probably, *Regres*. All these systems share the base pass 13+, 1♦ 0-7, and others 8-12 with different distributions.

In fact, the strong pass systems were not called strong pass systems. They were called weak opening systems (WOS) by their inventors (Sławiński and Rumiński) and proponents. The basic idea is Rumiński’s “principle of maximum activity.” Open as often as you can and beat the opponents to a playable contract. Make them take the last guess, and (please) let it be wrong. This should be good according to the principle of non-symmetry of information value.

If you want to open as often as possible, you must face the fact that 50 % of the hands are in the 8-12 hcp range. With a *Culbertson Neanderthal* approach, you will only open 25 % of the time, while passing most of the other 75 % (except for a few weak two openings and higher preempts).

The weak opening systems approach is supposed to have two advantages. The first is greater aggressiveness. The second is, of course, putting the opponents under pressure in unusual situations.

The previous story does not tell whether “all pass” was a good result for either side.

## Advantages and Weaknesses of Weak Opening Systems

In principle, a weak opening system lets the opponents use their opening system only when one of them is the dealer. If the weak opening system is first, the opponents are defending, whether they want it or not.

First assume that your left-hand opponent opens 1♦ showing 0-7 and any distribution. You may have a good hand, but suddenly, all your usual agreements went out of the window. You are missing one essential bid for your minors, and if you are playing a strong club (or *Polish Club* or *Swedish Club*, or 5551), you now have to use some kind of defensive system instead.

At first sight, the situation seems better when they pass, but that is not completely true. They have shown 13+ but no suit or distribution, and you should be disturbing them, or even better, obstructing them. If you are playing *Culbertson Neanderthal* or 5533 and treat the situation as ready for an opening bid, chances are that you will pass and hand over the initiative to the opponents. Remember, 5533 systems are pretty lame.

However, the weak openers are paying for their aggressiveness. First, the weak opening (1♦ 0-7) is dangerous in two ways. With balanced hands, it may be too high, and whatever they do, they may be doubled and have to pay out a lot. Secondly, they have slightly preempted themselves. It is quite difficult to find methods that *combine* rescue bidding with constructive bidding when you have to start at 1♥ rather than pass.

Thirdly, the strong pass is susceptible to competition. We have seen that a strong club is less vulnerable than previously thought, and the same is probably true for a strong pass, but still, if the opponents can preempt on a high level, the strong passers have not shown a suit, and are in a more difficult situation than competing natural bidders at other tables.

In fact, there is a fourth disadvantage. In spite of opening all 8-12 hands, the weak opening systems may perform worse than standard weak two openings, since they open many of the 8-12 hands *at the one level*. We have seen that there is a definite advantage to opening weak hands, but so far, the results say that we should open them on the two level or higher, to preempt our opponents.

In summary, it is a complicated mess of potential advantages and disadvantages. The only way to find out which systems are better is to implement and test them.

The theoretically most interesting Polish weak opening system is *Delta*. The opening bids are as follows:

|      |      |                   |    |                           |
|------|------|-------------------|----|---------------------------|
| pass | 13+  | all distributions |    |                           |
| 1♣   | 8-12 | no shortness      | 2♣ | 8-12 short ♦ no major     |
| 1♦   | 0-7  | all distributions | 2♦ | 8-12 short ♣ no major     |
| 1♥   | 8-12 | short ♠           | 2♥ | 8-12 short ♣ 5+ hearts    |
| 1♠   | 8-12 | short ♥           | 2♠ | 8-12 short ♣ 5+ spades    |
| 1N   | 8-12 | short ♦ 5+ major  | 2N | 8-12 short ♣ 55+ in major |

“Short” means *singleton or void*. After an initial pass, responder uses the same method but with the point limits 0-5, 6-10, or 11+ instead.

We will not look at the continuations, but just note that there is a relay system where the stronger hand bids the next bid and the weaker hand describes itself, using artificial methods. The two creators of the Polish weak opening systems, Łukasz Ślawiński and Stanisław Rumiński, have a clear philosophy, where pass is used as the strong opening bid, because it is the lowest bid, and a weak responder describes his hand by bidding short suits, so as not to grab trump suits. Likewise, a weak opener bids short suits.

The *Delta* system is seldom played by itself. However, it is used as a response to the forcing pass and as a rebid system by the pass opener.

## Regres

During the seventies and eighties, Polish players invented a large number of weak opening systems, see Ślawiński and Rumiński (1974). However, the one that gained the reputation of being the best compromise between aggressive and reasonably non-dangerous was *Regres*.

### Opening Bids

|      |      |                   |    |                      |
|------|------|-------------------|----|----------------------|
| pass | 13+  | all distributions |    |                      |
| 1♣   | 8-12 | shortness         | 2♣ | 8-12 5+ ♣            |
| 1♦   | 0-7  | all distributions | 2♦ | 8-12 5+ ♦            |
| 1♥   | 8-12 | 3-4 ♠             | 2♥ | 8-12 55+ in ♣♥ or ♦♠ |
| 1♠   | 8-12 | 3-4 ♥             | 2♠ | 8-12 55+ in ♣♠ or ♦♥ |
| 1N   | 8-12 | 5+ major          | 2N | 8-12 55+ in ♣♦ or ♥♠ |

*Regres* has the classical weak opening systems base pass 13+, 1♦ 0-7, and the rest 8-12. After pass, the *Delta* responses are used. Shortness means a singleton or void. The 1♣ opening bid takes care of all hands with a shortness, and the 1♦ response is a strong relay, and then the *Delta* openings are again used for opener's second bid.

