

Prezada senhora Leda Pain,

Em conformidade com o procedimento de apuração das denúncias apresentadas contra a senhora, considerando ainda que as defesas efetuadas nas fases anteriores não foram consideradas suficientes para a comprovação de sua inocência, procedemos a terceira fase do processo em que contratamos o especialista internacionalmente reconhecido, Mr. Nicolas Hammond, o qual inclusive foi recomendado pela senhora em sua defesa, para que se fizesse uma análise aprofundada e tecnicamente embasada do caso.

O desenvolvimento dessa terceira fase de apuração se deu conforme previsto nos procedimentos da FBB e de conhecimento da senhora, tanto pelo fato de ser pública quanto pelo fato de ter lhe sido detalhada quando da apresentação do relatório da segunda fase.

Em breve síntese, antes de se iniciar a presente fase, houve um imenso trabalho de levantamento e análise de informação, conforme se segue:

1. Inicialmente foram denunciadas pela comunidade do bridge 15 mãos ao Comitê de Ética. Após análise inicial, o Comitê descartou duas das denúncias e considerou as demais 13 suspeitas, de forma que as encaminhou para a sua defesa. Após a resposta, a conclusão da análise do Comitê de Ética foi a seguinte:
  - a. As bolsas 1 e 3 (numeração utilizada pela Leda), após reanálise das mãos e de suas explicações foram comiseradas **não suspeitas**.
  - b. As bolsas 2, 4, 5, 6, 7, 8, 9, 10, 11, 12 e 13 foram consideradas **suspeitas**.
2. A Diretoria da FBB após verificar a conformidade dos atos do Comitê e ouvir seu consultor técnico entendeu que as decisões tomadas pela jogadora foram atípicas, motivo pelo qual ensejaram maior investigação e o início da segunda fase das apurações, conforme o processo estabelecido.
3. Nesta segunda fase, foi realizado um extenso trabalho de coleta e análise de evidências, que, de forma resumida, pode-se apresentar da seguinte forma:
  - a. Comparação do desempenho em IMPs entre a jogadora Leda Pain e outros 23 jogadores considerados de nível equivalente ou superior ao da jogadora. Os dados foram submetidos de forma anônima para um estatístico contratado pela FBB que, após profunda análise técnica, considerou os resultados da jogadora Leda Pain discrepantes e compatíveis com irregularidades.
  - b. Comparação do desempenho da jogadora em torneios ao vivo com os recentes torneios on-line em que esta apresentou uma significativa evolução da ordem de 60% em sua performance.
  - c. Observação da transmissão de dois tempos de torneio online onde se verificou a incomum simultaneidade entre as mesas.
4. Em sua defesa, a jogadora não apresentou argumentos que pudessem desconstituir os achados estatísticos apresentados. Em resposta aos subitens “a” e “b” acima a defesa limitou-se a enaltecer o desempenho histórico de sucesso da jogadora, fato que não é contestado neste processo, e tentou desqualificar subjetivamente as comparações efetuadas com os demais jogadores, entretanto, sem apresentar dados estatísticos alternativos. Nenhuma estatística objetiva foi combatida com sucesso por argumentos

subjetivos apresentados, motivo pelo qual a defesa da jogadora não logrou êxito em comprovar sua inocência. Sobre o subitem “C”, a jogadora apresentou defesa individual de cada decisão por ela tomada, argumentando em prol de sua normalidade. Conforme esclarecido à jogadora, essa fase não é adequada para análises dessa natureza, uma vez que se limita a estatísticas e evidências. Análises de bridge aprofundadas foram realizadas na fase 3 e poderão ser confrontadas, conforme se poderá constatar no decorrer desse documento.

No contato inicial com Nicolas Hammond foram encaminhados dados iniciais conforme sua orientação, o que se pode constatar, tanto no Anexo I, quanto no Anexo III desse documento. Conforme previsão do nosso regulamento, as extensas análises estatísticas feitas pelo especialista Nicolas Hammond não foram pressupostas como suficientes para o veredito final, motivo pelo qual solicitamos que fosse indicado um expert de renome mundial que pudesse fazer uma análise decisiva para o processo.

O nome com as melhores recomendações foi o do jogador Christopher Robin “Kit” Woolsey com inatacável reputação técnica e ética na comunidade internacional de bridge. A FBB optou por esse expert, para que se pudesse dar o tratamento mais adequado e rigoroso possível ao grave caso em tela. Conforme pode ser verificado no Anexo I, os dados foram encaminhados para esse expert de forma anônima, sem que o mesmo soubesse sequer de que país eram os jogadores.

Desde o momento inicial do contato até o relatório final do Kit Woolsey, foi produzido um conjunto robusto de evidências sobre o caso. Ao total foram consideradas mais de 20 mil bolsas, sendo mais do que 6 mil apenas da jogadora Leda Pain. Isso permitiu uma comparação abrangente de resultados com jogadores dos mais altos padrões mundiais. A apresentação integral do conteúdo está organizada em anexos a essa carta.

O Apêndice I explica a metodologia utilizada pelo especialista Nicolas Hammond, bem como apresenta diversas estatísticas realizadas. Ressalte-se que no momento inicial ele confirmou a suspeição da jogadora sem a informação sobre quem era o jogador investigado.

O Apêndice II é o relatório produzido pelo expert Kit Woolsey, na íntegra.

O Apêndice III consiste em um relato complementar do especialista Nicolas Hammond desde o momento inicial do contato onde foram apresentados a ele nomes de forma anônima sem a indicação de qual o jogador estava sob investigação.

O Apêndice IV consiste de uma análise estatística adicional efetuada pelo consultor nesse conjunto de 344 bolsas. Da mesma forma que todas as análises efetuadas, o relatório aponta a jogadora Leda como efetivamente suspeita, inclusive de colaboração irregular quando em parceria com o jogador Gabriel Chagas. Ocorre que a análise técnica aprofundada em um universo menor de bolsas corroborou integralmente os achados estatísticos em universos mais amplos.

Conforme pode se constatar ao longo de todo processo investigativo, foram utilizados métodos dos mais diversos buscando afastar ou confirmar irregularidades. A força probatória individual de cada método é variada. Por exemplo, no caso dos estudos estatísticos, quando mais mãos analisadas, mais claras foram as conclusões. O que se evidencia do conjunto probatório é que, unanimemente, cada um dos métodos utilizados sempre aponta para a ocorrência de irregularidades. Isso envolvendo o Comitê de Ética, a

Diretoria da FBB, estatísticos, experts nacionais e internacionais. Dessa forma, não resta alternativa à FBB que não seja apresentar o conjunto probatório completo colecionado à jogadora e oferecer mais uma oportunidade para a defesa questionar os elementos que subsidiarão a conclusão final.

É importante mencionar que a apresentação original da denúncia tipificava apenas o uso não autorizado de informação. No decorrer da investigação, foi identificado um segundo potencial ilícito, qual seja, de possível colaboração irregular (*collusive cheating*). Nesse ponto valem dois esclarecimentos: 1) O processo atual não constitui acusação a nenhum jogador além da Leda Pain. As informações ora obtidas serão remetidas ao Conselho de Ética que deve decidir se inicia ou não um procedimento contra outros jogadores que possam eventualmente ter se associado à jogadora Leda Pain. 2) O estudo jurídico para dosimetria da pena irá considerar todas as possíveis irregularidades. No caso de constatação de duas irregularidades (self-kibitzing e collusion), as penas podem eventualmente se somar.

Ante o exposto, solicitamos à jogadora que acuse o recebimento dessa correspondência e, caso seja de sua vontade, apresente defesa em 5 (cinco) dias úteis, momento no qual haverá o julgamento final sobre o caso.

Atenciosamente,

Diretoria da Federação Brasileira de Bridge

Names	Boards	Count	Decliner		OL		Defense no OL		PC Diff		Defense		IMPS won		IMPs to par		P1 - decliner		P2 - Decliner		P1 OL		P2 OL		Defense P1 - no OL		Defense P2 - no OL	
			W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L
LEDA, PAIN - PAULINHA	1,989	34,656	97.12%	6	79.59%	10	97.46%	10	0.34	10	96.46%	9	-0.34	8	-0.03	6	97.34%	7	96.81%	21	82.52%	10	76.30%	24	97.78%	14	97.14%	
GABU4 - LEDA, PAIN	1,130	16,905	97.05%	8	84.64%	2	96.24%	1	1.19	3	97.44%	2	1.85	1	1.20	1	97.00%	16	97.11%	11	85.60%	3	83.84%	6	98.27%	4	98.22%	
LEDA, PAIN - SAVERIO	415	6,816	97.36%	3	74.38%	14	97.84%	8	4.45	9	96.45%	10	-0.73	10	0.01	7	97.18%	10	95.95%	5	75.47%	25	73.26%	26	98.84%	1	97.03%	
LEDA, PAIN - YBOS	346	5,673	97.10%	7	82.74%	4	97.90%	6	0.80	8	97.04%	4	-0.78	11	-1.89	13	96.98%	17	97.27%	9	80.09%	4	80.25%	17	98.28%	3	97.51%	
HECTORIC - LEDA, PAIN	278	4,854	97.18%	5	81.16%	7	97.31%	11	0.13	13	96.37%	11	-0.64	8	0.29	5	97.02%	14	97.29%	8	82.86%	8	70.41%	18	97.22%	27	97.41%	
HAWAI - LEDA, PAIN	172	2,875	97.23%	2	75.03%	13	97.93%	5	0.90	11	96.82%	8	-0.90	13	-1.72	12	98.17%	1	97.49%	6	79.63%	20	69.70%	28	98.45%	5	97.62%	
JUANCA - LEDA, PAIN	152	2,558	97.27%	4	87.01%	1	96.17%	3	0.20	7	97.50%	1	-1.05	14	-0.50	9	97.00%	12	95.98%	4	96.85%	2	87.18%	1	98.18%	8	98.10%	

This is the information for pairs.

See <https://www.detectingcheatinginbridge.com/investigations> and click on "Terminology" for explanation of all terminology.

Boards=Total number of boards.

Count=Number of cards played.

Declarer %=Double dummy declarer accuracy. High values may indicate self-kibbitzing. LEDA's values are fairly consistent across partners.

The R column should be ignored. This is the Rank field when compared to others in the same database. For this, I created a separate database for each player. The R should be ignored.

OL=Opening Lead. This is the double dummy accuracy rate. If this is high (81% is expert average) and with a large number of boards, this is suspicion of collusive cheating.

For example, with JUANCA, the OL% is high, but there are too few boards for this number to be useful. Rating is high with GABU44. Suspicious. Normal with PAULINHA.

Ignore IMPs for now; I have downloaded both pairs and teams, so this column is ignored.

