

(OL]DENWIKQGR0D +D08HULQD &RVWD /HLWH

,QVWLWXWH RI 3V\FKLDWU\)HGHU0D 8QLYHUVLW\ RI 5LR GH -DQHLUR %UD]LO

&RUUHVSRLQGLQ(DID)XWKRUK (VSLQGR0D +DOSHUQ 5XD %RWXFDWX EORFR DSDUWDPHQWR *UDMD
)D[(HVSLLQGR0DKDOSHUQ#\DKRR FRP EU

5HFHLYHG0GDWH \$FFHSWHG GDWH 6HS 8XEOLFDWLRQ GDWH

&RS\ULJKW < +DOSHUQ ((HW DO 7KLV LV DQ RSHQ DFFHVV DUWLFOH GLVWULEXWHG XQGHU WKH WH
XVH GLVWULEXWLRQ DQG UHSURGXFWLRQ LQ DQ\ PHGLXP SURYLGHG WKH RULJLQDO DXWKRU DQG VRXU

\$EVWUDFW

\$SLRQHHLQJ VWXG\ ZDV FRQGXFWHG DW WKH &HQWHU IRU &KHPLFDO 'HSHQGH
XVHG ZDV DQ HWKQRJUDSKLF VWXG\ ZLWK SDUWLFLSDQW REVHUYDWLRQ WR LQY
FRQVWUXFWLRQ RI SDWLHQWV\ DOFRKROLVP 6DPSOLQJ GDWD FROOHFWLRQ DQD
D FLUFXODU PDQQHU ,Q WKLV DUWLFOH ZH SUHVHQW RQH RI WKH PDLQ UHVXOV
DQWKURSRORJLFD0 H\H RQ DOFRKROLVP WKH DOFRKROLF KDELWXV ,W UHIHUV W
WKRXXJKWV DVVRFLDWHG WR ZD\ RI GULQNLQJ PDLQ\ FROOHFWLYHO\ ,W FRXO
QDYDO WUDGLWLRQ GLVVHPLQDWHG E\ EHOLHIV DQG P\WKV LQ IDYRU RI WKH SU
FRQFOXVLRQ DOWKRXXJK WKH UHVXOWV FDQQRW EH JHQHUDOL]HG WR RWKHU JUR
FRQFHUQLQJ DOFRKROLVP LQ RWKHU LQVWLWXWLRQV PRVWO\ WR LPSOHPHQW SU
WKH RUJDQL]DWLRQ

.HIZRUGVXDOLWDM\HDFK (WKQRJUDSK\ 3DUWLFLSDQW
REVHUYDWLRQ 0L0LWDU\ SHUVRQQHO 5HVHDFKHU VXEMHFW UHODWLRQV
\$OFRKROLVP

,QWURGXFWRQ

\$OFRKROLVP DPRQJ PLOLWDU\ SHUVRQQHO EHFDPH D PDWWHU RI VSHFLDO
DWWHQWLRQ LQ WKH %UD]LOLDQ 1DY\ VLQFH WKH FUHDWLRQ RI WKH &HQWHU I
&KHPLFDO 'HSHQGHQF\ &('4 LQ D VSHFLDOL]HG RXWSDWLHQW
FOLQLF IRU WKH WUHDWPHQW RI GUXJ DGGLFWLRQ ORFDWHG LQ WKH 1DY\ &HQW
+RVSLWDO 5LR GH -DQHLUR %UD]LO 7KLV &HQWHU LV D SLRQHHU LQLWLDWLYH
WKH %UD]LOLDQ 1DY\ XQSDUDOOH0HG LQ WKH %UD]LOLDQ \$UPHG)RUFHV D
PLOHVWRQH WKDW GHWHUPLQHG WKH RIILFLDO EHJLQQLQJ RI D VHULHV RI DFWL
GLUHFWHG WRZDUGV WKH WUHDWPHQW RI GUXJ XVHUV 1HYHUWKHOHV OLWWO
NQRZQ DERXW WKH HIIHFWV FDXVHG E\ WKH %UD]LOLDQ 1DY\ WUDGLWLRQV WR
GULQ EH\YHJDJHV LQ WKH ZRUNSODFH 7KH ILUVW VWXGLHV RQ WKLV PDWWHU K
UHFHQWO\ EHHQ PDGH E\ WKH DXWKRUV RI WKLV DUWLFOH UHVXOWLQJ IURP WK
VWXGLHV DW WKLV &HQWHU > @ RUFH