*Regres* also uses another kind of opening bids, based on the non-symmetry of information. The 1♥ and 1♠ openings show 3-4 cards in the suit. Responder usually knows whether the suit is a potential trump, but the opponents do not. The opened suit may in fact be *their* optimal trump suit.

Before we present the results, we must also look at the defense. First, I implemented a very simple defense that was popular in Sweden in the early eighties. Against the weak 1♦, double if you wanted to open 1♣ or 1♦, and use the rest of your opening bids otherwise. This defense does not aim to punish the weak opening but will catch it now and then.

Before running the tests, I thought that *Regres* would either be clearly superior to all the other systems, or clearly inferior.

| Board | Match | Imps  | Mean | System      |
|-------|-------|-------|------|-------------|
| 0.08  | 1.86  | 1174  | 1.50 | 5533 simple |
| 0.04  | 0.95  | 601   | 1.57 | 4444 simple |
| -0.12 | -2.82 | -1775 | 2.21 | Regres      |

Interestingly enough, the best weak opening system does not perform well. In fact, it loses by rather high numbers. The main problem seems to be that the bidding after 1♦ and some of the 8-12 openings is too imprecise. Also, *Regres* misses weak two opportunities when it opens at the one level with 8-12.

These results were against a simple defense. In order to compensate for all the second-guess situations a weak opening system will put its opponents in, Jeff Rubens described the ideas behind an advanced defensive system in a series of articles in the *Bridge World*, see Rubens (1986).

The general idea is that we need to be able to double the weak openings for penalties now and then, so double shows 15+ and at least three cards in the opened suit and sets "penalty double mode." The other overcalls are fairly strong overcalls, based on transfers. There is no reason to

interfere with weak hands, because the stronger the weak opener's partner, the more trouble they have with performing a constructive auction. Rubens's defense is called JRDEF.

| Board | Match | Imps  | Mean | System     |
|-------|-------|-------|------|------------|
| 0.06  | 1.50  | 944   | 1.50 | 5533 JRDEF |
| 0.03  | 0.60  | 381   | 1.57 | 4444 JRDEF |
| -0.09 | -2.10 | -1325 | 2.21 | Regres     |

Surprisingly, the simple defense is better than the advanced one. So much for trying to double your opponents. It is better to worry about your own bidding and let the opponents offer you unexpected gifts every now and then.

In the following deal, *Regres* is the home team versus *4444*.

# Weak Opening Systems

Jan 11, 2012

Deal 3

South

EW

♠ K 2

♥ K Q 2

♦ A K 9 7 6

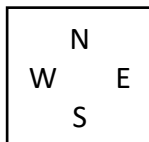
♣ K 8 2

♠ A J 6 3

♥ A 5 3

♦ 8 4 3

♣ J 5 4



♠ Q 5

♥ J 8 7 6 4

♦ Q J 5

♣ 10 9 3

♠ 10 9 8 7 4

♥ 10 9

♦ 10 2

♣ A Q 7 6

4444

**West**

—

pass

pass

Regres

**North**

—

2♦

4444

**East**

—

pass

Regres

**South**

1♦

pass

In the open room, South opens with the famous (or infamous) weak 1♦, showing 0-7 with any distribution. It is not so easy to design a response system, which allows for both constructive and destructive bidding. In *Regres*, 1N shows 20+ while other bids on the lowest level show 12-19 (and 1♥ and 1♠ may sometimes be made on a three-card suit). In this case, North shows 12-19 and five diamonds and North-South misses their game.

Regres

**West**

—

1♠

pass

4444

**North**

—

3N

Regres

**East**

—

pass

4444

**South**

pass

pass

In the closed room, West opens 1♠, showing 8-12 and 3-4 spades. North has a stopper and take the chance on 3N. The *Regres* team loses 7 imps.

| Deal | Open Room |     | Closed Room |     | Diff | Regres | 4444 |
|------|-----------|-----|-------------|-----|------|--------|------|
| 3    | 2D S +2   | 130 | 3N N =      | 400 | -270 | -      | 7    |

You may argue that South in the open room should bid once more, and that North in the closed room takes a chance and is lucky, but the fact remains that the 1♦ opening is sometimes difficult for its own side.

## Major

Let us test another WOS, *Major*. I chose this system, not because it is a contender for best WOS (in fact, Sławiński and Rumiński describes it as “certainly difficult to use”), but because it is built on the interesting idea of showing both majors with the first opening bid, and because I played it successfully in the eighties with Håkan Wolgé as partner.

