



GRADUATE STUDIES & RESEARCH COMMITTEE

**September 21, 2015
12:00 – 01:30 p.m.
ADM 250**

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GRADUATE STUDIES & RESEARCH COMMITTEE

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& K\$' FKDQJHG WK QMLHWQ H DRG XLDWWH G H \$ C H R I O H M R F K & Q W O G D Q G
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0DQDJHPHQW GHJUHH SBRQJHSBQJAXCEIRLHQW WHKHW B UHQJHWDQWLQD
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x 1RWH WKDW IRUXRQWVWLQJEQUUDIHRQ RQ SDJH

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%XVLQHVW RQ\RSW\RV DRQWVWFRQDQEHL EOH\ ZLOO
D FRS\ RI WKH 028 IRU UHYLHZ

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%UXFN 6LEOH\ \$SSU\RVHMGKH SURWSRVDOWR HOH
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&KDLU ZLOO DGGUH\WU*SV54VWFRQKH SURSRVHU

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GRADUATE STUDIES & RESEARCH COMMITTEE

November 9, 2015
12:00 – 01:30 p.m.
ADM 250

AGENDA

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+ LOU 1 If RQ & DWDQGLD 3 DXO

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GRADUATE STUDIES & RESEARCH COMMITTEE

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F &RQFHUQ ZDV H[SUHVVHG DERXWJWDPN LFQRQ R QGDQI LHQJWLK
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G 3DJH 3URSRVDO PHQWLRQV ^UHRVH DQDQBLILBGR XOG EH
H 3DJH 1RWH UHTXLUHPHQW WR' RDHWWLHQ GK DQYH HXTQILWMG
DWWDFKHG WR LW DQG LI VR DUH WKH\ KLGGHQ XQLWV"
I 3DJH 7KH GDWH RI WKH SURQJSDHPDKUDVWKRD VE HWKHDQDM
SURJUDP QHHGV WR EH FKDQJHG WKURXJKRXW
J 3DJH 7KH WDEOH UHIHUV WR FOD \$19% Z K DW W KH J
L 1R PHQWLRQ RI WKH 72() UHTXLWVMRQWVWLQ ZWQD \$UHRU\$HR
WR WDNH WKH 72() H[D P 7KLV VKRXOG VELHR Q DVGHF WQRLQ UHU LQ W
M \$OWKRXJK *6 5 GRHV QRW IRUPUDRODW LLRHQY LQZWKHH SIU R\$R
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OLQXWHV IURP WKH 1RYHPEHU IRUPHGLWLFQJV ZHRIQ BQD
DSSURYDO : LWKRXWDVTXRUHJRVIDQW VVGGKXQVHOHWV DSEPHHLWLQJ
%UXFN 3DXO \$SSURYHG 1RYHPEHU YHG BIVQVXXLEHPVL VAWHIG DS

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& RPPLWWHH XSGDWHV (3, & 6 UH W XLUQQHGH D GO R W DV HUH YALR H
SROLF\ 6LQFH WKDW OHWWHU ZDV WHFH RI QY HGF HIB RE PI UXQ HV KE & XLO/ WDEOHG WR WKH QH[W PHHWLQJ * UO2UHJ \D QLH] S RVLVR Q G5 MMKLDW HAQKFH
SRVLWLYH

3 U R S R V D O I R U X C G L H X / V & I R F Q H F I B Q / W U D J W P R Q R L Q R J O R / E D Z O D & G
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WKURXJK VHYHUDO UHLYLVLRQV SULRU \$VQRXSGEDPALHVQ LERXQG JHWRWWUKHI
IULQJH EHQHILWV DQG UHOHDVH WL RHP HZ DPL QRRHUT XHGVLWHRQJ L D\$CG G LQVG
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2578 SURSRVDO IRU WKH &HQWHU IRU 6HUGYLQJ R6YDWHLRQ (ZLMLQH
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& RPPLWWHH LQWURGXFWLRQV ZHUH PDGHMIRV & DHZORV 6DQFH
UHSUHVHQWDWLYH IURP WKH & ROOHJH RI +XPDQLWLHV DQG WKH