JURXS ZDV IURP ~~BUD~~ ~~MB~~ ~~IRP~~ ~~PHQ~~ 5HFUXLW XS WR 0DVWHU
&KLHI 3HWW\ 2IILFHUV \$OWKRXJK WKH PDMRULW\ RI WKH SDWLHQWV UHSRUWHG
WKDW WKH\ ZHUH DGGLFWHG WR DOFRKRO RQO\ D IHZ UHSRUWHG WKDW DOFRKRO
QRW WKHLU GUXJ RI FKRLFH EXW LW ZDV FRQVLGHUHG D FHQWUDO HOHPHQW
SUHVHQW WKURXJKRXW WKHLU H[SHULHQFHV

WKHVH JDSV GLVWXUEDQFHV IDLOXUHV DQG WUDQVJUHVVLQRV PD\ RFFXU DV
PDQLIHVWDWLRQ RI WKH GLVWUHSDF\ EHWZHHQ UHDOLW\ DQG WKHRU\ +RZHYHU
WKH LQVWLWXWLRQdV VWDQGDUGV DQG SUHFHSWV PXVW QRW EH QDWXUDOLJHG
ZHUH KLVWRULFDOO\ FXOWXUDOO\ DQG VRFLDOO\ GHWHUPLQH

7KH FUHDWLRQ RI WKH %UD]LOLDQ 1DY\ IROORZHG D SURFHVV WKDW WRRN
SODFH RYHU D ORQJ SHULRG HPEHGGHG LQ D FRPSOH[VWUXFWXUH EDVHG RQ
VRSKLVWLFDFWHG UHJXODWRU\ DQG EXUHDXFUDWLF IUDPHZRUN 6LPLODUO\ WKH
QDYDO PLOLWDU\ SURILOH ZDV PHQWDOO\ SURJUDPPHG WR PDNH LWV SHUVRQQH
REH\ DQG FRPPDQG > @)DLOXUHV DUH LGHQWLILHG E\ PLOLWDU\ VWDQGDUGV
LQ WHUPV RI DGHTXDF\ DQG FDSDFLW\ EDVHG RQ WKH GLVFLSOLQDU\
PLVGHPHDQRUV OLDEOH WR SXQLVKPHQW ZKLFK DUH OLVWHG LQ WKH 'LVFLSOLQ
5HJXODWLRQ R@WKHWDQO>FRQWDLQV WUDFHV RI WKH VSLULW RI WKH
\$UPHG 3URYLVLRQDO 5HJLPHQW DSSURYHG LQ DQG LWV DUWLFOHV RI ZDU
DSSURYHG LQ ERWK LQVSLUHG E\ WKH GUDFRQLDQ &RGH RI WKH
&RXQW RI /LSSH 7KLV FRGH WKH EDVLV RI WKH 3RUWXJXHVH DQG WKH

LQ QRLV\ SODFHV WLJKW DUHDV VXEMHFWHG WR YLEUDWLRQV DQG H[SRVHG
KD]DUGRXV VXEVDQFHV

:RUNLQJ SURFHVVHV

7KH ZRUNLQJ SURFHVVHV UHIHU WR KRZ WDVNV DUH GHVLJQHG DQG GLYLGHG
LQFOXGLQJ WKH SHULRG WKH SDFH DQG OHQJWK RI MRXUQH\ ,W LV DOVR UHOD
WR WKH UHPXQHWDWLRQ VDODU\ DV ZHOO DV WKH KLHUDUFKLFDO VWUXFWX
YHUWLFDO DQG KRUL]RQWDO UHODWLRQV KLSV