### Opening Bids

pass 13+ all distributions

1♣ 8-12 0-2 ♥, 0-2 ♠ 2♣ 8-12 5+ ♥, 3-4 ♠

1♦ 0-7 all distributions 2♦ 8-12 3-4 ♥, 5+ ♠

1♥ 8-12 3-4 ♥, 0-2 ♠ 2♥ 8-12 5+ ♥, 0-2 ♠

1♠ 8-12 0-2 ♥, 3-4 ♠ 2♠ 8-12 0-2 ♥, 5+ ♠

1N 8-12 3-4 ♥, 3-4 ♠ 2N 8-12 5+ ♥, 5+ ♠

*Major* uses the typical base of pass 13+ and 1♦ 0-7. The other opening bids show suit length information about both majors. Responder’s next bid is a strong relay asking for further information. There is a complete relay system that can find out opener’s strength, distribution, and location of honors. Other responses than the relay are non-forcing natural invitations (the lowest corrections are to play).

| Board | Match | Imps | Mean | System |
|-------|-------|------|------|--------|
| 0.04  | 0.98  | 589  | 1.50 | 5533   |
| 0.02  | 0.58  | 350  | 1.57 | 4444   |
| -0.07 | -1.56 | -939 | 2.90 | Major  |

It is a bad day for the weak opening systems. *Major* also performs worse than the natural systems 5533 and 4444. It is clear that the advantages of the aggressive 8-12 openings do not compensate for the extra problems created by the system base with the weak 0-7 1♦ and the lack of weak two openings.

| Board | Match | Imps  | Mean | System      |
|-------|-------|-------|------|-------------|
| 0.10  | 2.32  | 2781  | 1.58 | Polish Club |
| 0.03  | 0.65  | 786   | 1.50 | 5533        |
| 0.01  | 0.33  | 393   | 1.57 | 4444        |
| -0.07 | -1.63 | -1951 | 2.21 | Regres      |
| -0.07 | -1.67 | -2009 | 2.90 | Major       |

As you can see, the *Polish Club* performs considerably better than the weak opening systems that were previously very popular in Poland.

## Magic Diamond

In the early eighties, the *Carrot Club* was equipped with a *Swedish Club* opening, and then the meanings of pass and 1♦ were interchanged, resulting in a system named *Carrotti* (the name sounds like “Carrot 80” in Swedish). When system regulations stopped the weak 1♦, the system was once again remade, this time into the *Magic Diamond*. This is not a strong pass system, but it is a weak opening system, so I decided to include it in this chapter.

*Carrotti* was developed by Sven-Olov Flodqvist and the original *Magic Diamond* by Hans Göthe and Lars Andersson. The newest version, *Magic D-light*, was developed by Sven-Olov Flodqvist and Tomas Brenning, and it is the version I have implemented, see Flodqvist and Brenning (2008).

## Opening Bids

|    |                          |    |      |                |
|----|--------------------------|----|------|----------------|
| 1♣ | 12-16 unbal or 15-17 bal | 2♣ | 8-11 | 5+ clubs       |
| 1♦ | 17+ all distributions    | 2♦ | 8-11 | 5+ diamonds    |
| 1♥ | 8-11 4+ hearts           | 2♥ | 6-11 | 55+ ♣+♥ or ♦+♠ |
| 1♠ | 8-11 4+ spades           | 2♠ | 6-11 | 55+ ♣+♠ or ♦+♥ |
| 1N | 12-14 balanced           | 2N | 6-11 | 55+ ♣+♦ or ♥+♠ |

The 1♣ opening takes care of all unbalanced hands of 12-16 and 15-17 balanced. The 1♦ response is either 0-7 or 12+ with any distribution, while the other responses are similar to the opening bids. After 1♣ – 1♦, the opener’s rebids are similar to the opening bids. The 1♦ opening is strong, with 1♥ as weak, and other responses artificial transfers. The philosophy behind the system is to bid naturally and aggressively, especially after the 8-11 openings.

| Board | Match | Imps  | Mean | System        |
|-------|-------|-------|------|---------------|
| 0.09  | 2.09  | 1255  | 1.50 | 5533          |
| 0.07  | 1.71  | 1027  | 1.57 | 4444          |
| -0.16 | -3.80 | -2282 | 2.66 | Magic D-light |

This is definitely a sad result. *Magic D-light* scores very badly against the natural systems. I was surprised by this.

However, I looked into the simulations, and there are several reasons. *Magic D-light* suffers from the lack of standard weak two openings, and the aggressive one-level openings do not make up for this. The strong 1♦ is a bit clumsier than a strong 1♣, and we have already seen that the weak notrump is a liability. However, the main problem is the artificial 1♣ opening. It is difficult to manage and seems to lead to bad scores both by itself and in competition. In many deals, other systems have shown a suit in the 12-16 range and performs better in the competition for part scores and games. Finally, when responder has no support for the openings in one of a major, the system sometimes ends up in trouble looking for a reasonable part score.

It seems that the idea of opening aggressively with 8-11 and a four-card major (as in *Magic D-light*), or with 8-12 and a three-card major (as in *Regres*), simply is not as good as might have been expected from a theoretical standpoint.

*Magic D-light* is not a HUM system, but the implemented version has three brown stickers (2♥, 2♠, and 2N). There is also a “red” version with natural two-suited weak twos and 2N 55+ in the minors.