0XVL F DQG 'DQFH GHJUHH GHVLJQDWOLRNQH WORKVFLKD Q QIG
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-XVWL FH 6WXGLHV 2QOLQH *OREDO 0DVWHUV 3URJUDOL
RQFHQWUDWLRQV L*FOHR EMRO & GHRJLUQRHORVR VWR WKD WQG
KDYH HTXDO XOLYMMVW KUKHHL UXQGHFWLVURRQ ZQW WR UHP
HH XQLWV WR WKH QFLRQFH QWUDWLRQ (DFK QRZ KDV

HQW LVVXH LV WKDW JQKHG \$RID GRHQPIDF S6RHOQDFWH UHFHQWO\ VL
WUDWLRQ PXVW KDYH% LQ FRUHDUQDQS EGVFRUH FRXU
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QLW RYHUODS V WLLFOHDQW XGLRHQ/ VQXJH G V WHRG I W[KW WL V
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GDOO DOVR QRWHG WKDWFGIR D D VHGRPHQW RI OLEUDU\ UHVR
-XVWL FH 6WXGLQH V DQG FMDKADHG WQHWKHZUWSURSRWDO
RXUFHV WKDW SVRKHW OHLKUH DQHZGRRHQ/F Q Q W UKDDWYIHR WR VKS
HQW GRQH EHIRUH WKH FRQFHQWUDWLRQ LV DSSURYHG

F - XVWLFH 6WXGLHV SURYLGHG D WHZIRU SHDDJH OSUHRUS R V H G
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UHTXHVWHG WKDW -XVWLFH 6WXGLHV 6U5IVEXURQWUWQH[WHZIWHW W WQHQJ
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'2(RI PLOOLRQ VR LW DSSHDUV WMRKRSKWR DISDPURWDROS H \\$ DTVXHRA
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WKH SURSRVDO 7KHUH DUH VWLOQRV\OWKHPD EQLPSSCRRLQOWVZ WIKWD
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E 7KH FXUUHQW 3HQUROOOG VVWXGHSQHFWV DDUHWVNRQJDQRGXWV
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RQ WLPH EXW WKH DJHQGD ZDVQ\TW W\K\Q WD JRHQMG DHZAD V7 K\H\Q WD UUDY
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GRXEON FKHFNQJ VSHOOLQJ HUURUV /LNHV\KQAQD\GW 3
LQFRUUHFWO\ LQ WZR SODFHV

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VHQVH RQ ZK\ LW LV SDUW RI WKHLU VWUXFWXUH

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ZLOO RFFXU ZLWK WKHVH FDP SHUV ZKLOH WKH\ DUH KHUH RQ FD
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O 7KHUH LV QR GLVFXVVLRQ DERXW VL\PLQD\Q\H\B\H\W\Q\H\Q\H
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*XHVW 1LFROH /RHVHU & XUULFXOX P DQG \$FDGHPLF 3URJUDPPL

7KH PLQXWHV RI WKH)HPEHVK\DUQ J ZHUVHUE GRXFKWVXS QF
DQG DSSURYHG 3DXO EURXJKW XSKWKQH PQRQVRIV SWHRSQFH
ZHUVH DSSURYHG DV VXEPLWWHG

)13 & RQFHQWUDWLRQ 'DYLG %UXF NH06RXWHVQ 0HQGD DOLQO O/HQGD
6XVDQ .HQGDOO TXHVWLRQHG ZKHVKHWDUEQRDWIRMHQDNUVSHRUUDOP
WKH '13 SURJUDP 3DJH RI WKH SUDQFHSHMDO ISQSHEDWVHWWKVKH
SURJUDP & DVVDQGUD 3DXO EURXJKW XSKWKQH PQRQVRIV SWHRSQFH
H[SHFWHG WR KDYH KHDOWK LQVXUDQFH BKOZHVHQZSQWHHG DQDQFH
RI WKHVH QXPEHUV UHIUHQFLQJ KORZ 3W KSHU XFHNUHHQ BWDQDPSLSQSHUGR
DSSURYHG WKH)13 & RQFHQWUDWLLRQO SUDQFHSHMDO ISQSHEDWVHWWKVKH
UHIUHQFH V UHJDUGLQJ KHDOWK HQS/URUSQFDHOQ XRPQFHU WKRVH FK
EHHQ PDGH ZLOO EH IRUZDUGHG WR & 5