P1=Player 1

P2=Player 2

Players are listed alphabetically.

The last two columns are important for detecting collusive cheating.

These are unweighted defense double dummy for each player ignoring the OL.

LEDA's value with SAVERIO is high.

The chart above uses accuracy rates for the defense.

The next is the individual players data:

This is similar to above but goes into more details.

This chart uses error rates, not accuracy rates. I realize that this is confusing. I will be moving to error rates only in the next version of the software.

The "WE%" is the weighted average, this factors in the time of the claim and is a more accurate measure than the previous page.

Name	Boards	Count	Declarer					OL			Defense - no OL				
			Boards	E%	R	WE%	WR	A%	R	CDF	Boards	E%	R	WE%	WR
LEDA_PAIN (PAULINHA)	1,536	10,027	561	2.66%	7	1.98%	8	82.52%	10	82.55	975	2.22%	14	1.64%	15
PAULINHA (LEDA_PAIN)	1,422	7,342	447	3.19%	21	2.18%	18	76.30%	24	0.71	975	2.86%	24	2.11%	26
GABU44 (LEDA_PAIN)	834	4,860	287	3.00%	16	2.12%	15	85.60%	3	97.66	547	1.73%	4	1.20%	3
LEDA_PAIN (GABU44)	819	4,783	272	2.89%	11	2.11%	14	83.84%	6	90.88	547	1.78%	7	1.23%	4
SAVERIO (LEDA_PAIN)	313	1,740	110	2.41%	5	1.59%	4	73.20%	26	3.77	203	2.97%	25	2.05%	23
LEDA_PAIN (SAVERIO)	301	1,735	98	2.82%	10	2.08%	13	75.47%	25	9.49	203	1.36%	1	0.94%	1
LEDA_PAIN (YBOB)	273	1,789	105	3.02%	17	2.14%	16	85.06%	4	86.64	168	1.72%	3	1.24%	7
YBOB (LEDA_PAIN)	240	1,211	72	2.73%	9	1.91%	7	80.25%	17	47.58	168	2.49%	19	1.81%	19
LEDA_PAIN (HECTORC)	219	1,476	81	2.71%	8	2.06%	11	79.41%	18	41.68	138	2.59%	20	1.83%	20
HECTORC (LEDA_PAIN)	194	1,008	56	2.98%	14	2.23%	20	82.86%	8	70.03	138	2.78%	22	1.95%	22
LEDA_PAIN (HAWAI)	135	996	59	2.51%	6	1.77%	6	69.70%	28	8.11	76	2.38%	17	1.71%	17
JUANCA (LEDA_PAIN)	115	700	38	3.00%	15	2.30%	21	86.84%	2	87.32	77	1.82%	8	1.24%	5
HAWAI (LEDA_PAIN)	113	547	37	1.83%	1	1.13%	1	79.07%	20	43.33	76	1.76%	5	1.27%	8
LEDA_PAIN (JUANCA)	112	580	35	2.41%	4	1.67%	5	87.18%	1	88.73	77	1.85%	9	1.24%	6

The defensive value for LEDA with SAVERIO is suspicious. Particularly when combined with other data.

The data with GABU44 is suspicious.

PAULINHA appears to be a weaker player; not suspicious. But curious on ability level.

I have not asked for the known ability of the players.

The values for LEDA are confusing.

At times, this is a world class player; but with other partners (e.g. HECTORC) the error rate is higher indicating a weaker player.

I will do some more work on this player.

A análise em relação aos dados da jogadora Leda Pain foi aprofundada, conforme encaminhamento do próprio Nicolas Hammond. Após essa análise inicial, foram prestadas informações adicionais, tais como, o ranking, os títulos de todos os jogadores mencionados, bem como o fato de GABU44 se referir ao jogador Gabriel Chagas e a relação entre jogadores Leda e Gabriel. O ranking brasileiro, as conquistas internacionais e o título da WBF do Gabriel também foram informados antes do prosseguimento das investigações.

Segundo as orientações do especialista, além das análises estatísticas, seria imprescindível a contratação de um expert para análise das decisões de Bridge. O jogador recomendado foi o Sr. Kit Woolsey, dono de um currículo reconhecido mundialmente, com inúmeras conquistas de torneios americanos, abertos e oficiais da WBF.

Para essa fase, recomendava-se a análise mínima entre 150 e 200 bolsas. Mantendo-se coerência com a fase 2 do processo, foram encaminhadas as mesmas 344 bolsas que já haviam sido analisadas estatisticamente. Neste ponto, o Nicolas Hammond efetuou uma análise estatística das bolsas, comparando o desempenho da jogadora com experts de padrão mundial.

A primeira iniciativa feita pelo especialista foi identificar corretamente o código das bolsas jogadas no BBO:

BBO uses a 10-digit time stamp and a 1-5 digit tournament number. The tournament numbers are not unique; therefore, it took some time to find the correct BBO tournament IDs (TIDs). They are:

56579-1599436766  
54761-1599418793  
48077-1599350263  
46397-1599332509  
40317-1599263792  
38601-1599246375  
31944-1599178591  
29628-1599159175  
22829-1599092344  
20483-1599072873  
12873-1599004468  
10778-1598986781  
2554-1598224098  
9423-1598202708  
1235-1598138314  
8766-1598040565  
8795-1597965107  
4912-1597619395  
3496-1597608035  
4155-1597532477  
1170-1597510832  
9860-1597424528  
1270-1597360543

The last number is a 10-digit time stamp (number of seconds since Jan 1, 1970).

You have used boards for LEDA\_PAIN with PAULINHA (184 boards) and GABU44 (168).

Em seguida apresentou as seguintes análises, primeiramente tendo como foco as bolsas jogados em parceria com a jogadora Paulinha:

I normally work on pairs, not on players. I find this easier because collusive cheating can be more easily proved.

Using the data from the TIDs above, and only those, I will strongly suspect connection data when playing with PAULINHA.

I state this because LEDA's declarer rating is 99,007 for 63 boards.

For comparison, see

<https://www.detectingcheatinginbridge.com/statistics/index.html>

Click on Data (show/hide) under Pair Statistics.

Look at the second table, top players FTF declaring.

99,007 would put her at #1.

However, I must point out that very few boards - 63 - and always possible that someone has a good lucky streak.

Leda's defensive + OL rating with Paulinha is 98,908.

Compare to the world's best (third table) of Lotan Fisher at 98,718.

Therefore the data strongly indicates cheating with Paulinha.

The fact that her declarer rating was high indicates self-kibitzing, not collusive.

Paulinha's values are normal, no indication of cheating by Paulinha, which tends to rule out collusive cheating

Os indicativos dessa análise são muito fortes. Apontam para prática de Self-Kibitzing da jogadora Leda Pain quando jogando em dupla com a Paulinha, no entanto, isentam a jogadora Paulinha tanto de Self-Kibitzing quanto de colaboração ilícita.

Quando a análise ocorre em parceria com o jogador Gabriel Chagas, a conclusão se modifica, conforme podemos avaliar a seguir:

The data, from these TIDs only, with GABU shows normal declarer ratings.  
97,407 for Leda, 97,965 for Gabu.

Their defensive (including opening lead) values are both 98,523.  
Indicative of probable collusive cheating.

Em síntese, há dois diferentes apontamentos de irregularidade. O primeiro de Self-Kibitzing, quando a jogadora Leda Pain joga em parceria com a Paulinha. O segundo de colaboração ilícita quando joga com o jogador Gabriel Chagas. No primeiro caso, há um aumento de performance no carteio, enquanto no segundo um acréscimo de desempenho na defesa, compatíveis com as irregularidades apontadas. Até aqui nenhuma acusação pode ser feita contra a jogadora Paulinha.

Na sequência, a pedido da Federação, o especialista Nicolas Hammond retirou os nomes dos jogadores e enviou as bolsas jogadas para o expert Kit Woolsey, ao qual sequer foi informado o país de origem dos jogadores.

I have the anonymized data at

<https://www.bridgescoreplus.com/zall/anon-101-kkpqq>

Player\_1 is LEDA\_PAIN, Player\_2 is Paulinha

Only you/I know these names.

Other anonymized data is at



Details of all hands are at:

<https://www.bridgescoreplus.com/zall/anon-101-184-kmdqq>

In this case, Player\_1 is GABU44, Player\_2 is LEDA\_PAIN.

Only you/I know these names.

Com base nos dados anônimos apresentados acima, o Kit Woolsey analisou as primeiras 50 bolsas jogadas pela Leda e pela Paulinha e não encontrou evidências de colaboração irregular, isentando de uma vez por todas a jogadora Paulinha de qualquer afirmação. Nessa análise, o Kit Woolsey não avaliou a possibilidade de self-kibitzing.

Na sequência, passou a analisar as 168 bolsas jogadas pela jogadora Leda Pain em parceria com o jogador Gabriel Chagas. O relatório completo do Kit Woolsey se encontra no Anexo II, motivo pelo qual é apresentado a seguir apenas a conclusão do documento.

### **Summary**

I have looked at 168 hands played by the pair in question. Every action except declarer play was closely examined, and determined to be "suspicious", "anti-cheating", or "normal" according to my definitions.

There were 39 "suspicious" actions, and 18 "anti-cheating" actions. This is a much higher percentage of suspicious actions vs. anti-cheating actions than would normally be expected for an honest pair. This indicates that the pair avoided several pitfalls which would normally be expected to occur.

The pair was aggressive with their preempts, particularly with 5-card weak 2-bids. However, an examination of all hands where they did make a preempt which wasn't clear-cut and all hands where they did not make a preempt which might have been made, on every such hand if they preempted partner had sufficient trump support and if they didn't preempt partner did not have sufficient trump support.

Of the 38 suspicious actions, in my opinion 9 of them were not judgment situations. These 9 actions were either clearly bad bridge actions or definitely anti-percentage actions without knowledge of partner's hand but became indicated actions if knowing partner's hand.

From these results, I conclude that it is very likely the pair was colluding.

## APÊNDICE II – Relatório Kit Woolsey

## **Kit Woolsey's report**

### **Methodology**

The methodology described in this article is used to determine indications about whether a player or pair is guilty or innocent of having illicit knowledge of the hands from the bids and plays made. The procedure will work for both potential self-kibitzing (where a player may know all four hands) and potential collusive cheating (where a player may know his partner's hand but not the opponent's hand). The knowledge the player is considered to potentially have is very important for the analysis. For example, suppose a player makes a questionable call to arrive at a slam, and the slam needs two finesses both of which are on. If the issue is potential self-kibitzing then the hand is indicative of guilt, since if the player were self-kibitzing he would know the finesses were on. However, if the issue is collusive cheating the hand is indicative of innocence, since if there were collusion the player would know that the slam was a poor contract.