,Q WKH 1DY\ WKHUH DUH FHUWDLQ DFWLYLWLHV ZKLFK EHFDXVH RI WKHLU

WKH H[LVWHQFH RI QRUPV VXSSRUWLQJ \$DROVXWVSKWLBZQR OS-D ULYFXODU DWL RQW WKH
ZRUNSODFH ZKHQ DOFRKROLF EHYHUDJZIDVDSIDGHLG WELERWKI GW BW WQXQFKUWK FH D
RIIHUHG WR DFFRPSOLVK PDQ\ WDVQVJRTKHD WDS WQXHLDWLGRQQ WRUW WKHLQ RUGH
DGPLQLVWUDWLYH SURFHGXUHV YDULHVRODSG DQGLHW HQO FRQVFLB RXP RW DQG FRVQV
DFFRUGLQJ WR WKH MXGJPHQW RI HDFK DWWRBWLWR ZQHOGQWH WKKHL SQ UHTSPWL
EH FRPSODFHQW ZLWK WKH XVH RI EHSUHUHQW DWKLRQX BK RVHO IWK HQ ZBOMB DRFFXU
LQWHUSUHWLQJ DV QRUPDO WKH IUHTXKLOF'S DQGLB R B B Q W RFLD OF R Q W G U M F D W R I Q
FRQVXPHG LQ WKH QDYDO FHOHEUDWL RQ VO L IH @ QGLRQ LQK W KKH HODS M X L F D W H W R V
RI fVRFLDO GULQNHUVg FKLHIV DQG V X I S H K R Y L W R D N H W H L Q V R V R F M R Q G W D W K L F D Q V
HSLVRGHV RI DOFRKRO GUXQNHQQHV V Q V O H L D M L C J W R V W K H W K H H Q W H J R Z D W H B Q W H
SDUWLFXODUO\ EHFDXVH WKH\ DOVR D G E F W K H S D R U W K H V H D S Z D F W I P R G X O D W H W K H L U

7KH SDWLHQWV RI WKH &('4 PD\ QRW U X O H V R J S R O L W H O H V V D Q G G H F R U X P V H C
VDPSOH RI WKH HQWLUH %UD]LOLDQ 1 D Y G H F R Q V P G H U H G D U H S U H V H O W D W L Y H W E
QDYDO FRQWLQJHQW DV D ZKROH < H W D Q H I S O D Q D W R U \ P R G H O K R X O G
GHILQLWHO\ EH EXLOW IURP D VPDOO V F D O H I D Q G O S L D R L S W O R I W K H W H H G V H D S B Q S H G
HYHQ UHYLVHG WR LQYHVWLJDWH V @ P W B U L D W S H F R W V W R Q S U B L P L W U R F D O H > U H
\$OWKRXXJ WKH SDWLHQWV RI WKH &('4 W H S U H Q H I O W D W Q D W I D D G W L R Q Q R H W K H I
QDYDO FRQWLQJHQW WKH\ UHYHDO Z H G H L Y G G P W Q D W R W K L R I F R X O G D Q F D O R G D W
DGLFLWRQ LVVXH DW WKH KH DUW RI W I K H I X W D L O L X W L R W L E H Q R V H Z R W W K \ W R I K W
SRLQW RI YLHZ 1HYHUWKHOHVV WKLVKHUSDFWILRQW FRXO Q G H J K O L D Q W W R I H R G
FKDUDFWHULVWLFV RI D JUHDWHU V H E O S U W R H Q M L Q V L F D B P E M K B Y L R S R I Q W
UHODWHG WR DOFRKROK FURORXUS W L R Q E H O R X G I V G H U L Y R I G W R W K H I L H O G 7 K H I
IURP WKH FKRLFH RI D FHUWDLQ DQJOH S H R U F H S D O \ W L O H W K H V I S D F W L H Q M V H L Q G H L Z S R L
LQWHUSUHWHG E\ WKH VRFLR DQWKUR S D O R X J L B D O V H H D W R H W K K H U H V H D W F K H F W H G R
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SHUVSHFWLYH > @ HYHQ WKRXJK WKH V X E M H F W L Y L W \ R I W K H U H Y H D U F K H U Z D
DOZD\V SUHVHQW , Q I D F W H Y H Q W K H V H O H F W L R Q R I U H V H D U F K W R S L F V F D Q E
LQIOXHQFHG E\ WKH UHVHDFKHUdV Y D O X H V S H U V B O D L O W H U H V V R U V R F
FRPLWPH@ W K D W L V Z K I K H V W D W H V W K D W D O O U H F R J Q L J D E O H
UHVHDFKHUdV SHUVSHFWLYHV VRFLDO SRVLWRQV DQG SURIHVVLRQDO
EDFNJURXQG PXVH EH FRQVLGHUHG GXULQJ WKH UHVHDFK GHVLJQ H[FXWLRQ
DQG DQDO\VLV DQG VKRXOG EH ULJRURXXVO\ VKRZQ