+LODU\ 1L[RQ SUHYLRXVO\ VHQW WR DDOLOV WR IRW KWK RVPWPK
VHOHFWHG IURP 6-681V 5HVHDUFK & RPSSHDMFLAKL & QPVSR VDLWWLIRQGD
%DNHUVILHOG 7KHUH ZHUVH SDUWLFW & DRQFHVH IRRJZ DQHGP ZHUVHP
& ROOHJH RI (QJLQHHULQJ IURP WK\$68R QOQHJH IRUROFVWKQF&R O OI
6RFLDO 6FLHQFH V 6KH WKDQNHG WKWVXQHPIEH U&KIR ID QWKRHDQ Q/RXU
WKDW WKHVH ZRXOG EH D FHOHEUDQG RPQH PREUWKRITI LQ BZLHMUVLQ
WR DWWHQG

5HYLHZ RI 2578 *XLGHOLQHV 7KHUKHDUVHDGVZLEWIKURXHSYIRVLS
DQG XSGDWLQJ SROLFLHV FRQFHUQLQJ 357BQFRIKQQLQH HNKLJQHS/WW
FKDQJHV WR WKH 2578 *XLGHOLQHV 7KPHRUQJ ZMDKHDFFRREPXWWWKGHLV
PHPEHUV SRLQWLQJ RXW WKH IROORZLQJ

x & KDQJHV WR JXLGHOLQHV KDYH WR E IF KPDDQJHH VE H F D X V H R I L Q
x 7HUPLQDWLRQ 5RE 6LEOH\ ZDQWHG P&O HDQ W/H2A5K 8WR BAXHWU P
*LOOHV 0XOOHU DQG 'DYLG %UXFN SRUQWHLGP RQ DWWLQD WU HFIOH
2578V 'DYLG %UXFN WKRXJKW WKH SURFHVWV HZDW HWG RVR KFDXP E
WHUPLQDWLRQ SURFHVW EH VLPSOLILHGHWBLQHQ B Q QWDUDQ W H
2578 V DFFRXQWV ZHUH EHLQJ VSHQW QQ WZKHUHDQQVMUQI&H GZ
DQG UHFHLYH WKH 'HDQ V DSSURYDO IRU WHUPLQDWLRQ
x 1HHG WR DGG WKH 7RZHU)RXQGDWLRQ XDDNG D FEKRWL FDHO MRRU DKRG
GLVWLQFWLRQ EHWZHHQ WKH WZR IRU SHRSOH WR XQGHUVW
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\$EVHQW & DVVDQGUD 3DXO & DUORV 6DQFKH] 'RORUHV OHQD

7KH PLQXWHV RI WKIRHOHDWIEQJ ZHUH EUVRFXXWKWL RQ DRQG
DSSURYDQ .HQGDOO %UXFN \$SODURFYKHG PLQXWHV ZHUH
DSSURYHG DV VXEPLWWHG

67&&6 2578 UHVXEPLWWHG SURSRVDO/VLZKQHIDHEFZDW D JHQ
DSSURYDO RI 2578V DQG GXH GLOLJH&QFH SFURQSFHMHQ WQJ WKHS\$RDUFWM
WKHPVHOYHV 'DYLG %UXFN DQG RWK\HOLWKDRGI RQ & BIUQV COOEHRVX
VWDWHG WKDW 67&&6 DSSHDOHG WR KDV@USHRDWHGQEWLDO POGHS LGR
VWDUWHG DGYHUWLVLQJ RQ WKHLU ZHYHULWWKBIQGHJDHUQ@UWQ XLFQ
GRZQ WKH VLWH DQG GLG VR SHQGLQQ HDHSUJQRYDQVRA RMPRIH WUW25G