The procedure will work both for IMPs and matchpoints. The difference is that there are different priorities involved. At IMPs undoubled overtricks are virtually irrelevant. A play or defense when it is known that only an undoubled overtrick is at stake is not analyzed. At matchpoints, every trick potentially counts.

For the rest of the article we will be assuming IMPs, with potential collusive cheating. A pair in question will be assumed to potentially know his partner's exact hand, but no information about the opponent's hands which isn't available through proper channels. Thus, declarer play will not be analyzed. Also, we are assumed to be talking about a pair of high skill quality, so they can make a decent analysis of the hand.

It cannot be emphasized strongly enough that this procedure will not provide absolute proof of guilt or innocence. There is luck involved in bridge, and an innocent pair may appear to likely be guilty or a guilty pair may appear to likely be innocent from the procedure. The final decision of guilt or innocence by a committee will always be a judgment call, based upon the results of this procedure and the quality of the actions analyzed.

It is also important to understand that any specific hand, or even several specific hands, are not by themselves evidence of guilt or innocence. Honest players will take strange actions, and sometimes these actions succeed. Cheating players will not always make the most of their knowledge for various reasons, and will take losing actions. In order to have any real evidence one way or the other it is necessary to examine EVERY hand played by the pair over the time frame for which they are under suspicion. Without doing that, the investigation is not thorough. Individual hands which involve unlikely actions which succeed may form the basis for a pair being under suspicion, but these are not sufficient for any kind of conclusive case.

## Definitions:

An action is considered a "success" if it is an action which clearly would be taken knowing partner's hand, and there are other reasonable actions possible which would not be taken. Note that this definition has nothing to do with how the actions actually worked out on the actual hand, since that depends upon the lie of the enemy cards which is not known.

An action is considered a "failure" if it is different from a possible action which clearly would be taken knowing partner's hand.

An action is considered "neutral" if it is neither a success or a failure.

Naturally almost every bid and play are neutral. Either they are forced, routine, or knowledge of partner's hand wouldn't affect things.

## Examples:

West holds: K973, J974, 873, Q2

N	E	S	W
-	-	1NT	P
3NT	P	P	P

Both a spade and a heart lead are reasonable. If East has QJxxx, xx, Axx, xxx, the spade lead is a success and the heart lead is a failure. If East has xx, KQ10xx, Axx, xxx, the heart lead is a success and the spade lead is a failure. Suppose East had xxx, xx, Axx, KJ10xx. The queen of clubs lead would be a success, obviously. Both the spade and heart leads would be failures, since the queen of clubs lead is possible and would have been led knowing partner's hand.

West holds: KJ972, A5, 984, 763

N	E	S	W
-	-	1NT	P
3NT	P	P	P

A spade lead is by far the normal lead, so if it strikes gold it wouldn't be considered a success -- nothing else is reasonable. It would be a neutral lead. However, if partner had xx, KQJxx, xxx, xxx a spade lead would be a failure, since a heart clearly would have been led knowing partner's hand.

North: KJxxx, Jx, Kxx, QJx

South: AQxxx, xx, Axx, Kxx

N	E	S	W
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-	-	1S	2H
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3H	P	?	
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3H: Limit raise or better.

It is trivial to see at a glance that 4S won't make. South might well bid 3S or 4S. If South bids 3S, that is a success. If South bids 4S, that is a failure.

N	E	S	W
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1D	P	1S	P
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3S	P	?	
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North: Axxx, Ax, AK10xx, xx

South: KQxx, xxx, Jx, Jxxx

Do you want to be in 4S? Let's see. Spades need to split 3-2. Diamonds will have to come in, perhaps with a finesse or the queen coming down. But a heart lead or shift hurts your entries. Stop! It's complicated. If you can't see at a glance whether or not you want to be in 4S, that means nothing is clear. Both pass and 4S are neutral actions, even if turns out on close analysis that one of the actions is clearly percentage. It has to be quickly obvious.

Now to the important definitions of the statistics we are going to use:

An action is considered a "suspicious" action if it is a success, and it isn't necessarily the mainstream choice.

An action is considered an "anti-cheating" action if it is a failure and there is a reasonable action which would have been indicated knowing partner's hand.

An action is considered a "normal" action if it isn't a suspicious action or an anti-cheating action.

Going back to our opening lead examples:

West holds: K973, J974, 873, Q2

N	E	S	W
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-	-	1NT	P
3NT	P	P	P

Let's suppose you as the investigator judge that leading a spade is the mainstream action -- perhaps 75% of experts would lead a spade and 25% of experts would lead a heart. This is a judgment decision, of course, but we have to make judgment decisions in bridge. Then:

Suppose West leads a spade:

If East's hand is QJ10xx, xx, Axx, xxx, the spade lead is clearly a success. But it is not a suspicious action, since we decided it is the mainstream action. It is a neutral action -- basically, just good bridge.

If East's hand is xx, KQ10xx, Axx, xxx, the spade lead is clearly a failure. Since leading a heart is a reasonable action, the spade lead is an anti-cheating action.

Suppose West leads a heart:

If East's hand is QJ10xx, xx, Axx, xxx, the heart is a failure, and since leading a spade is reasonable the heart lead is an anti-cheating action.

If East's hand is xx, KQ10xx, Axx, xxx, the heart lead is a success, and since it is not a mainstream choice it is a suspicious action.

Suppose East's hand is xxx, xxx, Ax, KJ10xx. Obviously, the queen of clubs lead would be a suspicious lead. However, the spade and heart leads would be neutral leads, not anti-cheating leads, because a club lead wouldn't be considered a reasonable action.

Note that it is possible for a pair to have a suspicious action and an anti-cheating action on the same hand. For example, the pair might make a losing competitive decision, defending when they clearly would do better declaring, but then find an opening lead which is a success but not mainstream.

A meaningful action is an action which is either anti-cheating or suspicious. It is clear that any pair is going to have plenty of meaningful actions, hence plenty of suspicious actions and plenty of anti-cheating actions. If a player has a close decision and gets it right (relative to his partner's hand), that is a suspicious action. If he gets it wrong, that is an anti-cheating action. In no way does a suspicious action show that a pair is cheating -- it simply means the player got it right. In no way does an anti-cheating action show that a pair is innocent -- it simply means the player got it wrong.

Obviously almost all actions will be normal actions. A good question is: For an honest pair, what percentage of meaningful actions will be suspicious, and what percentage will be anti-cheating? It might seem that it will be about 50-50, since we are talking mostly about decisions

which are pretty close. However, a close examination of the definitions indicates that an honest pair figures to have more anti-cheating actions than suspicious actions. The reason is that some of the successes won't be counted as suspicious because they are mainstream actions, while almost all of the failures will be counted as anti-cheating actions.

To test this, I analyzed about 800 deals played by Bramley-Woolsey (who else could I trust). The results were:

Suspicious: 84

Anti-cheating: 118

This comes to about 42% suspicious, 58% anti-cheating -- about what would have been guessed. While there might be some bias involved in the analysis, it seems reasonable to assume that this is the percentage which is about normal for an honest pair.

What about a colluding pair? It might seem at first glance that for a colluding pair there would be no anti-cheating hands. After all, they can see their partner's hand so wouldn't they always take the action indicated by this knowledge. In real life, that doesn't happen. There are many possible reasons why a colluding pair might produce an anti-cheating action.

They might have lost concentration.

They might not have gotten the needed information.

They might have mis-analyzed the hand as to what does or does not make.

They might not have foreseen the likely effects of their action.

They might have been afraid to take the action for fear it would be too blatant.

For these reasons, colluding pairs will have anti-cheating actions. However, they will have far fewer compared to their suspicious actions than an honest pair. How much fewer? From a few samples we have analyzed, it appears that a colluding pair will have between 65% and 85% suspicious actions (compared to 42% for an honest pair), and thus between 35% and 15% anti-cheating actions (compared to 58% for an honest pair). The actual number depends upon the pair, how skillful they are, how blatant they are willing to be, and how focused they are with their collusion.

How many boards need to be analyzed to form a meaningful conclusion? Obviously, the more the better. There is always a luck element, and an innocent pair might have an unusually high percentage of suspicious actions (maybe even over 50%), while a guilty pair might be at the low end (around 65%). However, for a large enough sample (generally 150 to 200 hands), it is almost certain that the truth will come out just from the numbers.

Should the investigator be looking at the quality of the actions as well as just the raw numbers? Absolutely! An underlead of AQxx vs. a suit contract on a blind auction which hits partner with king-doubleton means a lot more than a lead from the right Kxxx vs. 3NT on a tossup guess, yet both are counted equally as suspicious actions. If there are a lot of actions like that, that may

be a strong indication of guilt. Similarly, if an anti-cheating action is of the "the player would have to be a total idiot to have done this knowing partner's hand" type, that makes a difference, and if there are several of these that may be a strong indication of innocence.

An investigator will have to make judgment decisions about what is a mainstream action and what would or would not be suggested by knowing partner's hand. On a given hand two different investigators may come to a different conclusion about whether an action is suspicious, anti-cheating, or normal. However, in the long run if the investigator is consistent in his analysis, his results are likely to represent truth.

## **Analysis of Pair 2**

See <https://www.bridgescoreplus.com/zall/anon-102-168-mmjqz> for a list of all of the boards.

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<https://tinyurl.com/yxkwfc6j>

### 1. Normal

Knowing the South hand, it isn't particularly obvious which major is likely to be most effective lead.

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<https://tinyurl.com/y5g93qyc>

### 2. Normal

The bidding looks completely mainstream.

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<https://tinyurl.com/yxll47or>

### 3. Suspicious

It isn't totally clear whether South should show the preference on his AK doubleton, or bid 3NT on his hefty spade stopper and likely source of club tricks. North might pass a 3NT call. It does appear at a glance that 4H is the superior contract.

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<https://tinyurl.com/y435agnb>



#### 4. Normal

Competing to 3S is completely mainstream.

-----

<https://tinyurl.com/y4q426ka>

#### 5. Suspicious

Choice of which minor to open might be open to debate. But finding a diamond fit, particularly in face of potential spade competition, is a lot easier when you open 1D. Also, why should South move from 2H when his partner might have 4 hearts. He certainly isn't worth a game try, so he is correcting.

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<https://tinyurl.com/y6nnf9sw>

#### 6. Normal

Mainstream enough auction. Not obvious whether opening 1S or 1NT would lead to better result looking at North hand.

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<https://tinyurl.com/y534w4bd>

#### 7. Normal

Routine auction.

-----

<https://tinyurl.com/yyacy9x7>

#### 8. Anti-cheating

A club lead, certainly reasonable, is a ton more successful and is obvious if knowing the hand.

-----

<https://tinyurl.com/y4e3m8vm>

#### 9. Normal

Auction mainstream. Defense looks routine enough.