In the following deal, *Magic D-light* is the home team versus 5533.

# Weak Opening Systems

Jan 02, 2012

Deal 5

North

NS

♠ A J 7 4 2

♥ 6

♦ 10 6 2

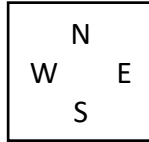
♣ K J 9 8

♠ 9 6

♥ K 7 5 2

♦ K J 9 4

♣ 10 6 2



♠ K 10 5

♥ A J 10 9 8 4

♦ 5

♣ A Q 5

♠ Q 8 3

♥ Q 3

♦ A Q 8 7 3

♣ 7 4 3

5533

**West**

—

3♥

pass

Magic

**North**

1♠

pass

pass

5533

**East**

2♥

4♥

Magic

**South**

pass

pass

In the open room, *Magic D-light* has a schoolbook defensive auction to reach game. When West supports hearts, East can add distributional points.

Magic

**West**

—

pass

pass

X

3♥

5533

**North**

pass

pass

2♠

pass

pass

Magic

**East**

1♣

2♥

pass

3♣

pass

5533

**South**

1♦

pass

pass

pass

In the closed room, *Magic D-light* has a longer auction, but misses the game. The 1♣ opening shows 12-16 unbalanced or 15-17 balanced and West's pass shows 0-10 points. East's 2♥ is natural with 15-16 and now *Magic D-light* cannot reach the game anymore, even when West balances. The *Magic D-light* team loses 6 imps.

| Deal | Open Room |      |      | Closed Room |      | Diff | Magic | 5533 |   |
|------|-----------|------|------|-------------|------|------|-------|------|---|
| 5    | 4H        | E +1 | -450 | 3H          | E +2 | -200 | -250  | -    | 6 |

## Super Spade

Finally, let us look at a highly unusual system with a completely different basic idea. This is the *Super Spade*, invented by Einar Bergh and Pontus Svinhufvud, Sweden, in the late seventies.

The main idea in this system is that pass shows 8+ and at least four spades, while 1♣ shows 8+ and at least four hearts. With a major, you start low, which means that hands with minors are open artificially and relatively high, to preempt the opponents' majors.

The system is available in at least three versions, the *Super Spade*, the *Small Säfte Spade*, and the *Small, Happy Säfte Spade*. I chose to implement the small, happy version. Säfte is the name of a countryside town in Sweden, where the developers lived in the eighties.

### Opening Bids

|      |       |                   |    |                     |                    |
|------|-------|-------------------|----|---------------------|--------------------|
| pass | 8+    | 4+ spades         |    |                     |                    |
| 1♣   | 8+    | 4+ hearts         | 2♣ | 8-12                | 4+ ♣ and 5+ ♥ or ♠ |
| 1♦   | 0-7   | all distributions | 2♦ | 8-12                | 4+ ♦ and 5+ ♥ or ♠ |
| 1♥   | 8+    | unbalanced        | 2♥ | 8-12                | 4+ ♥ and 5+ ♠      |
| 1♠   | 8-12  | balanced          | 2♠ | solid six-card suit |                    |
| 1N   | 13-18 | balanced          | 2N | 19-21               | balanced           |

Pass and 1♣ take care of almost all hands with four-card majors, so the other opening bids show at most 33 in the majors (except for 2♣, 2♦, and 2♥).

After pass and 1♣, responder bids 1♦ with 0-7. After pass, responder bids 1♣ with 4+ hearts. In this way, bidding modules reappear in many places in the system.

Some of the opening bids have narrow point ranges, while others have very wide ones. The two-level opening bids are mostly weak two-suiters. The response system after the weak 1♦ is also different. 1♠ is 19+ while 1N is 15-18 balanced or semi-balanced. It is difficult to predict whether this system will score well or badly.

| Board | Match | Imps | Mean | System             |
|-------|-------|------|------|--------------------|
| 0.08  | 1.91  | 1146 | 2.09 | <b>Super Spade</b> |
| -0.03 | -0.73 | -437 | 1.50 | 5533               |
| -0.05 | -1.18 | -709 | 1.57 | 4444               |

Interestingly, we have found a HUM system that beats 5533 and 4444 by a clear margin. Obviously, the openings based on minors contribute to the aggressiveness of the system, while the low major openings still mean that our side can compete later on.

| Board | Match | Imps  | Mean | System             |
|-------|-------|-------|------|--------------------|
| 0.13  | 3.05  | 3659  | 2.09 | <b>Super Spade</b> |
| 0.03  | 0.62  | 745   | 1.50 | <b>5533</b>        |
| 0.01  | 0.33  | 393   | 1.57 | <b>4444</b>        |
| -0.08 | -1.90 | -2279 | 2.21 | <b>Regres</b>      |
| -0.09 | -2.10 | -2518 | 2.90 | <b>Major</b>       |

A match with our three HUM systems confirms the previous results. *Major* and *Regres* are not as good as the natural systems, while the *Super Spade* is clearly better.

With the *Super Spade* we have found a HUM system, which is outperforming natural systems. If the world wanted bridge bidding to be as good as possible, the *Super Spade* should not have been outlawed.