5RE 6LEOH\ ZRXOG OLNH WR VHH PRIRQDWHIMWKLHDZ WDQHGL\H
%UXFN ZDQWV PXFK FOHDUHU DQG VXSVLRHWRHGDQY25G78Q FVH IDKIDLV
FODVVHV GRLQJ UHVHDUFK SURSRVDO/JUDQGGEXWILQJLWJKHWXBR
EH VXFFHVIXO +H EHOLHYHV WKDWWDQG VGKHH JGLQHJQFLQFHVLFV
ZRXOG OLNH WR VHH HYLGHQFH RI UHFIRQFSHDWQVQIKDVKIS\$VRUQHZDQ
2578 SURSRVDOV SURGXFHG SRRUO\ ZWQHWWKQOJHIV HODQYFLKV HSQ RASHD
67&&6 SURSRVDO KDG JRQH WKURXJK POGQD SJSHZLUQWVHQS VDRQ@RQH
WKDQ 'U *DR WR UHZRUN WKH SURSRVDOQWLTKB QRIZPG WDVQH IHRDJU
(QJLQHHULQJ LV FKRVHQ WKH\ PXVW ZKRUWSZLDQKV WIKQGF XUWHDQW
H[LVWLQJ 2578 SROLFLHV DQG JXLGHOLQHV

-HUU\ *DR VHQW D PHPR WR WKH FRPPLWWHH KDMG 6UMWKLQJ
FRPPLWWHH DW LWV)HEUXDU\ WPKHDHW MQKJH LALVOXHUA ZIURHQPV
DGGUHVVHG LQ WKDW PHPR KRZHYHU *RHQPL&MVHSQHPOQIDPH\$FWRQW
GLVFXVVLRQ WKH FRPPLWWHH EURXJKW DVKHDWIS\$URYDOWRKH67&&
2578 SURSRVDO IRU 67&&6 LV DSSURYHG ZPDKEQHDVHQFWRURUHZDWLQ
WR WKH & 5 FRPPLWWHH

)XUWKHU 2578 EXVLQHV *LOOHV 0XOOHU OHW WKH FRP

QHHGHG WR EH UHFHLYHG E\ KHU QR OW\ RVHEW W\Q DQX\GLHCGQ L QK W KRG
DJHQGD

\$OWKRXJK QRW RQ WKH DJHQGD 'DHYLGF%UWXHQNWE RI Q XJLKWH
HIIRUVV DORQJ ZLWK 6WHSKHQ % U DGQJV TXRQ OULH Y E D W LVRQH SSRUDLFD W
GLVFXVVHG WKH TXHVWLRQ RI ZKHQ WKRZUH & UWQ RWX BWWWWKLQHGXQWVH/ HVQH
VWXGHQW KDV DOUHDG\ HDUOLHU LQH MUH HUFRSXUDWHH RI WKQHLLWVJ UD
SURJUDP +H DOVR DVNHG IRU WKH FRFRPLHMWWRUH PQR W KDR & WIRWS R UD
XQLWV LQ D SURJUDP RU WKH XQLWV VFWBHQHLOQHQWOR DQG RI RUZHGYL VIK E
+LODU\ 1L[RQ PHQWLRQHG WKDW KH UW&H RXJWWDIPOL V D Q L S MUH LQWU
SHUFHQWDJH PHWKRG 'DYLG %UXFN VDDYLG WKKHD WSWSR H WFRQEWWW W
WKLV SROLF\ ZKHQ WKH UHYLVLRQV ZHUV FRPSOHWH

7KH PHHWLQJ DGMRXUQHG DW

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* UDGXDWH 6WXGLHV DQG 5HVHDUFK & RPPL
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3UHVHQW +LODU\ 1L[RQ 'DYLG %UXFNLO6XW\QX@QBDOD6DMLHQ/KD3
5RE 6LEOH\ &DVVDQGUD 3DXO &DUORV 6DQFKH]

\$EVHQW 'DYLG %UXFN 'RORUHV 0HQD

7KH PLQXWHV RI WKHP 0IDHUVFLQJ ZHUH EULR/KJXWW LRSQIRU
DQG DSSURRYDQDOO .HQGDOO \$SSURRYHG PLQXWHV ZHU
DSSURRYHG DV VXEPLWWHG