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<https://tinyurl.com/y2luwqpx>

#### 10. Normal

South's game try looks mainstream enough.

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<https://tinyurl.com/y2rrvjo6>

#### 11. Normal

Weak 2 might not be everybody's choice, but reasonable enough and not clear that it will make any difference looking at North hand anyway.

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<https://tinyurl.com/yydlmhs2>

#### 12. Anti-cheating

North might reasonably have doubled 3S. Knowing the South hand it is clear that 3S has no chance of making, and might well be down two. Defense was routine.

-----

<https://tinyurl.com/yyyw3j2e>

#### 13. Normal

The 1S call is normal enough. North's double of 4H is reasonable on the auction, and knowing the South hand it isn't clear whether 4H will make or not. Hand is complex, and defense is normal enough.

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<https://tinyurl.com/y53x8mbn>

#### 14. Normal

South's 4H call was reasonable descriptive call. With the information North had, South's splinter and forcing pass, his decision to go to 5S looks mainstream.

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<https://tinyurl.com/y5vneq7u>

#### 15. Normal

Routine auction to routine contract.

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<https://tinyurl.com/y59722c3>

#### 16. Anti-cheating

If South knew North's hand, it would be clear that 4S is a good contract. South could easily have started with a takeout double, perhaps a more popular choice anyway. The 2C overcall took a serious risk that it would end the auction.

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<https://tinyurl.com/yxf7vmbz>

#### 17. Normal

Many would prefer a 1H opening, but it really make no difference opposite the North hand.

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<https://tinyurl.com/y6csg8bn>

#### 18. Normal

Routine lead, nothing matters.

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<https://tinyurl.com/y3jv27qg>

## 19. Normal

Routine auction.

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<https://tinyurl.com/y5qys9hz>

## 20. Anti-cheating

The 2D opening is style, and not clear whether the North hand indicates the action or not. However, knowing the South hand the 4D bid is simply an overshot. It is trivial to see that 4D is down 1, and North can see that it is very unlikely that the opponents with 20 HCP and no major-suit length will be sucked in. 3D would certainly be a reasonable, if not mainstream, choice, and is definitely indicated if knowing the South hand.

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<https://tinyurl.com/y4zcyp57>

## 21. Normal

Overcall, lead, and defense all routine.

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<https://tinyurl.com/y4truk3n>

## 22. Normal

Auction a little pushy, but looking at the N-S hands it isn't immediately obvious whether you want to be in 3NT or not.

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<https://tinyurl.com/y5tq8fe7>

## 23. Normal

Routine auction to routine contract.

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<https://tinyurl.com/yyvgfxds>

#### 24. Suspicious

Bidding Michaels on the South hand is quite reasonable and would be choice of many. On this hand, it is easy to see that the action might be a major disaster.

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<https://tinyurl.com/y27dpx2>

#### 25. Normal

North hand is certainly worth a move after getting raised, and reaching the good 4S game was routine in their methods.

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<https://tinyurl.com/y2ghrsht>

#### 26. Normal

Knowing the North hand it would appear that a heart lead is best and letting declarer win the first trick cheaply might be costly. But it isn't trivial to see that, so will leave as normal.

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<https://tinyurl.com/y5czdl8r>

#### 27. Anti-cheating

South could certainly have reasonably responded 1NT, which might be a mainstream choice, and a considerably safer contract would be reached as would be seen if the North hand were known.

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<https://tinyurl.com/y2xw5yxx>

#### 28. Normal

Double of 5C and subsequent club lead completely mainstream.

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<https://tinyurl.com/yy2k3av5>

### 29. Suspicious

Spade lead far from obvious on the auction as South just about can't have good enough spades and entries to defeat 3NT while enemy diamonds could be 3-3. But knowing the actual South hand, spade lead is clearly indicated.

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<https://tinyurl.com/y5jgoo6a>

### 30. Normal

Lead and defense clearly mainstream.

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<https://tinyurl.com/y4epc944>

### 31. Suspicious

Club lead isn't necessarily mainstream holding natural trump trick -- heart lead would be as popular. Clearly club lead indicted from North hand.

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<https://tinyurl.com/yytbfanf>

### 32. Suspicious

1NT overcall would be far from automatic choice, but knowing the North hand is it clearly indicated, both to get to spade fit and inhibit the opponents from bidding their likely cold 4H game.

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<https://tinyurl.com/y24z84kg>

### 33. Normal

2S opener perhaps not popular at this vulnerability, but probably stylistic. Also, it isn't clear that the call will work out better or worse than passing. Lead normal, and nothing after that.

-----  
<https://tinyurl.com/y2dml87v>

#### 34. Suspicious

Not making any slam move with the North hand is a very low road, as it wouldn't take much for a minor-suit slam to be there. But looking at the South hand, it is clear to forget slam.

-----  
<https://tinyurl.com/y5wvlwwf>

#### 35. Normal

1H overcall is mainstream. So is heart lead and defense.

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<https://tinyurl.com/y6kg168r>

#### 36. Suspicious

The 4S call is odd. But unless they have agreements about the 4S call I don't know about, South's decision to not make a move would certainly not be popular. Yet with 5S in possible jeopardy, it is clearly indicated.

-----  
<https://tinyurl.com/y47bjftj>

#### 37. Suspicious

The re-opening 2NT call isn't clear on this auction where the opponents might not a fit, yet it is certainly indicated knowing the South hand. The same can be said even stronger about South's decision to compete to 4D after having pushed the opponents to the 3-level, but North has the perfect fitting hand for this action.

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<https://tinyurl.com/y4tdcp8d>

#### 38. Normal

Routine sequence to automatic contract.

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<https://tinyurl.com/yxIhyha6>

39. Normal

Routine auction.

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<https://tinyurl.com/y372ahv2>

40. Suspicious

Driving to slam with the North hand is really pushing it. But South has a perfect hand, and looking at the two hands at a glance you would want to be in slam.

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<https://tinyurl.com/y4qwjebu>

41. Normal

Reasonable route to get to automatic contract.

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<https://tinyurl.com/y2jlo84q>

42. Normal

Routine lead.

-----

<https://tinyurl.com/yy55gusj>

43. Normal

Don't know their methods, but from what I can judge this looks like a mainstream auction within their agreements.



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<https://tinyurl.com/y5qxj3sn>

44. Normal

Looks like reasonable sequence given their methods.

-----  
<https://tinyurl.com/y5u7rmdw>

45. Normal

Looking at the South hand a diamond lead would figure to be best, but that would be too far out on the North hand, so even though the heart lead wasn't optimal it is still considered a normal action.

-----  
<https://tinyurl.com/y4x3j8fn>

46. Suspicious

North did open 1D and West bid hearts, yet South found a heart lead which is the indicated lead looking at the North hand.

-----  
<https://tinyurl.com/y6hkcaqd>

47. Normal

The super-light third seat opener at adverse is very strange. However, the North hand doesn't appear to either indicate doing this or not doing this, so it has to be in the normal category.

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<https://tinyurl.com/yy3y4wn8>

48. Normal

The successful heart lead looks like the mainstream choice.

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<https://tinyurl.com/yxkgp7u6>

49. Normal

A nice 5C contract. However, every action looks pretty mainstream.

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<https://tinyurl.com/y3d2mvvx>

50. Normal

Given what appears to be their methods, their actions look like they are mainstream to get to the best contract.

-----  
<https://tinyurl.com/yxa4mxoc>

51. Normal

Bidding clubs on the North hand is just good bridge, and probably mainstream. How many clubs to bid isn't clear even looking at the South hand. 6D figures to be down 4. But the jamming effect causing the opponents to focus on the wrong thing might make a difference. So who knows.

-----  
<https://tinyurl.com/y55mcmsa>

52. Anti-cheating

Both passes look mainstream. 8 of diamonds lead looks mainstream. But whatever North was thinking as his reason for ducking the heart trick, that certainly wouldn't have been indicated knowing the South hand.

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<https://tinyurl.com/y2ecxc2u>

53. Normal

Routine.

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<https://tinyurl.com/y392n64p>

54. Normal

All actions mainstream. It isn't immediately clear whether more optimal to compete to 5S.  
Defense routine.

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<https://tinyurl.com/yy5r2vcq>

55. Normal

Lead normal. Heart shift after two rounds of clubs looks like proper defense.

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<https://tinyurl.com/yys32a4o>

56. Normal

Lead and defense routine.

-----

<https://tinyurl.com/y6pc4u2p>

57. Normal

Routine auction to routine contract.

-----

<https://tinyurl.com/y4xwpurz>

58. Normal

Hard to assess, not understanding their methods here. Likely they couldn't get to diamonds systemically, and 2H is okay anyway.

-----  
<https://tinyurl.com/y475y8ql>

59. Normal

Routine auction.

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<https://tinyurl.com/yyvfjdbe>

60. Suspicious

While the singleton club lead is reasonable, leading into declarer's second suit when partner has overcalled and opponents haven't even considered notrump is not totally clear. Of course knowing the South hand, it is very clear.

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<https://tinyurl.com/y67tusdn>

61. Normal

Bidding actions look mainstream. Ace of diamonds lead seems mainstream.

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<https://tinyurl.com/y4m3bsgk>

62. Normal

Overcall is reasonable, and not clearly indicated or contra-indicated by South hand. Opening lead obvious, and rest of defense pretty routine.

-----

<https://tinyurl.com/yyolgo99>

63. Normal

Opening lead and subsequent defense look pretty routine.

-----

<https://tinyurl.com/y378ot4t>

64. Normal

2NT overcall is reasonable, maybe mainstream, and not particularly clear if anything is better looking at South hand.

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<https://tinyurl.com/y68gyrmo>

65. Normal

Seems like a mainstream light third seat opener and Drury auction.

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<https://tinyurl.com/y3pn9p3g>

66. Suspicious

While quitting on the North hand is reasonable, there could well be a game and I can easily see players making a move. It is clear looking at the South hand that this wouldn't be a good idea.

-----

<https://tinyurl.com/yxbf97xu>

67. Normal

Knowing partner has 3 spades, it is clear to lead the king. From the spade spots it is impossible for partner to have the ace of spades, so heart shift is just good bridge. Rest of defense is routine.

-----

<https://tinyurl.com/y6x7c3zq>

68. Normal

North probably can't do anything else with this hand vs. the strong NT. Lead is normal. At end North could have cashed the diamonds before leading the spade, but he had seen all the

diamonds so this was simply just a bridge blunder, not any indication that he didn't know South's hand.

-----

<https://tinyurl.com/yxaqc4lv>

69. Normal

Auction looks reasonable enough, and nothing is obviously indicated anyway.