In the following deal, *Super Spade* is the home team versus 5533.

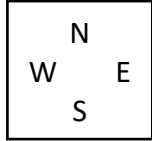
|              |             |
|--------------|-------------|
| Jan 12, 2011 | ♠ 7 5       |
| Deal 1       | ♥ J 7       |
| North        | ♦ Q J 8 5 2 |
| None         | ♣ 9 6 5 2   |

|             |  |             |
|-------------|--|-------------|
| ♠ 10        |  | ♠ Q J 9 6 3 |
| ♥ Q 6 5 2   |  | ♥ A K 9 4   |
| ♦ K 7 6 4 3 |  | ♦ A 10 9    |
| ♣ A 8 7     |  | ♣ 10        |

|             |
|-------------|
| ♠ A K 8 4 2 |
| ♥ 10 8 3    |
| ♦ —         |
| ♣ K Q J 4 3 |



|             |              |             |              |
|-------------|--------------|-------------|--------------|
| 5533        | Super Spade  | 5533        | Super Spade  |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | 1♦           | 1♠          | pass         |
| 1N          | pass         | pass        | pass         |

In the open room, North opens a 0-7 1♦. East's 1♠ is a standard five-card spade opening, but in the second round, East erroneously decides to pass the negative notrump.

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| Super Spade | 5533         | Super Spade | 5533         |
| <b>West</b> | <b>North</b> | <b>East</b> | <b>South</b> |
| —           | pass         | pass        | 1♠           |
| 2♦          | pass         | 2♥          | pass         |
| 3♥          | pass         | 4♥          | pass         |
| pass        | pass         |             |              |

In the closed room, the *Super Spade* has a better auction. East's initial pass shows 8+ and at least four spades and West's 2♦ is 8-12 and at least five diamonds. After this, it is easy for East-West to bid the heart game. The *Super Spade* team wins 8imps.

| Deal | Open Room |     | Closed Room |      | Diff | Spade | 5533 |
|------|-----------|-----|-------------|------|------|-------|------|
| 1    | 1N W =    | -90 | 4H E =      | -420 | 330  | 8     | -    |

## 22. Negative Effects of Systems Regulations

New systems and conventions have been invented since the beginning of contract bridge, and, for almost as long, systems and conventions have also been prohibited by regulations. Of course, there are arguments for both sides. On the one hand, bridge players should be free to invent and play new conventions – that is a primary part of the game contract bridge. On the other hand, life will be too difficult for players if they have to meet a large number of completely new and artificial conventions.

One argument is that complex, artificial systems should be allowed only in top level games, while beginners and less experienced players should be protected. This idea may seem fine, but in real life it does not work as well as you might think. If a pair wants to play a new system, they need to practice before they enter the real competition. In the nineties, artificial systems were forbidden on lower levels in almost all jurisdictions, and actually this led to their dying out. Personally, I think that this means that if you forbid something except on the highest level, you can as well forbid it on that level too.

Another argument has been about whether highly artificial methods really have any intrinsic value or are played just to confuse the opponents. The results in this book show that some highly unusual methods and some brown stickers really are technically superior, or at least good enough compared to current standard bidding, and that they deserve to be allowed and used. Among these are:

- Multi in pair competitions, forbidden in all ACBL charts
- Transfer openings (like in *Moscito*), forbidden in all ACBL charts
- Wilkosz 2♦, forbidden in all ACBL charts and all lower WBF levels
- Triple Multi, forbidden in all ACBL charts and all lower WBF levels
- *Super Spade*, forbidden in all ACBL charts and all lower WBF levels

We have seen that Multi wins over standard weak two openings, and that Triple Multi is even better. We have also seen that it is not difficult to defend against Multi. I think that it should be allowed on all levels.

From a technical point of view, it makes no sense that Multi is allowed by the WBF, while Wilkosz 2♦ is not.

Finally, we have seen that the *Super Spade* performs better than 4444 and 5533. At the same time, its structure is completely different from standard systems, and it is difficult to play against. Since the *Super Spade* exists, there must be a number of other HUM system designs that will also be better than today's standard systems.

If we want bidding to develop, we must find a way to allow new, highly artificial systems and conventions to be used in practical play on more levels than just the top elite ones. Otherwise, we are working against the development and improvement of the game of contract bridge. Some kind of intelligent combination between allowing and limiting artificial systems is necessary. Just forbidding really good ones must be the wrong way to go into the future of bridge.

## 23. Final Results of the Comparisons

We have reached the end of the competitions. Some systems have done well, while others can always have a beer in the bar. Let us look at the overall top list of contestants, in one final comparison.