'HILQLWHO\ WKH GXDO VWDWXV RI WKH DXWKRU SHUVRQDO DQG SURIHVVLRQDO
UHTXLUH D FRQVWDQW SRVLWRQ RI VXVSLFLRQ WKDW LV DQ HWKQRJUDSKL
VWDWH > @ 7KHUHIRUH LW ZDV QHFHVVDU\ WR UHDOL]H WKDW DOWKRXXJ W
VRFLDO ZRUOG ZDV IDPLOLDU WR KHU VXFK IDPLOLDULW\ ZDV DSSDUHQW
UHTXLULQJ D SUDFWLFH RI VHOI DZDUHQHVV WR SURFHGG WR WKH DQDO\VLV RI
NH\ HOHPHQWV > @

\$V WKH FKLHI RI &('4 VKH ZDV LQ D SULYLOHJHG SRVLWRQ IURP ZKLFK
VKH FRXOG HDVLO\ XQGHUWDNH WKH LQYHVWLJDWLRQ KDYLQJ DFFHVV IURP
ZLWKLQ 7KH XQGHUVWDQGLQJ RI D FHUWDLQ VRFLRORJLFDQ FRQILJXUDWLRQ
FRXOG EH RXWOLQHG DIWHU KHU ORQJ SHULRG RI REVHUYDWLRQ DQG FORVQH
'LIIHUHQW UHVHDFKHV FRQGXFWHG LQ DQ\ RWKHU VLWH RI WKH %UD]LOLDQ 1DY
ZRQOG KDYH LPSRVHG REVWDFOHV IRU LQVWDQFH LW LV QRW HDV\ WR EH
RIILFLDOO\ DOORZHG WR EH DQ REVHUYHU RQ D VKLS RU D EDWWDOLRQ
5HVHDFKHUV KDYH PHQWLRQH G R Z G L I I L F X O W L W L V W R D F F H V V W K H % U D] L O L
\$ U P \ @ , W L V S D U W L F X O D U O \ K D U G W R R Y H U F R P H W K H F K D L Q R I F R P P D Q G
DGPLQLVWUDWLYH UHTXLUHPHQWV DQG VXVSLFLRQV FKLHIO\ ZKHQ WKH VXEMHF
LV DOFRKROLVP

%HVLGHV WKH ILUVV DXWKRU KDG WR RYHUFRPH WKH SDWLHQWVC GRXEWV DE
KHU UROH DV D UHVHDFKHU DV ZHOO DV WKH REMHFWLYHV RI WKH VWXG\
(YHQWXDOO\ WKH\ VXEVWLWXWHG PLVUUXV E\ FRQILGHQFH DQG FORVQHVV
PDLQO\ ZKHQ WKH\ SHUFHLYHG WKDW VKH FRXOG XQGHUVWDQG WKHP EHLQJ
RSHQ WR KHU WKHLU QDUUDWLYHV DYRLG MXGJPHQW \$GGLWLRQDOO\ WKHL
FRPPRQ PLOLDU\ XQLYHUVH LQFOXGLQJ WKHLU ODERU URXLWQH VODQJV DQ
FXVWRPV PD\ KDYH UHSUHVHQWHG D ERQG XS WR WKH SRLQW WKDW WKH\ DVNH
LI VKH FRXOG EH WKHLU VSRNHVZRPDQ VRPHRQH ZKR FRXOG EULGJH WKH JDS
EHWZHHQ 2IILFHUV DQG 3UD@DV

DOFRKROLF KDELWXV 2WKHU PLOLWDU\ SHUVRQQHO RI WKH FRUSRUDWLRQ PD\ E
HTXDOO\ YXOQHUDEOH WR WKH KDUPIXO HIIHFWV RI FRQVXPLQJ EHYHUDJHV RQ
ERDUG WKRXXJK WKH\ PD\ QHYHU ORRN IRU KHOS &RQVHTXHQWO\ SURWHFWLYH
PHDVXUHV IRU ZRUNHUV FRXOG PLQLPL]H KXPdq DQG PDWHULDO GDPDJHV LQ
WKH %UDJLOLDQ 1DY\ HVSHFLDOO\ LI WKH ZKROH RUJDQL]DWLRQ UHDOL]HV WKH
WKH WUDGLWLRQV RI FRQVXPLQJ GULQNV RQ ERDUG VKRXOG EH UHH[DPLQHG