-----

<https://tinyurl.com/y6crygcu>

70. Normal

Any lead could be right, and nothing is particularly indicated from the South hand. The club shift just looks like good bridge, and knowing the North hand it would be clear the contract can't be defeated anyway.

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<https://tinyurl.com/y6elpm6a>

71. Suspicious

Bidding looks routine, as is opening lead. North's play at trick 1 is unclear. South could have a stiff heart, and with dummy likely entryless it isn't clear that going up ace will cost anyway. But with South having Qxx of hearts, playing the ace is obviously wrong. Later, when declarer leads a spade up South risked an undertrick to gain an undertrick by playing small, as declarer might have had the 10, but with North having the 10 playing small was obviously right.

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<https://tinyurl.com/y23qd9vk>

72. Normal

1NT overcall looks routine. Lead and defense straightforward.

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<https://tinyurl.com/y4hax7p9>

73. Normal

Straightforward auction to routine contract.

-----

<https://tinyurl.com/y34kuya4>

74. Normal

The alert appears to say the 2S call isn't a range ask but does focus on clubs, so North's saying minimum is consistent with his xx in clubs. Given that, it is a routine auction.

-----

<https://tinyurl.com/yy3mqogc>

75. Normal

Bidding and lead mainstream.

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<https://tinyurl.com/y3auvztf>

76. Normal

Looks mainstream for neither partner to open.

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<https://tinyurl.com/y2kevtrd>

77. Suspicious

Difficult evaluation, and we don't know the pair's style of opening 1S vs. 1C on this sort of hand. But South could easily be 6-5, a pretty good 6-5, and the North hand could be very valuable opposite that. North could have a considerably less valuable hand and he could have shown values with 4C, but going low with 3C is right opposite this South hand.

-----

<https://tinyurl.com/y3te5588>

78. Normal

Mainstream lead on the auction.

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<https://tinyurl.com/y69oq4kf>

79. Normal

Not clear which lead is mainstream, but neither indicated by North hand anyway.

-----

<https://tinyurl.com/y2qd2wja>

80. Normal

All bids look pretty mainstream, and not clear what is best contract anyway.

-----

<https://tinyurl.com/yyk9rocb>

81. Normal

Far from clear what South should lead. But looking at North hand, it is far from clear what lead is indicated.

-----

<https://tinyurl.com/y2hpym7u>

82. Normal

At this vulnerability acting on the South hand would be unpopular enough so failing to do so, clearly indicated by the North hand, doesn't qualify as anything but normal.

-----

<https://tinyurl.com/yxzozrkt>

83. Suspicious



Somewhat a guess for South, but 3NT could have been terrible if North had a singleton in clubs. 4S is obviously a reasonable and probably mainstream alternative. On the actual cards, it is easy to see that 3NT is superior.

-----

<https://tinyurl.com/y5cfqcx2>

#### 84. Normal

Routine auction and lead.

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<https://tinyurl.com/y6cjsty9>

#### 85. Suspicious

South could have had a lot more for the 2S call, and in better places. But this time North was right to take the low road opposite that South hand.

-----

<https://tinyurl.com/y58g93la>

#### 86. Suspicious

North might have taken some action, but it isn't clear that he should or what is or is not indicated. However, South's club lead is far from obvious on with East having opened 1C. A diamond lead or the ace of hearts would be very reasonable candidates. Even a trump lead. But opposite the North hand, the club lead is very clear.

-----

<https://tinyurl.com/y5dt3zr9>

#### 87. Suspicious

It is easy to see that 5C is down 1. It is also easy to see that, with West being at least 5-5 in the majors, that 4H is cold. So the 5C call, which is clearly marginal, is very indicated looking at North hand.

-----

<https://tinyurl.com/y3g4bj3g>

88. Suspicious

Difficult hand. While their actions were reasonable they were far from clear. The final result looking at the two hands was clearly the best bet.

-----

<https://tinyurl.com/yygtjxof>

89. Normal

Pretty hard to miss this grand whatever you do.

-----

<https://tinyurl.com/y26mjyuo>

90. Normal

North has a weird one. Unclear how to bid it, but in reality all roads would likely lead to 4S.

-----

<https://tinyurl.com/y2lfhp5j>

91. Suspicious

North's pass of 3H is far from clear, but right on target when this is South's distribution. Also, if South had opened 1H, as many would, it would be impossible to stop short of game.

-----

<https://tinyurl.com/y2at22vs>

92. Normal

Nothing particularly indicated.

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<https://tinyurl.com/yyl32ypj>

### 93. Suspicious

Leaping to 6NT without investigating a minor-suit small or grand looks like beginner's bridge. But on the actual North hand 6NT is the right contract, even with the 4-4 club fit and the 5-3 diamond fit.

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<https://tinyurl.com/yy4y9rdh>

### 94. Normal

1NT overcall probably mainstream, and not clear what is indicated by North hand anyway.

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<https://tinyurl.com/y3bpbsl5>

### 95. Normal

This sort of preempt appears consistent with their general style, so it has to be considered normal. Still waiting for it to hit shortness in partner's hand.

-----

<https://tinyurl.com/yxok8ev7>

### 96. Normal

While 4S might be a good contract, that isn't immediately clear. In addition, it is virtually impossible for either of them to act. Queen of clubs lead is probably mainstream, and opposite South hand pretty much any lead will work.

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<https://tinyurl.com/y2gl9oxw>

### 97. Normal

Auction and lead probably mainstream, and nothing particular will matter.

-----

<https://tinyurl.com/y5qofvfk>

98. Anti-cheating

North might have doubled 1NT, but not clear. The opening lead doesn't seem normal, and is not indicated on the North hand.

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<https://tinyurl.com/y4bjalof>

99. Normal

Diamond lead looks mainstream.

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<https://tinyurl.com/yydr2mmh>

100. Normal

Auction routine. Mainstream lead. Complex after that.

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<https://tinyurl.com/yy7uju5c>

101. Suspicious

Whether to bid garbage Stayman or pass 1NT on the South hand is a decision which will always be debated. On this layout, bidding garbage Stayman was clearly indicated by the North hand.

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<https://tinyurl.com/y3vtfugc>

102. Suspicious

North could have reasonably led from any of his four suits. The club choice was definitely the lead indicated knowing the South hand.

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<https://tinyurl.com/y5plwpp3>

103. Normal

The 3C bid is explained as relay GF. Does the 3H call show a 4-card heart suit? If so, the bidding would be routine for them. If not, South's 4H call would be in question. Not knowing the methods, must give them the benefit of the doubt.

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<https://tinyurl.com/yyuwwvzb>

104. Normal

While the 2NT call could turn out badly but obviously is indicated by the North hand, it is probably mainstream so consider a normal auction.

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<https://tinyurl.com/y69c9c8g>

105. Normal

Standard auction to routine contract.

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<https://tinyurl.com/yymc29vr>

106. Normal

The re-opening is reasonable enough, and it is not clear what is indicated from the South hand anyway.

-----

<https://tinyurl.com/y6hwasbw>

107. Anti-cheating

It looks more common to act on the South hand at favorable vulnerability, either with an initial takeout double or a balancing 2NT call. Looking at the North hand, declaring 3C appears to be better than defending 2S.

-----

<https://tinyurl.com/y2jcqhgc>

108. Normal

Opening lead is probably mainstream, and the North hand doesn't indicate anything in particular anyway. Incidentally, this hand is a good example of the difference between potential collusive cheating and potential self-kibitzing. If self-kibitzing were the issue the lead would be an indication of innocence, since looking at all 4 hands it is obviously necessary to lead a club. Knowing just partner's hand, that information is not available.

-----

<https://tinyurl.com/y59bolzg>

109. Normal

Knowing partner's hand, it is clear that a heart lead (forget a club lead -- that would be gross) is better than a spade lead. However, from the North hand a spade lead would be hugely mainstream, and leading a heart would be a bit blatant.

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<https://tinyurl.com/y6x2fkr2>

110. Normal

Lead and defense routine

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<https://tinyurl.com/y3mkx44j>

111. Normal

Straightforward auction.

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<https://tinyurl.com/y4l9wtre>

112. Normal

The reason for the double of 3D is not obvious, but if it was meant as a tactical action to buy the contract in 4H North doesn't need to see the South hand to evaluate that -- he has the information from the bidding.

---

<https://tinyurl.com/yxsooh56>

113. Normal

Reasonable sequence.

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<https://tinyurl.com/yyx9rgwj>

114. Suspicious

Overcalling 1NT and bypassing the good 5-card spade suit is a marginal action. But opposite the North hand, that is the only way to find the heart fit.

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<https://tinyurl.com/y29qe73b>

115. Suspicious

The choice between 3NT and 5C as the final contract depends upon South's holding in spades, diamonds, and clubs. Opposite the actual South hand it is easy to see that 5C has a much better chance to succeed than 3NT.

---

<https://tinyurl.com/y4k24ao8>

116. Normal

Competing to 4C and no higher looks like the mainstream action for the South hand.

---

<https://tinyurl.com/y5cgt9o9>

117. Suspicious

South's off-shape takeout double with a doubleton club and only 3 hearts would not be a popular choice, but it is the way to get to 4H. North's double of 4S holding a stiff spade and 5 good hearts is far from clear, but looking at the South hand it isn't obvious whether 4S doubled or 5H is the better result.

#### 117. Anti-cheating

South could have gotten a second doubled undertrick by underleading the ace of diamonds. This would risk letting the contract make if declarer had stiff king of diamonds, but North's double and his 4 of clubs on the second round of clubs make it very likely that North has the king of diamonds.

-----  
<https://tinyurl.com/yxfqum29>

#### 118. Normal

Routine Drury auction.

-----  
<https://tinyurl.com/y56aopt5>

#### 119. Anti-cheating

South could have rebid 2D, probably a more popular choice, and North would likely have passed, leading to a more secure contract. Thus, the 2D rebid is indicated looking at the North hand.

-----  
<https://tinyurl.com/y3kvalyz>

#### 120. Suspicious

The 4C cue-bid was ambitious enough and would probably not be a popular choice. But the 5H call on top of that was just plain a blatant overbid. If North has stuff in spades instead of the beautiful QJ of clubs, 5H may be too high and North may be bidding a hopeless slam. But North has the magic cards to make slam basically on a club finesse, or better if a spade lead rather than a diamond lead.

-----



<https://tinyurl.com/y5cevfed>

121. Normal

Routine auction to the right contract.

-----

<https://tinyurl.com/y5kvmhoh>

122. Suspicious

One would expect South to have asked for the queen of trumps, since slam figures to be an underdog without it. However, with North holding both black jacks and the singleton heart, slam becomes a slight favorite even without the queen of spades.

-----

<https://tinyurl.com/yy5msbqb>

123. Normal

Routine auction in their methods.