First, I selected the systems that have performed considerably better against 4444 and 5533 in previous tests and put them all together. The *Blue Club*, *Scanian*, and *2/1* all have been given five-card weak two openings, and *Cottontail* opens 11-15 and has received a strong notrump. *Modern Precision* has a four-card 1♦ and Ekrén 2♦. The *Scanian* system is *2/1* with 2♣ containing 18-21 balanced and Multi 2♦. This is to give the fairest comparison between the best systems.

| Board | Match | Imps  | Mean | System           |
|-------|-------|-------|------|------------------|
| 0.11  | 2.58  | 3867  | 3.77 | Cottontail Club  |
| 0.04  | 0.95  | 1426  | 2.71 | Blue Club        |
| -0.02 | -0.45 | -670  | 2.91 | Modern Precision |
| -0.03 | -0.67 | -998  | 2.09 | Super Spade      |
| -0.05 | -1.14 | -1716 | 2.49 | Scanian Simple   |
| -0.05 | -1.27 | -1909 | 2.91 | 2/1 Bergen       |

Note that there is almost a four-imp difference between the best natural and the best strong club system. Also, a HUM system is among the top contestants.

Now let us look at the bottom part of the list. Here I have added standard 4444 and 5533 with six-card weak two openings to show the scores of the systems that perform least well.

| Board | Match | Imps  | Mean | System        |
|-------|-------|-------|------|---------------|
| 0.13  | 3.09  | 4633  | 1.50 | 5533          |
| 0.11  | 2.67  | 4012  | 1.57 | 4444          |
| -0.02 | -0.56 | -836  | 0.99 | Culbertson    |
| -0.04 | -1.06 | -1591 | 2.21 | Regres        |
| -0.08 | -1.93 | -2891 | 1.72 | Roman Club    |
| -0.09 | -2.22 | -3327 | 2.66 | Magic Diamond |

Finally, here is a comparison between the winner, *Cottontail Club*, and standard 4444 and 5533 with six-card weak two openings.

| Board | Match | Imps  | Mean | System          |
|-------|-------|-------|------|-----------------|
| 0.26  | 6.22  | 3731  | 3.77 | Cottontail Club |
| -0.13 | -3.02 | -1810 | 1.50 | 5533            |
| -0.13 | -3.20 | -1921 | 1.57 | 4444            |

This last result shows that in an environment where a majority of your opponents use standard systems like 4444 and 5533, you can gain nine imps per match by choosing the best system. And you will have this advantage in every match, every time you play, year after year, or at least until your opponents change their systems.

## 24. Validating the Results with Pairs Competitions

In this book, we have seen quite a few interesting and surprising results. One obvious question is how reliable they are. It would be great if I could compare the results with human bidding performance.

The problem was that I did not have enough match results from human play, so I could only compare the systems against each other, not against human players. However, the set of 7,200 test deals actually comes from pairs competitions played at the bridge club of Lund, and the PBN files contain the match point results of each pair in each competition. These could be used to compare the implemented systems with the human performance. Each competition had at least 24 deals and at least 20 pairs.

For each meeting between two implemented systems, there is a result, and it is straight-forward to look it up in the human result table for the deal and award match points. These points can be summed to give a match point percentage result. However, if one system scores 55 %, the other will, of course, score 45 % since they are only competing against each other. The result will depend on the performance of the other system, not the humans.

I let the software select all deals where only one side made a bid other than pass. Instead of the double-dummy play result, this algorithm used the average result achieved by the human players, calculated the score and number of match points, and summed up the total percentage. In this way, I could get a comparison with humans, but only for *non-competitive auctions* in the pair competitions.

It is generally thought that being declarer gives an advantage, since it is easier to declare than to defend. The calculation above showed that the declarer made 0.2 tricks more on average than the perfect play by the double-dummy analysis.

Back in 2010 to 2013, the bridge club of Lund was one of the better clubs in southern Sweden. There were a few grand masters, some high-level club players, some more average club players, and some beginners. The average opposition was no way near an international elite level, but I would say that it was quite good for a Swedish bridge club.

Here are the results of a shorter test involving some of the better systems. They have been bid and compared with the actual results in the competitions.

| Place | Percent | System           |
|-------|---------|------------------|
| 1     | 50.94   | Super Spade      |
| 2     | 50.70   | Cottontail Club  |
| 3     | 50.69   | Scanian Simple   |
| 4     | 50.45   | 4444             |
| 5     | 50.00   | Modern Precision |
| 6     | 49.73   | 5533             |

As we can see, some of the systems performed a bit above average. A medium size pairs competition is normally won by 55 – 65 %, but the bidding provides only part of the difference, maybe around 1 – 2 % at the most. For this reason, I would say that the test shows that the systems bid similar to or better than most club players.

This implies that the system and natural bidder algorithms are good enough for the results presented in this book to be reliable.

Since this was a shorter test, the actual results for each system are a bit random and unreliable.

As a final effort, I implemented a pairs competition algorithm that could play competitions between the implemented systems. One competition consists of a Howell barometer with six boards, 12 pairs (that is, 12 systems), and 11 rounds. The difference from an ordinary competition is that each pair plays 24 deals per round and goes through 300 complete competitions, resulting in  $11 * 24 * 300 = 79,200$  deals in the test.