/LPLWDWLRQ RI WKH 6WXG\

\$V LW ZDV PHQWLRQHG EHIRUH GXH WR WKH IDFW WKDW WKLV LV DQ LQQRYDWL
VWXG\ FRQFHUQLQJ WKH FRQVXPSWLRQ RI DOFRKRO LQ WKH %UDJLOLDQ 1DY\
WKH PDMRU REVWDFOH HQFRXQWHUHG ZDV WR GHYHORS D UHVHDFK FRQFHUQLQ
GHOLFDFW VXEMHFW %HFDXVH RI WKDW WKH &('4 DQG LWV SDWLHQWV ZHUH W
EHVW FKRLFH DYDLODEOH WKRXXJK WKH\ PD\ QRW EH DQ DFFXUDWH VDPSOH RI
WKH QDYDO FRWLQJHQW 7KXV IXUWKHU VWXGLHV QHHG WR EH XQGHUWDNHQ
RUGHU WR H[SORUH WKH SUHVHQW UHVXOWV LQ D ODUJH VDPSOH

5HIHUUHQFHV

+DOSHUQ (()HUUHLUD 60% 6LOYD)LOKR -) GD 7KH HIIHFWV RI WKH
ODERU VLWXDWLRQV LQ WKH FRQVWUXFWLRQ RI WKH DOFRKROLV RI WKH %UDJLOLDQ
1DY\ PLOLWDU\ SDWLHQWV &DG 3VLFRO 6RF 7UDE
+DOSHUQ ((/HLWH /0& 6LOYD)LOKR -) GD 'ULQNLQJ RQ ERDUG
OHDUQHG WUDGLWLRQ \$QWURSRO`WLF
+DOSHUQ ((/HLWH /0& 7KH GU\ ODZ RQ ERDUG SUHYHQWLYH
FKDOOHQJHV LQ %UDJLOLDQ 1DY\ \$UT %UDV 3VLF
+DOSHUQ ((/HLWH /0& D 7KH FRQVWUXFWLRQ RI WKH DOFRKROLF KDELWXV
DQG DOFRKRO FRQVXPSWLRQ LQ WKH ZRUNSODFH DPRQJ PLOLWDU\ SDWLHQWV RI
%UDJLOLDQ 1DY\ &DG 6DXGH &ROHW
+DOSHUQ ((/HLWH /0& E 'HFLSKHULQJ WKH PHDQLQJ RI QDY\
HWK\OLF EHKDYLRUV RI PLOLWDU\ SDWLHQWV %RO 3VLFRO
+DOSHUQ ((/HLWH /0& HSUHVHQWDWLRQV RQ SDWLHQW LOOQHVV DQG FXUH
DW WKH &KHPLFDO 'HSHQGHHQFH

&LWDWLBQSHUQ ((/HLWH /& 7KH \$OFRKROLF +DELWXV \$ 6RFLR \$QWKURSROGRLFDO

3DJH RI

0DUVKDOO 6. 7LOWRQ :HDYHU /& %RVGHWARN .(,QVRLQD WURW LFDO HWKQRJUDSK
 PDQDJHPPHQW FRQVLGHULQJ DGROHVFHQWVSWRFRQVWQROXDIOSDUDQWDSHNQRZOHGJH
 - \$GROHVF)RVVH\+DUYH\ & 0F'HUPRWW) 'DYLGVRRQ /
 6SUDGOH\ 7KH HWKQRJUDSKLF LQWHUYLHZ D)GJWY:ROXKWLQJ +TXDFLXUDWLYH UHVHDFK
 %UDFH *XED* /LQFROQ <6 &RPSHWLQJ SDUD
 6FKZDQGW 4XDOLWDWLYH LQTXLU\ D GLFWRFRDUFKRI WHPVHQJLQXVDSGLQFROQ (GQ
 2DNV &\$ 6DJH UHVHDFK &DOLIRUQLD 6DJH 3XEOLFDWLRQ