-----

<https://tinyurl.com/yxo5kpwu>

124. Normal

Clearly the winning decision, but all the actions are probably mainstream.

-----

<https://tinyurl.com/y2t8cfsa>

125. Normal

South's 2D and then 4C is very aggressive. He might well have contented himself with 3C, which is probably the mainstream action. The 5C contract does have good play opposite the somewhat magical North hand, but whether you want to be there or not isn't immediately obvious, so will have to let it go.

-----

<https://tinyurl.com/yx97flrp>

#### 126. Normal

The 2C overcall and the later 3S balance are both reasonable and probably mainstream, and no particular indication looking at the two hands anyway.

-----

<https://tinyurl.com/y3gv6anf>

#### 127. Suspicious

Any of South's three suits could be right or wrong on the opening lead, but a glance at the North hand makes it clear that the diamond lead is right this time.

-----

<https://tinyurl.com/y46dp4um>

#### 128. Suspicious

This 5D call at adverse vulnerability is nuts. Nobody would make this call. Yet, opposite the perfect North hand (stiff spade, 3-card trump support, magic fillers in hearts, and nothing wasted in clubs) it figures to be a winner, being on a finesse with 4S having a good chance to be making also. This bid is about as blatant as one can be.

-----

<https://tinyurl.com/y2s5hd34>

#### 129. Suspicious

While sitting the double might be right, it is far from clear. North is presumably expected to have a balanced hand, which means that South will be doubling with a fair 4-card spade holding. Opposite the actual South hand, it is obviously clear.

-----

<https://tinyurl.com/y54k5rkn>

#### 130. Anti-cheating

A diamond lead would be a quite possible candidate considering the relatively weak North hand, and that is the lead indicated by looking at the South hand.

-----

<https://tinyurl.com/y6d7ahqp>

#### 131. Anti-cheating

South has bid his full hand with the 3H call, and at adverse vulnerability competing to 4H over 3NT is nuts. However, North has nothing wasted in clubs, and the perfect fitting kings in the pointed suits. Even so the 4H call is not indicated from looking at the North hand, since 4H figures to go down 2 tricks with diamond ruffs which were warned about by the 2D overcall while 3NT might not make. It is quite possible that South forgot about the overcall when bidding 4H and thought that 4H was going to be making.

-----

<https://tinyurl.com/yxn7jbtf>

#### 132. Normal

Routine auction.

-----

<https://tinyurl.com/yybub3xg>

#### 133. Normal

Not exactly sure what the all of the auction meant, but apparently North showed clubs, South raised, and North drove to slam, all of which is reasonable enough.

-----

<https://tinyurl.com/y2cqfrfr>

#### 134. Anti-cheating

South's hand is so flat and full of extra strength that many if not most would just bid 3NT, or maybe Stayman first, since it is extremely unlikely that a 5-3 heart fit is better. If South knows the North hand, he can see that 3NT is right, and that North might wrongly convert to 4H.

-----

<https://tinyurl.com/yycdu6xa>

135. Normal

Seems like routine auction in their methods to get to the right spot.

-----

<https://tinyurl.com/y2zotodq>

136. Normal

The 2NT call is reasonable, and neither indicated or not indicated by the South hand. South's 4C call wouldn't be the choice of everybody, but it isn't particularly indicated. North's decision to quit over 4S is reasonable, and again knowing the South hand wouldn't be clear what to do. Opening lead could be either suit, and doesn't matter.

-----

<https://tinyurl.com/yy6x5xaz>

137. Suspicious

This 2D opener may be far out for even their standards, but it looks find opposite the North hand and they have made this sort of bid a lot (although they seem to usually hit a fit when they do) so will let it go. The opening lead, however, is far from clear. Many would be leading the king of clubs here, but knowing the North hand obviously a diamond is far better.

-----

<https://tinyurl.com/yysez2nz>

138. Normal

Bidding routine. Either club or heart lead possible, but no particular favorite looking at North hand.

-----

<https://tinyurl.com/y4jt4x5b>

139. Normal

3D bid seems okay. The club shift isn't particularly obvious and could be costly, but is fine when South holds the queen. However, it isn't necessary on the actual layout and it is possible for the club shift to be necessary (give declarer xx, AKQJxx, 10xx, Jx), so will just let it go.

-----

<https://tinyurl.com/yxdx57uh>

140. Normal

Auction looks reasonable enough.

-----

<https://tinyurl.com/yxc336xg>

141. Anti-cheating

North's pass of the overcall doesn't appear to be mainstream, since as a passed hand 2S would be a comfortable call. And opposite the South hand that would appear more effective, both getting to a better strain and shutting out the enemy diamond suit.

-----

<https://tinyurl.com/y6obotgq>

142. Normal

Routine. No legitimate way the bad game could be avoided.

-----

<https://tinyurl.com/y52m4ujm>

143. Anti-cheating

South can defeat the contract by underleading his ace of diamonds when in with the king of spades. This is a quite findable play considering North's carding in clubs which presumably is suit-preference. It would be a clear defense knowing the North hand.

-----

<https://tinyurl.com/y2f672kk>

144. Suspicious

Many would overcall 2H on the South hand. Knowing the North hand, that would be disastrous.

-----

<https://tinyurl.com/y2bfaabd>

145. Normal

Knowing the North hand, it isn't clear whether the 5C call will be a success or not. Also, it is probably a mainstream choice in a difficult situation.

-----

<https://tinyurl.com/yxfr7uj6>

146. Suspicious

There was no double of 2D, which takes away from the value of leading the doubleton vs. the club lead. It looks pretty much like a tossup, and obviously the North hand indicates a diamond lead.

-----

<https://tinyurl.com/y5asg526>

147. Normal

Auction is routine enough.

-----

<https://tinyurl.com/y3rbrrer>

148. Normal

Routine auction.

-----

<https://tinyurl.com/y6xvwmev>

#### 149. Normal

This auction is baffling. South isn't anywhere the values for a 2/1 call -- he has a normal 1NT response. And North bid the hand as though South could be this weak. Still the contract was routine, and would have been reached after a 1NT response, and maybe they are doing something unusual here. It doesn't appear they gained anything.

-----

<https://tinyurl.com/y4xjdowc>

#### 150. Normal

North might have raised to 3C, but not clear if this is favorable or not and perhaps not the popular choice anyway.

-----

<https://tinyurl.com/yxd68h9j>

#### 151. Suspicious

North's shift to the king of hearts is a shocker. It could very easily blow a heart trick which might be the setting trick, and is unlikely to gain. Either a club continuation or a spade shift is far more mainstream. Yet, knowing the South heart holding of QJx, the king of hearts shift is quite the potential winner.

-----

<https://tinyurl.com/y4nqbbhc>

#### 152. Normal

The 9 of hearts is certainly the lead indicated knowing the North hand, but it looks like the mainstream lead anyway.

-----

<https://tinyurl.com/y5a22fy5>

#### 153. Suspicious

Even with partner a passed hand, a preempt with this strong a playing hand and 3-3 in the majors may well miss a vulnerable game. It is marginal at best. But knowing the North hand, it

is certainly the winning action as it will be very difficult if not impossible to double, it might make, and anything the opponents do will probably get them in trouble.

-----

<https://tinyurl.com/yyb3bxzs>

154. Normal

Not clear how popular the 2NT call would be, but it is certainly reasonable enough. North has a guess, and the 6C guess looks as good as anything with this impossible to bid hand and might well be the mainstream choice.

-----

<https://tinyurl.com/y2jz5lfo>

155. Suspicious

This is a scary holding to lead from when the only thing you know about South's spade holding is that he doesn't have 5 spades. It would definitely not be mainstream, and might not be very popular. Of course knowing the actual South hand it is a clear choice.

-----

<https://tinyurl.com/y57uv8l2>

156. Normal

Trump lead pretty routine from this hand on the auction.

-----

<https://tinyurl.com/y3afa5k9>

157. Normal

The 4D call is reasonable in what is basically a guessing game, and not clear knowing the South hand what the correct action is.

-----

<https://tinyurl.com/y6b3cgh7>



158. Normal

The 3NT call doesn't have to be right, although it clearly is opposite the South hand. Still, it is probably a mainstream choice as it doesn't pay to hang in 3D on this sort of hand.

-----

<https://tinyurl.com/y4bvubvz>

159. Anti-cheating

Knowing the North hand, South would be much better placed making a takeout double instead of overcalling 1NT. This will let North introduce spades naturally, and get to what looks like the best partial.

-----

<https://tinyurl.com/y4xx4a5h>

160. Normal

Assuming 1S shows 5+, which it probably does, this looks like a routine auction.

-----

<https://tinyurl.com/yysxuar8>

161. Normal

Routine bid, lead, defense.

-----

<https://tinyurl.com/y476w7qm>

162. Anti-cheating

Passing would not be unreasonable with the red-suit holdings as they are and having already shown 5 spades. Looking at the North hand it appears that passing is the winner, since a couple of diamond ruffs figure to defeat 3H while 3S is a long ways from cold.

-----

<https://tinyurl.com/yyutsby4>

163. Normal

Routine

-----

<https://tinyurl.com/y673ha2r>

164. Normal

Mainstream actions given their multi defense.

-----

<https://tinyurl.com/y2wkalmt>

165. Suspicious

How can South defend this way? If he thinks his partner's 9 of hearts is suit-preference, he should simply duck the heart which guards against anything bad happening. If he thinks his partner's 9 of hearts is count, he should again duck the heart in case he is wrong about which ace partner has. Ducking can only cost if declarer has 7 clubs and partner has the ace of diamonds -- then South can get squeeze-endplayed. There is no reason at all to play for this, since North's ace is just as likely to be the ace of spades. Obviously knowing North's hand South's defense is best. This is a good example of a player who knows the hand making what appears to him to be an obvious play, without realizing that if he didn't know the hand it would be a hopeless play.

-----

<https://tinyurl.com/y4bj9lrd>

166. Normal

Yes, the club lead would be a little better, and that is obvious knowing the South hand. But while some might avoid the diamond lead, nobody would ever find the club. There are limits.

-----

<https://tinyurl.com/y6zlxvbh>

167. Normal.

The 1NT opener is pretty standard with the South hand, and 2H is a fine contract anyway.

---

<https://tinyurl.com/yychk4zx>

168. Anti-cheating

Obviously, this accident wouldn't have happened if they knew the other's hand.

---

Anti-cheating 18

Suspicious 39

### **Commentary**

This is pretty convincing.

This pair wasn't idiots. There weren't flashy impossible leads and defenses or wild bids which worked for the most part. But there was a remarkable consistency on the close decisions. Also, some of the things they did are not obvious, and would not even be noticed by many observers. A good example of this is #165

South's defense is gross if you think about it. But if you don't put yourself in his shoes about what he is looking at, his defense seems automatic.