I selected the 30 most successful systems and played them against each other in several groups and re-sorted them until I could create a complete pairs competition ladder. The results between the best 12 systems are as follows:

## Validating the Results with Pairs Competitions

| pl        | no | points    | %                | system name               |
|-----------|----|-----------|------------------|---------------------------|
| 1         | 3  | 401416    | 50.68            | Cottontail 16+            |
| 2         | 12 | 397498    | 50.19            | 2/1 Bergen W5 5-11        |
| 3         | 4  | 397354    | 50.17            | Modern Precision 4D Ekrén |
| 4         | 2  | 396325    | 50.04            | Cottontail 15+            |
| 5         | 9  | 395991    | 50.00            | Scanian Simple W5 5-11    |
| 6         | 1  | 395791    | 49.97            | Blue Club W5              |
| 7         | 10 | 395635    | 49.95            | Standard American W5 5-11 |
| 8         | 6  | 395117    | 49.89            | Modern Standard W5 5-11   |
| 9         | 11 | 394995    | 49.87            | Swedish Club              |
| 10        | 5  | 394670    | 49.83            | Modern Precision          |
| 11        | 8  | 393718    | 49.71            | Polish Club Multi         |
| 12        | 7  | 393490    | 49.68            | 4444 HSCD                 |
| 12 pairs, |    | 264 deals | 300 competitions |                           |

The results from the competition between the systems in the second-best group are as follows:

| pl        | no | points    | %                | system name           |
|-----------|----|-----------|------------------|-----------------------|
| 1         | 10 | 397822    | 50.23            | Polish Club           |
| 2         | 12 | 397321    | 50.17            | Super Spade           |
| 3         | 9  | 397093    | 50.14            | Moscito               |
| 4         | 4  | 396456    | 50.06            | Five-Card Majors 5542 |
| 5         | 1  | 396430    | 50.05            | Auken-von Arnim       |
| 6         | 5  | 396253    | 50.03            | Five-Card Majors 5551 |
| 7         | 11 | 396229    | 50.03            | 5533                  |
| 8         | 7  | 396037    | 50.00            | 4444                  |
| 9         | 8  | 395801    | 49.97            | 4444 CDHS             |
| 10        | 6  | 395451    | 49.93            | Major                 |
| 11        | 2  | 394700    | 49.84            | Classic Precision     |
| 12        | 3  | 392407    | 49.55            | Fantunes              |
| 12 pairs, |    | 264 deals | 300 competitions |                       |

The conclusion is that pairs competition results do not differ very much from team match results. Some of the natural systems, such as *2/1* placed a bit better, and the *Blue Club* performed a bit worse. We can also conclude that the differences between the systems' results seem to be smaller in pairs than in teams. This means that good bidding may be more important in teams, and this is the reason that I chose the match tests as the main method in this book.

## 25. Reader Quiz Solutions

If you did the reader quiz before you started reading the results, you can now calculate how well you guessed the truth. Here are the answers.

### **Which system is better, four-card or five-card majors?**

Five-card majors score slightly better than four-card majors, which in turn are better than 5542 and 5551. But these are all very small differences, inside the limit of uncertainty.

### **Is 2/1 better than *Standard American Yellow Card* (SAYC)?**

Yes, it is slightly better. But again, it is only a small difference.

### **Which is better, weak or strong notrump?**

Strong notrump is clearly better than weak notrump. The reason the weak notrump still survives could be explained by sub-standard defensive bidding skills.

### **Which are better, natural or strong club systems?**

Again, the result is quite obvious. Modern strong club systems are clearly better than the natural ones.

### **Which are better, constructive six-card weak two openings, or wild and obstructive five-carders?**

This is the strongest of all the results. The wild and obstructive weak openings are superior.

### **Which conventions gain a lot of points for you? How about Bergen raises, checkback, Cole, and Gazzilli?**

Strangely enough, none of these conventions are much better than a simple natural standard. If you find that they make bidding easier, go ahead. But they are not superior in any objective way.

### **Which is the best notrump defense?**

Surprisingly, the wild DONT is best, and the others are fairly equal.

**Which is the best defense against a strong one club?**

The more constructive defenses, like Suction, Trash, and Truscott are good but do not threaten a strong club opening. Wilder defenses, like IDAC or Nonsense, are simply quite bad for their own players.

**Can you disturb a strong club to make the system suffer?**

No, not really. The best is to bid constructively when you can.

**Are modern systems better than good, old *Culbertson*?**

Yes, they are noticeably better.

**Were the Italian Blue Team systems good or bad?**

The correct answer is yes and no. The *Roman Club* was actually quite bad, while the *Blue Club* was and is really good.

**Were the highly artificial systems of the eighties superior, or did they only gain by confusing the opponents?**

Again, the answer depends on the actual system. The Polish *Regres* is actually not as good as you may expect, while the Swedish *Super Spade* is indeed good. On a theoretical level, it was wrong to forbid them.

**Are relay-based systems superior to non-relay systems?**

Natural bidding, asking bids, and relays are surprisingly equal in value.

**Which is the world's best bidding system type?**

It seems like a strong one club system with strong notrump and aggressive weak two openings is the best type of system.

**Which is the world's best bidding system?**

The strongest system found so far is the author's *Cottontail Club*. However, it must be possible to design even better strong club systems, and maybe also artificial strong pass systems. Among the common systems, it is some type of *Modern Precision*, which is slightly better than the best natural system 2/1.

### **What Did the Author Believe Previously?**

Finally, let me reveal my own assumptions about good and bad systems, which I had before all these computations.