*LOOHV 0XOOHU DQQRXQFHG WKH 6WXBHQWKIS HWWHDGIFTQVYR
ZLOO UHSUHVHQW XV DW WKH & 68 UHDVQHQ UFRKE FGRFESHHWIZWORQWUAVL
WKH HYHQW

5HYLHZ RI &HQWHU IRU \$TXDFXOWXBRHDDWRUBHV 2BQSLQJ
SURSRVDO

*LOOHV 0XOOHU H[SODLQHG WKDW KIHPKVDRGUZRLUPN+HDGMHW HAWQV
KLP LQ VWUXFWXULQJ WKH 2578 WRUGHV KGLWIFKU HSQRWD IDFFWDLQG VVLUWDL
2578 ZLVKHV WR EH NQRZQ IRU LWV HRSHHGMMOLVYAH UDQGI JUHHHDQVLRHUV
,W DSSHDUV WKDW LW FDQ EH VXFFFHWWKHO FDTQKHE\HKVDPYQI WRSQSHPRUR

7KHUH ZDV FRQFHUQ WKDW 0/0/ ZRXOG P%DUDWKHUWRI &DQH6W
GLVFXVVLRQV EXW QR FRPPLWPHQW DVQGRQRWMKHPQDZQH68 :HUIKIDY
WR EH LQVWDOOHG WR PDNH WKH GHFKDLSQHQV7KWR TXKHNV25R&LEH
DSSURYH LW DQG 0/0/ PRYHV WR &DO 6WLDWWHHRZQWUQHRWHDWKH
FRQFHUQV

7KHUH ZHUH VRPH TXHVWLRQV FRQFHUQDQJW WKFWSKWRHSZLVMIG
([HFXWLYH 'LUHFWRU DQG WZR RWKRQUGGLXUHDFWWLRLQSDRQGEV8RFDQFV
'LUHFWRU RI 5HVHDUFK DQG 'HYHORSVPIRQWH GLOQGI FWWKRUDKLSVW\$Q
WKHUH ZHUH TXHVWLRQV DERXW WKH QHMURGDWFRRHKVQFDORWUHQTODW

+LODU\ 1L[RQ UHDFKHUGHRXMQWDRFRLOQIWWUDHOQFHWKFDROXJWQI
&RPPLWWHH FRQFHUQV

-LP +DUYH\ DJUHHG WR HOLPLQDW H WKIS XFXDEWS\$ RQL D/Q B Q3VR QL
DQG IRU WKH 'LUHFWRU RI 5HVHDUFK DQGO'W RQ ODRQGP HQ FWK D P%OR WHK
EH DFWLYHO\ LQYROYHG ZLWK WKH FDHUQWD MURIDLOQGW B UMH K WV KERXWM Z
SDLG +H IXUWKHU DJUHHG WR LQFUDWIDQH QHQGLQNG QSGH UV RQ
FRQWULEXWLRQV 'U +DUYH\ IHOW WKDW HV KIDLSGU RVSKRNUUDHOZHDJH FVR
LQGXVWU\ SDUWQHUV LQWHUHVWHG LQ YSRDQWVHQGLUVQXVZ/LVR Q WV K H
NLQG FRQWULEXWLRQV *HQHUDOO\ RMUKPH RI H V B Q W W LDEQGVH HRQHVF W
HTXLSPHQW +H ZLOO PRGLI\ KLV MOLHQAGWVHXS BR VWSBQG WV KHR UFROOH
7RZHU)RXQGDWLRQ 5RE 6LEOH\ KDG VDRUPM DQ Q FVXWQV VZW W G WK
EORFNV EH IOLSSHG WR UHIOHFW KWKQ MDQOWLPP DXQISQI U V-WR RUGH SW
DQG DJUHHG WR PDNH WKDW FKDQJH KHKHS &RSRVLWVW MHR IXU MOKHFL
VHHG IXQGV DUH DYDLODEOH IURP WKHN7&ZHUVH)RWQG DQW IDR QRZ \$0
)RXQGDWLRQ DFFRXQW ZLOO EH XVHGV B VP D WID UWWK DXW IFKODQVH LLQP
SURSRVDO