I've double-checked the links to make sure they are accurate, as well as making a final go-through of the hands. While some of my classifications could be debated (that will always be the case), I'm pretty sure there is no bias in any direction.

### **Suspicious Nine Hands**

[Kit provided additional commentary on nine hands. They are cross-referenced to those above].

While most of the suspicious actions involve normal judgment decisions, a few of them are just plain bad bridge. These are actions I would expect virtually no expert to make. Below are 9 such actions, all terrible bridge actions which are all indicated actions if partner's hand is known. This is a very unusual number of such actions, and is very indicative of collusive cheating. Normally one might expect at most one or two such by experts over this number of boards.

---

<https://tinyurl.com/y4q426ka> (Board #5)

The 2NT call is an asking bid, and the 3D response shows a maximum with 3 hearts. We don't know the rest of their structure, but it appears likely that 3C would show a minimum with 3 hearts, 3H a minimum with 4 hearts, and 3S a maximum with 4 hearts. So, what is the justification for the 2NT call? South clearly isn't strong enough to have any game interest opposite a single raise. If North has 4 hearts it will get the partnership to the 3-level or higher, when South could have passed and played in 2H. The only time bidding 2NT is gains is when North has only 3-card heart support and the hand will play so badly in the 4-3 fit that it is better to go to the 3-level. And North happens to have exactly that hand. There is no legitimate reason for South to expect North to not have 4 hearts.

-----

<https://tinyurl.com/y4x3j8fn> (Board #46)

North opened the bidding 1D. West has shown hearts. East will often have 3-card heart support for his takeout double. What justification can there possibly be for leading a heart from xxx, a lead which not only is figures to give declarer a heart finesse when he has few dummy entries but is likely to establish dummy's long heart which declarer would be unable to do so easily. However, looking at the North hand the heart lead becomes the clear choice.

-----

<https://tinyurl.com/yyl32ypi> (Board #93)

While we don't know the N-S methods, it is hard to imagine that a sophisticated pair playing at this level doesn't have the mechanism to explore the possibilities of a minor-suit small slam. Looking at the South hand, it is very easy to see that a minor-suit slam might be considerably superior to 6NT opposite a 1NT opening bid. Yet, opposite this exact North hand, 6NT is the best contract even though there are two 8-card minor-suit fits. Due to the magical 10 of hearts, 6NT makes if the diamonds come in for 5 tricks (2 spades, 3 hearts, 5 diamonds, 2 clubs). If the diamonds don't come in, 6NT makes if the clubs are good for 4 tricks (2 spades, 3 hearts, 3 diamonds, 4 clubs). 6 of either minor needs that minor suit to come home without loss. Thus, North has the exact hand where it is wrong for South to investigate and find a minor-suit fit.

-----

<https://tinyurl.com/y3kvalyz> (Board #120)

North's sequence of 2S and then 3H doesn't necessarily show 3-card heart support. In fact, North will have a doubleton more often than not, since with 3-card support he might have raised immediately as the 2H call shows 5+ hearts. South's 4C call is perhaps reasonable, since there could be a slam. However, having made his slam move, going beyond the 4H safety level with this hand is ridiculous. North could have what would appear to North to be a much better hand than his actual hand, something like AKxxxx, xxx, Ax, Qx, and 5H would be in considerable jeopardy. Yet, opposite the actual North hand, with nothing wasted in spades and the magical QJ of clubs, it is a slam you want to be in. On a diamond lead it is basically on the club finesse -- the 5-1 club split was unlucky. On a spade lead, which isn't at all unlikely, the slam will make even if the club finesse is off provided either the hearts are 2-2 or the clubs are 3-3, since dummy's small diamond can be discarded on a club and the losing diamond ruffed in dummy.

-----

<https://tinyurl.com/y5kvmhoh> (Board #122)

It would be routine for a good player to ask for the queen of trumps after finding out he is off one keycard, and stopping in 5S if North doesn't have it. Even if it is granted that North will have second round heart control for his 4H call, South needs both the jack of spades and the jack of clubs in the North hand to make slam a tiny favorite. Without the jack of spades, slam is a definite underdog. Thus, leaping to slam without finding out about the queen of spades is clearly an anti-percentage action, unless South knows about the black jacks.

-----

<https://tinyurl.com/y46dp4um> (Board #128)

The 5D call is insane. South's hand is riddled with potential losers. This is adverse vulnerability where even down 2 against a making game shows a loss, and South has plenty of potential defense against 4S. If South catches the wrong hand he could easily be going for 1100 with 4S not making. 5D is a bid no expert would make. However, South caught trump support, a singleton spade, and a perfect fitting QJ of hearts, none of which he had any reason to expect to find if he didn't know the North hand.

-----

<https://tinyurl.com/yxd68h9j> (Board #151)

North's shift to the singleton king of hearts with dummy holding the singleton ace is almost certain to blow a trump trick. While it is true that declarer might want to ruff a spade in dummy, leading the king of hearts figures to at best break even, particularly since dummy's diamonds are a threat. However, with partner holding the miraculous QJx of hearts, the heart shift becomes safe and possibly productive.

-----  
<https://tinyurl.com/y2jz5lfo> (Board #155)

The only information that North has about South's spade holding is that South has 0-4 spades. Leading from AJ9x is about the most dangerous lead one can make as far as giving up a trick, and North has a 5-card suit he can lead from with relative safety and a couple of entries to potentially establish and run the suit. However, with South's whole hand being KQx of spades, the spade lead becomes obvious.

-----

<https://tinyurl.com/y2wkalmt> (Board #165)

It is obvious from declarer's foolish falsecard of the queen of clubs that declarer has solid clubs, since partner would lead top of a sequence if he had a sequence. North must have the spade or diamond ace to defeat the contract. The only clue South has is North's 9 of hearts (a bad play) which should logically be suit-preference. However, if South isn't sure of this, he can duck the first heart, knowing that declarer still has at most 11 tricks (4 spades, 1 heart, 6 clubs) unless he holds an unlikely 7-card suit. Then South can win the second heart, and if his partner has the ace of spades instead of the ace of diamonds all will be well since declarer won't be able to get to dummy. South's actual defense is ridiculous, unless he knows his partner has the ace of diamonds.

-----

## **Summary**

I have looked at 168 hands played by the pair in question. Every action except declarer play was closely examined, and determined to be "suspicious", "anti-cheating", or "normal" according to my definitions.

There were 39 "suspicious" actions, and 18 "anti-cheating" actions. This is a much higher percentage of suspicious actions vs. anti-cheating actions than would normally be expected for an honest pair. This indicates that the pair avoided several pitfalls which would normally be expected to occur.

The pair was aggressive with their preempts, particularly with 5-card weak 2-bids. However, an examination of all hands where they did make a preempt which wasn't clear-cut and all hands where they did not make a preempt which might have been made, on every such hand if they preempted partner had sufficient trump support and if they didn't preempt partner did not have sufficient trump support.

Of the 38 suspicious actions, in my opinion 9 of them were not judgment situations. These 9 actions were either clearly bad bridge actions or definitely anti-percentage actions without knowledge of partner's hand, but became indicated actions if knowing partner's hand.

From these results, I conclude that it is very likely the pair was colluding.

## APÊNDICE III – Complemento Nicolas Hammond



## **Initial Contact**

Prepared and written by Nicolas Hammond.

On September 23, 2020, I was contacted by a representative of the Brazil Bridge Federation and asked about identifying a cheating player.

I believe there is always a possible confirmation bias if presented with only one name, therefore I asked for at least five names, at least one of which would be a player under suspicion.

My Bridgewinners email response was:

I do not need real names.

To avoid any confirmation bias, I suggest that you send the BBO names of 5 players.

This should include the name of the player you suspect, and also 4 honest players.

If you think there are more than 1 cheating player, include them in the list of 5.

I am aware that there are some players from South America that are believed to be cheating; but I don't look up their country of origin.

I was given the following five BBO handles:

Leda pain  
Maufigo  
Tubiska  
Emilioir  
Rmfmello

My response was:

LEDA\_PAIN is suspicious. But with some partners, not all.

MAUFIGO is not suspicious.

TUBISKA is not suspicious.

EMILIOLR is not suspicious.

RMFMELLO is possibly suspicious. Depends on how good a player he/she is.

My later response was:

The data with GABU/LEDA is suspicious on the defense, the bidding and the opening lead. If they live together, even more suspicious. Declarer play not so suspicious.

At the time this original work was done, I did not know the real names of GABU44 or LEDA\_PAIN. I did not know they were married and living together. I have seen lots of data of married couples and therefore my statements was based on experience at looking at data.

## APÊNDICE IV – Estatística Nicolas Hammond

# **Online Bridge Report On LEDA\_PAIN**

**October 20, 2020**

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Permission is given to share this report as needed for the investigation into Giorgio Duboin.

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# 1 Introduction

I was asked to provide statistical information on the online partnerships of LEDA\_PAIN/PAULINHA (PAIR\_1) and GABU44/LEDA\_PAIN (PAIR\_2).

I was provided with a set of BBO Tournament IDs (TIDs) to use for both partnerships.

I was also asked to compare the performance of GABU44 (Gabriel Chagas) in face to face (F2F) competitions.

The processed data for PAIR\_1 is at

[https://www.bridgescoreplus.com/zall/leda\\_pain-paulinha-184-hhheq](https://www.bridgescoreplus.com/zall/leda_pain-paulinha-184-hhheq)

This data was anonymized and is at

<https://www.bridgescoreplus.com/zall/anon-101-184-kmdqq>

In the anonymized data, Player\_1 is LEDA\_PAIN and Player\_2 is PAULINHA.

The processed data for PAIR\_2 is at

[https://www.bridgescoreplus.com/zall/leda\\_pain-gabu44-168-xqqqk](https://www.bridgescoreplus.com/zall/leda_pain-gabu44-168-xqqqk)

The data was anonymized and is at

<https://www.bridgescoreplus.com/zall/anon-102-168-mmjqz>

In the anonymized data, Player\_1 is GABU44 and Player\_2 is LEDA\_PAIN.

The following statistics were generated:

For declarer play, every card played from hand or dummy was compared against double dummy. If the card did not give up a trick, it is considered a 'good' card, if it gives up a trick it is considered a 'bad' card. To enable true comparisons with other players that are independent of the time of the claim, the number of 'bad' cards was compared to the maximum number of possible cards played, this is known as the declarer weighted error rate.

For opening leads, every opening lead was compared against double dummy. If the card did not give up a trick, it is considered a 'good' card, if it gives up a trick it is considered a 'bad' card. The double dummy opening lead accuracy rate (DDOLAR) can then be calculated.