I had no strong idea about four-card versus five-card majors, but I clearly preferred four-card openings. In fact, I have never played 5533 or 5542 seriously myself. I did believe that 2/1 was better than SAYC. But I also believed in weak notrump.

I felt rather sure that strong one club systems were better than natural ones and I definitely preferred wild weak two openings. I also thought that Bergen raises, checkback Stayman, Cole, and Gazzilli all were better than simple natural. I prefer DONT against notrump but did not believe that it would be the best defense, and I realized that the defenses against a strong club were probably not efficient.

I thought that modern systems were better than *Culbertson* and that the Blue Team systems were *all* rather bad. I actually thought that the Polish pass systems were really good while the *Super Spade* was doubtful. I was quite surprised when it was the other way around.

I definitely thought that asking bids and relays would be better than natural, which was wrong, but I also believed that a strong one club system would be among the best, which was correct.

Finally, I did not believe that the *Cottontail* would be best. Of course, our previous version opened from 10 points and had a 10-12 notrump opening non-vulnerable. Now we have changed to 11-15 and to a strong 16-18 one notrump in all situations.

So half of what I believed was right and half of it was wrong. This book is based on computational facts, not my previous guesses and opinions. Anu and I trust the results and we have chosen to go for what we now think is the best system.

## 26. Conclusions

Greg Matula was right when he wrote that there is no objective way of knowing whether one system or convention is better than another, and he has been right so far. But now it has changed. The computer simulations presented in this book are facts, not subjective judgements.

First of all, I hope that the presentations have been entertaining. At least, there have been some surprises (both positive and negative). For example, the *Blue Club* was in fact a very good system, and a revolutionary jump ahead, compared to *Culbertson*. On the other hand, the *Roman Club* was doubtful, and now we know it. For some people, the fact that checkback Stayman and Gazzilli do not improve on the simple beginner's natural bidding must be a disappointment.

Secondly, I hope that the book will inspire the reader to try new systems and conventions. A strong club is easier and more fun to bid with than a natural system with wide-range openings. Slam bidding is easier after a strong 1♣ than after a self-preempting 2♣ and there is an imp bonus, so why not try it?

I also expect several readers to protest against the results (especially those who play a system or convention which has not scored very well). Why doesn't 5542 score better? Surely, Gazzilli must be more useful than this book says. Otherwise, why would so many people play it?

The only thing I can say is that all the systems and conventions are carefully implemented and then tested and validated in several different ways. And if there are any remaining bugs, most of them will even out.

If you really think differently than these results, you should be aware of the amount of testing you need to go through to give a serious argument. For example, if you truly believe that a weak notrump is as good as or better than a strong one, please try it out. Play weak notrump in 50 % of your competitions and strong in the other 50 %, analyze the deals where your side opened one notrump, and sum up and save the statistics (imps or match points gained). After you have played 14,400 deals, you have the same size test as in this book. But that is 600 evenings with 24 deals each. If you play three times a week, it will take you four years.

A reader may feel that some specific presented result is wrong, based on a much smaller number of deals, but that reader is most likely wrong. I

have run tests on a set of 240 deals (ten 24-deal competitions), and the inherent randomness of bridge means that any system can score ten imps more or ten imps less, regardless of its merits. The better system will be the loser in some of these shorter tests, and vice versa.

The main results concerning systems and conventions are as follows:

- Careful point calculations and re-evaluations are most important.
- Aggressive five-card weak two openings are superior to conservative six-carders with no four-car side suits.
- Strong club systems are better than natural systems.
- Strong notrump is better than weak notrump.
- Canapé is good. The two best-scoring systems both use it.
- At least one HUM system is among the best. We should allow HUM systems to be played at higher and some medium levels.

In many cases the differences between systems and conventions are rather small. For example, 5533 scored a bit better than 4444 *HSCD*. But the difference is so small that other factors will definitely matter more. In pairs, 4444 *HSCD* actually places ahead of 5533. In these cases, choose the system and conventions that you already know, understand well, have trained, and that you like and have confidence in. In this way, the human factors will score better for you.

Finally, I am certain that there are remaining errors in the system definitions and bugs in the program code. Since I am an experienced programmer, I would be crazy to believe otherwise. However, there are a lot of developers out there and many good bridge programs. Others are welcome to repeat the tests and maybe get partially different results. That would be great. This is a new era in bridge. Let us work together to improve the game even more.

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Bridge players constantly argue about the ‘best’ bidding systems and conventions. Strong Club or Natural? With or without relays? Standard or 2/1? Weak or strong notrump? Was the Blue Club system really better than the natural systems in the 1950s and 1960s? Is two-way Stayman as good as Stayman and transfers? Disciplined or undisciplined weak twos — which work better? And many, many more...

Well, now we have the answer to those questions, provided by exhaustive analysis and the results of computer simulations. And not only which is better, but also by how much, typically tested in thousands of 24-board IMP matches.

Playing the same deals via the same AI software eliminates the variable of player skill, and bidding methods are judged solely on their own merits. It is as objective a test as modern technology can provide.

And the results may not be what you would expect.



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