0 6 3 6LEOH\ \$SSU RWKHDGV WKH 2578 3URSHQWDQH U IIRW WKH
\$TXDFXOWXUH DW ORVQH / DQEGRLQDJWORDWLH V EPHR DS SIRRUZYDQ GWR
WR & 5 SHQGLQJ WKHVHQ JSHMR S RUVHYG VFLKRQ V VZR UVMKQ JE IXQJHW
FRQMXQFWLRQ ZLWK WKH 5HVHDUFK)RXQMGD WLKRHQ³ &URHOPORHYJH
RI (QJLQHHULQJ RQHW KWKHLQW FSODUW CQDHMIGV W R SESR M S/L Q
WH[W WR UHPRYH WKGV RQH Q UWHFWWIRH VD RQH DQHRUQ H RQV GWR E
DGGHG DQG FODULGHGD RQH Q M VQGH RQH Q B W L RQV Q DQVBL RRQZ
VHHG PRQH\ 7KH FRPPDLJWVH B MKUDWK HLL QDQV Z RQH Q LFRKX - LP
+DUYH\ WR JHW D DQHDLWWLHRQ RDIQFOQ B LQHUV G H RQH DQH
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* UDGXDWH 6WXGLHV DQG 5HVHDUFK &RPPI
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3UHVHQW +LODU\ 1FLQRQXV\ DYLGH\ Q\G\ OOL\ LQGD\ 0DX\ Q\ Q5RE\ 6LEOH\ &D
3DXO\ &DUORV\ 6DQFKH] 'RORUHV\ OHQD

7KH PLQXWHV RI WKH \$W LQJ ZHUH EUVRXJKWL RQ DRQG GDSSUF
ZDV SRLQWHG RXW VZDWD EDVYHQW% URPNG KRORUHW LQHQDQZ DV S
UHTXLULQJ D FKDQHJHP LQOXWH MWZHUV DSSURYHG ZLWK WKH IUL
DERYHRE 6LEOH\ PRYQGUDBVWD VHFRQGHG

%UXFN EURXJKW WVKHR FGDPVPHL VRQHWMKHSUHWYALLVILRQWRH WRKOLF\\
UHDGLQJ LQ WKH \$FDWKPL\$U6HYQBRWM GRDQG BQ U7KVHWWHFWV DGD
EDVLF FHUWLILF RWIDQORZIUIOPVRUH WJKDQS HQQ&QMLVY MUKULRW \\
*\$3(DQG VPDOOZ\$WRKJ VREVDWDQWLDO 2SHUQF8IWWLXIGFIDWWHV \$QRW
DV 8UEDQ 5HJLRQBOS3RODHQQTQH UHYLUVHRQHZVHGEHLQ&J 5JMWRGD
VHHN DFRPSURPLVH

%UXFN UHYLHZHGLW& HDQ BZGSEU RWDLDRQ LGSHRVOFUFLUE L Q J D O O R I W K
WKDW DUH QHZ KDYFHWQRW EHHIHRQJ H L Q GZUKRKH SLUQRFQHKGXHU H SRUJH Y
6SHFLDO & R QVLRGSHWDRWQ R R U UHLQ VWDWWBHQG
HDFK WHUP DQG WKHP R/HNGLSDXVO B VGLLR/QWXADXOG LH
PHHW WKH SURDIQGDUURQDRI DWSURIHVVLRQ

% U X F N U H O D W H W G K M V K X H Q V G W Q J V I H R R I J R U D L G H Q D W
U H M H E W I R Q F \ 3 I R H V D C P D Q V H A M D R I M W K Q D H B W U R

7KH UH YLVHG 6-68 LOV DVOQISU\RVF WRHV D @ DAQR
LQIRUPDWLRQ LQ WRKXOLGU EJX LKGJH QOQ JKXWZI GV
XQDQLPRXVO\ WR XWII DROQVKZH WKH GXH OLQWH
DV D WHVWKFDVUHH SZRUWW IURBW\QIGKVD WWRNF
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+LODU\ 1L[RQ ZDV UHRIOWKWHFORFRIDWWHH
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