For defensive play, every card played after the opening lead was compared against double dummy. If the card did not give up a trick, it is considered a 'good' card, if it gives up a trick it is considered a 'bad' card. To enable true comparisons with other players that are independent of the time of the claim, the number of 'bad' cards was compared to the maximum number of possible cards played, this is known as the defensive weighted error rate.

Declarer play:

Player	Partner	Boards	Bad	Total	WER Total	WE%
LEDA_PAIN	GABU44	45	28	852	1,080	2.59%
GABU44	LEDA_PAIN	43	21	680	1,032	2.03%
LEDA_PAIN	PAULINHA	63	15	1,086	1,512	0.99%
PAULINHA	LEDA_PAIN	37	18	603	888	2.03%
OZDIL	GABU44	40	20	628	960	2.08%
GABU44	OZDIL	31	11	551	744	1.48%

**Figure 1. Declarer play**

The Partner column is the name of the partner. The Boards is the number of boards declared. The Bad is the number of “bad” cards played, defined as a card that loses one or more tricks against double dummy. The total is the total number of cards played, this includes play from both dummy and declarer’s hand. WER Total is the maximum number of cards that declarer could have played, if they did not claim and all 52 cards were played. As the last round is forced, this value is  $24 * \text{the number of boards}$ . The WE% is the weighted error rate. For example, in the first line, with partner PAULINHA, LEDA\_PAIN declared 63 hands, played a total of 15 “bad” cards in these 63 boards. There were a maximum of 1,512 possible cards ( $63 * 24$ ) assuming no claim, the weighted error rate is the number of bad cards divided by the maximum possible number of cards played: 0.99% ( $15 / 1,512$ ).

The opening leads are reported for the sake of completeness. There are too few opening leads to be statistically relevant for cheating analysis.

Player	Partner	#	Good	DDOLAR %
LEDA_PAIN	GABU44	46	41	89.13%
GABU44	LEDA_PAIN	33	25	75.76%
LEDA_PAIN	PAULINHA	42	38	90.48%
PAULINHA	LEDA_PAIN	42	23	54.76%
OZDIL	GABU44	41	38	92.68%
GABU44	OZDIL	32	28	87.50%

**Figure 2. Opening lead statistics**

The figure above shows the number of leads and their double dummy accuracy. The number of leads is not significant enough for statistical analysis, typically I would like to see a minimum of 100 opening leads. Expert average in face-to-face play is just under 81%.

Defensive play:

Player	Partner	Boards	Bad	Total	# OLs	WER Total	WE%
LEDA_PAIN	GABU44	79	9	694	46	902	1.00%
GABU44	LEDA_PAIN	79	6	709	33	915	0.66%
LEDA_PAIN	PAULINHA	84	7	701	42	966	0.72%
PAULINHA	LEDA_PAIN	84	22	716	42	966	2.28%
OZDIL	GABU44	73	16	608	41	835	1.92%
GABU44	OZDIL	73	9	615	32	844	1.07%



### Figure 3. Defensive statistics

The column “# OLs” is the number of opening leads by the player. Opening leads are treated differently for statistics and this number is subtracted from the possible number of cards played.

The data above is somewhat meaningless unless there is comparative data.

The first set of comparative data is top level events from 1955-2020. This includes data on Gabriel Chagas with different partners.

Partner	# Boards
Miguel Villas-Boas	785
Marcelo Branco	684

### Figure 4. Chagas list of face to face (FTF) partners

The data from old Vugraph events is known to have occasional problems. These problems are assumed to be consistent across all pairs and are not likely to have a major impact on the results of the data.

Player	Partner	Boards	Bad	Total	WER Total	WE%
Miguel Villas-Boas	Gabriel Chagas	187	73	2,742	4,488	1.63%
Gabriel Chagas	Miguel Villas-Boas	180	107	2,606	4,320	2.48%
Marcelo Branco	Gabriel Chagas	179	68	2,651	4,296	1.58%
Gabriel Chagas	Marcelo Branco	160	64	2,161	3,840	1.67%

### Figure 5. Chagas and partner's FTF declarer play

Player	Partner	#	Good	DDOLAR %
Miguel Villas-Boas	Gabriel Chagas	196	155	79.08%
Gabriel Chagas	Miguel Villas-Boas	167	142	85.03%
Marcelo Branco	Gabriel Chagas	180	146	81.11%
Gabriel Chagas	Marcelo Branco	152	125	82.24%

### Figure 6. Chagas and partner's FTF opening leads

Player	Partner	Boards	Bad	Total	Subtract	WER Total	WE%
Miguel V-B	Gabriel Chagas	363	56	2,359	196	4,160	1.35%
Gabriel Chagas	Miguel V-B	363	55	2,401	167	4,189	1.31%
Marcelo Branco	Gabriel Chagas	332	40	2,165	180	3,804	1.05%
Gabriel Chagas	Marcelo Branco	332	48	2,183	152	3,832	1.25%

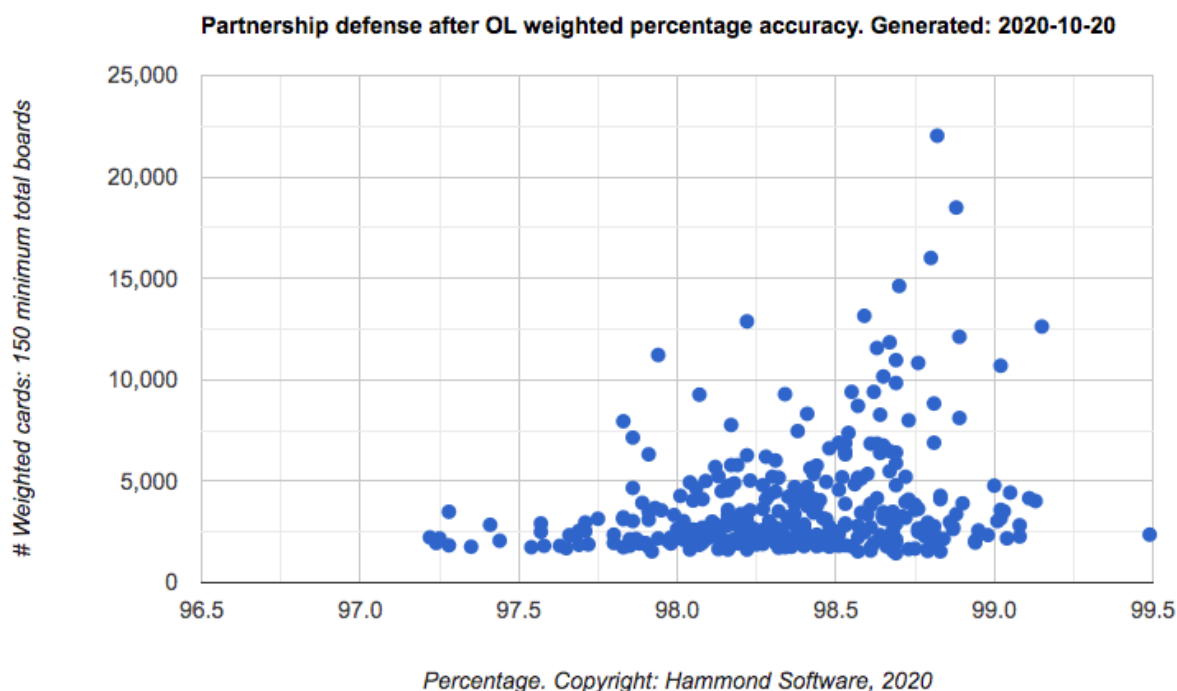
### Figure 7. Chagas and partner's FTF defensive play

Next I look at the partnership data.

I look at the defensive weighted error rate for GABU44/LEDA\_PAIN. Their weighted error rate is 0.83% with a total of 168 boards played. This translates to an accuracy rate of 99.17%.

I then use the data from on-line play in top tournaments, ask for comparison data for all pairs with 150+ total boards played.

This is the accuracy graph:



**Figure 8. Online weighted accuracy rate, defense without OL, 150+ boards cut-off**

GABU44/LEDA\_PAIN would be ranked second on this chart with a 99.17% accuracy rate. The pair at 99.5% is known to be a cheating pair (BBO confirmed connection data showing self-kibitzing), the names are not public yet so I cannot reveal. I have left the various names off the following charts:

Boards	WE %
198	0.51%
<b>GABU44/LEDA_PAIN: 168</b>	<b>0.83%</b>
1,098	0.85%
378	0.87%
386	0.89%
253	0.92%
172	0.92%
360	0.95%
195	0.96%
320	0.97%
286	0.98%
296	0.98%
912	0.98%
246	0.99%
448	1.00%

200	1.02%
246	1.05%
168	1.06%
192	1.06%
336	1.10%
719	1.11%

**Figure 9. Online weighted accuracy rate, defense without OL, 150+ boards cut-off**

If we do the same test, but with online FTF play, the top ten pairs are:

Boards	WE %
162	0.54%
153	0.58%
1,329	0.81%
<b>GABU44/LEDA_PAIN: 168</b>	<b>0.83%</b>
327	0.83%
160	0.85%
3,590	0.90%
848	0.91%
275	0.93%
243	0.93%
155	0.96%
255	0.97%
4,152	0.97%
361	0.99%
198	1.00%
195	1.01%

**Figure 10. FTF weighted accuracy rate, defense without OL, 150+ boards cut-off**

The third pair on the list is Fisher/Schwartz. The pair with 4,152 total boards is Balicki/Zmudzinski.

The defensive play of GABU44/LEDA\_PAIN is suspicious. Their defensive play after the opening lead on these 168 boards would rank them second in on-line play using similar tournaments. If this was FTF play, they would rank fourth, just behind Fisher/Schwartz. Their declarer play is normal. This data is indicative of possible collusive cheating and should be investigated with human analysis of their play.

The overall play of LEDA\_PAIN with PAULINHA is suspicious. Her declarer play, and defensive play are above normal thresholds. I would recommend asking for connection data from BBO.

There is difficulty in using a small number of boards to attempt to prove something statistically.

## **2 Data**

I do not claim to have all data; there has been no attempt to remove any data from this report.

For online team data, I take data from the Bridgehouse, ACBL, Reynolds KO, USBF, OCBL and the Alt events including the mixed events. I ask the computer to search for the different strings and include those events, e.g. “Reynold”, “USBF”, “OCBL”, “Alt “, the latter is Alt with a space. For USBF, I include extra checks to exclude all Junior and training events.

For face-to-face (FTF) competition, I use data from BBO and The Vugraph Project (TVP). There are certainly some errors in the older BBO and TVP data. Any time errors are found, they are corrected. Given a large set of data, the Law of Large Numbers (LLN) should apply and any unresolved errors should be consistent across all players.

### **2.1 Errors**

All efforts have been made to remove any errors from the data.